

 $I(J^P) = \frac{1}{2}(0^-)$

D^0 MASS

The fit includes D^{\pm} , D^{0} , D_{s}^{\pm} , $D^{*\pm}$, D^{*0} , $D_{s}^{*\pm}$, $D_{1}(2420)^{0}$, $D_{2}^{*}(2460)^{0}$, and $D_{s1}(2536)^{\pm}$ mass and mass difference measurements.

Given the recent addition of much more precise measurements, we have omitted all those masses published up through 1990. See any Review before 2015 for those earlier results.

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
1864.83 ±0.05	OUR FIT					
1864.84 ±0.05	OUR AVE	RAGE				
1864.845 ± 0.025	± 0.057	63k	¹ TOMARADZE	14		$D^0 \rightarrow K^- 2\pi^+ \pi^-$
1864.75 ± 0.15	± 0.11		AAIJ	13V	LHCB	$D^0 \rightarrow K^+ 2K^- \pi^+$
1864.841 ± 0.048	± 0.063	4.3k	² LEES	13S	BABR	e^+e^- at $arLambda(4S)$
1865.30 ± 0.33	± 0.23	0.1k	ANASHIN	10A	KEDR	e^+e^- at ψ (3770)
1864.847 ± 0.150	± 0.095	0.3k	CAWLFIELD	07	CLEO	$D^0 \rightarrow K^0_S \phi$

¹ Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration. The largest source of error in the TOMARADZE 14 value is from the uncertainties in the K^- and K_S^0 masses. The systematic error given above is the addition in quadrature of $\pm 0.022 \pm 0.053$ MeV, where the second error is from those mass uncertainties.

² The largest source of error in the LEES 13S value is from the uncertainty of the K^+ mass. The quoted systematic error is in fact $\pm 0.043 + 3$ ($m_{K^+} - 493.677$), in MeV.

$$m_{D^{\pm}} - m_{D^0}$$

The fit includes D^{\pm} , D^{0} , D_{s}^{\pm} , $D^{*\pm}$, D^{*0} , $D_{s}^{*\pm}$, $D_{1}(2420)^{0}$, $D_{2}^{*}(2460)^{0}$, and $D_{s1}(2536)^{\pm}$ mass and mass difference measurements.

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4.75±0.08 OUR FIT				
$4.76 \pm 0.12 \pm 0.07$	AAIJ	13V	LHCB	$D^+ \rightarrow K^+ K^- \pi^+$

D⁰ MEAN LIFE

Measurements with an error $>10\times10^{-15}~\text{s}$ have been omitted from the average.

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
410.1 ± 1.5 OUR AVE	RAGE				
$409.6 \pm \ 1.1 \pm \ 1.5$	210k	LINK	02F	FOCS	γ nucleus, $pprox$ 180 GeV
$407.9 \pm \ 6.0 \pm \ 4.3$	10k	KUSHNIR	01	SELX	$K^{-}\pi^{+}$, $K^{-}\pi^{+}\pi^{+}\pi^{-}$
413 \pm 3 \pm 4	35k	AITALA	99E	E791	$K^{-}\pi^{+}$
$408.5 \pm \ 4.1 {+} \ \begin{array}{c} 3.5 \\ - \ 3.4 \end{array}$	25k	BONVICINI	99	CLE2	$e^+e^-pprox \Upsilon(4S)$
$413 ~\pm~ 4 ~\pm~ 3$	16k	FRABETTI	94 D	E687	$K^{-}\pi^{+}$, $K^{-}\pi^{+}\pi^{+}\pi^{-}$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

424 417	${\pm 11 \atop {\pm 18}}$	$egin{array}{c} \pm \ 7 \ \pm \ 15 \end{array}$	5118 890	FRABETTI ALVAREZ	91 90	E687 NA14	$K^{-}\pi^{+}, K^{-}\pi^{+}\pi^{+}\pi^{-}$ $K^{-}\pi^{+}, K^{-}\pi^{+}\pi^{+}\pi^{-}$
388	$^{+23}_{-21}$		641	¹ BARLAG	90 C	ACCM	π^- Cu 230 GeV
480	± 40	± 30	776	ALBRECHT	881	ARG	e^+e^- 10 GeV
422	\pm 8	± 10	4212	RAAB	88	E691	Photoproduction
420	± 50		90	BARLAG	87 B	ACCM	K^- and π^- 200 GeV
1 -		C 00c					

BARLAG 90C estimate systematic error to be negligible.

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$$\left|m_{D_1^0}-m_{D_2^0}\right|=x\;\Gamma$$

The D_1^0 and D_2^0 are the mass eigenstates of the D^0 meson, as described in the note on " $D^0-\overline{D}^0$ Mixing,' above. The experiments usually present $x \equiv \Delta m/\Gamma$. Then $\Delta m = x \Gamma = x \hbar/\tau$.

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group, see the note on " D^0 - \overline{D}^0 Mixing."

$VALUE(10^{-5} n s^{-1})$ $CL\%$ DOCUMENTID TECH COMMEN	VALUE $(10^{10} h s^{-1})$	CI %	DOCUMENT ID	TECN	COMMEN
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$0.95\substack{+0.41\-0.44}$ OUR EVALUATION

0.8 ±0.7 OUR AVERAGE Error includes scale factor of 1.7. See the ideogram below.

below.					
$-\ 2.10 {\pm} 1.29 {\pm} 0.41$		¹ AAIJ	16V	LHCB	pp at 7 TeV
$3.7 \hspace{0.2cm} \pm 2.9 \hspace{0.2cm} \pm 1.5$		² LEES	16 D	BABR	$e^+ e^-$, 10.6 GeV
		³ KO	14	BELL	$e^+e^- ightarrow ~ \Upsilon({ m nS})$
$1.37 \!\pm\! 0.46 \! \substack{+0.18 \\ -0.28}$		⁴ PENG	14	BELL	$e^+e^- ightarrow ~\Upsilon({ m nS})$
		⁵ AAIJ	13CE	LHCB	<i>pp</i> at 7, 8 TeV
		⁶ AALTONEN	13AE	CDF	<i>р</i> рат 1.96 ТеV
$0.39\!\pm\!0.56\!\pm\!0.35$		⁷ DEL-AMO-SA	10 D	BABR	$e^+ e^-$, 10.6 GeV
• • • We do not use the	following	data for averages	, fits,	limits, e	etc. • • •
		⁸ AAIJ	13N	LHCB	Repl. by AAIJ 13CE
$6.4 \begin{array}{c} +1.4 \\ -1.7 \end{array} \pm 1.0$		⁹ AUBERT	09 AN	BABR	e^+e^- at 10.58 GeV
-2 +7 -6	1	⁰ LOWREY	09	CLEO	e^+e^- at $\psi(3770)$
$1.98 \!\pm\! 0.73 \!+\! 0.32 \\ -\! 0.41$	1	¹ ZHANG	07 B	BELL	Repl. by PENG 14
< 7	95 1	² ZHANG	06	BELL	e ⁺ e ⁻
-11 to $+22$	1	¹ ASNER	05	CLEO	e^+e^-pprox 10 GeV
< 11	90	BITENC	05	BELL	
< 30	90	CAWLFIELD	05	CLEO	
< 7	95 1	^{.2} LI	05A	BELL	See ZHANG 06



- ¹ Model-independent measurement of the charm mixing parameters in the decay $D^0 \rightarrow K_S^0 \pi^+ \pi^-$ using 1.0 fb⁻¹ of LHCb data at $\sqrt{s} = 7$ TeV.
- ²Time-dependent amplitude analysis of $D^0 \rightarrow \pi^+ \pi^- \pi^0$.
- ³Based on 976 fb⁻¹ of data collected at Y(nS) resonances. Assumes no *CP* violation. Reported $x'^2 = (0.09 \pm 0.22) \times 10^{-3}$ and $y' = (4.6 \pm 3.4) \times 10^{-3}$, where $x' = x \cos(\delta)$ + y sin(δ), y' = y cos(δ) - x sin(δ) and δ is the strong phase between $D^0 \rightarrow K^+ \pi^$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.
- ⁴ The time-dependent Dalitz-plot analysis of $D^0 \rightarrow K_S^0 \pi^+ \pi^-$ is emplored. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow$ $K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm .
- ⁵ Based on 3 fb⁻¹ of data collected at \sqrt{s} = 7, 8 TeV. Assumes no *CP* violation. Reported $x'^2 = (5.5 \pm 4.9) \times 10^{-4}$ and $y' = (4.8 \pm 1.0) \times 10^{-3}$, where $x' = x \cos(\delta) + y$ $\sin(\delta), y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+ \pi^$ and $\overline{D}^0 \to K^+ \pi^-$. ⁶ Based on 9.6 fb⁻¹ of data collected at the Tevatron. Assumes no *CP* violation. Reported
- $x'^2 = (0.08 \pm 0.18) \times 10^{-3}$ and $y' = (4.3 \pm 4.3) \times 10^{-3}$, where $x' = x \cos(\delta) + y$

 $\sin(\delta), y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+ \pi^-$

- and $\overline{D}^0 \rightarrow K^+ \pi^-$. ⁷ DEL-AMO-SANCHEZ 10D uses 540,800 ± 800 $K^0_S \pi^+ \pi^-$ and 79,900 ± 300 $K^0_S K^+ K^$ events in a time-dependent amplitude analysis of the D^0 and \overline{D}^0 Dalitz plots. No evidence was found for CP violation, and the values here assume no such violation.
- ⁸Based on 1 fb⁻¹ of data collected at $\sqrt{s} = 7$ TeV in 2011. Assumes no *CP* violation. Reported $x'^2 = (-0.9 \pm 1.3) \times 10^{-4}$ and $y' = (7.2 \pm 2.4) \times 10^{-3}$, where $x' = x \cos(\delta)$ $+ y \sin(\delta), y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow$
- $K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$. 9 The AUBERT 09AN values are inferred from the branching ratio $\Gamma(D^0 \to K^+\pi^-\pi^0)$ via $\overline{D}^0)/\Gamma(D^0 \to K^- \pi^+ \pi^0)$ given near the end of this Listings. Mixing is distinguished from DCS decays using decay-time information. Interference between mixing and DCS is allowed. The phase between $D^0 \rightarrow K^+ \pi^- \pi^0$ and $\overline{D}^0 \rightarrow K^+ \pi^- \pi^0$ is assumed to be small. The width difference here is y'', which is not the same as y_{CP} in the note on $D^0 - \overline{D}^0$ mixing.
- ¹⁰LOWREY 09 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \rightarrow K^- \pi^+ \pi^0$ and $D^0 \rightarrow K^- \pi^- 2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $\Delta m = (2.34 \pm 0.61) imes 10^{10} \ \hbar \ \mathrm{s}^{-1}$.
- 11 The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \rightarrow K^0_{S} \pi^+ \pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm .
- ¹² The AUBERT 03Z, LI 05A, and ZHANG 06 limits are inferred from the $D^0 \overline{D}^0$ mixing ratio $\Gamma(K^+\pi^- \text{ (via } \overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decaytime information is used to distinguish DCS decays from $D^0 - \overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows *CP* violation. AUBERT 03Z assumes the strong phase between $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}{}^0 \rightarrow K^+ \pi^$ amplitudes is small; if an arbitrary phase is allowed, the limit degrades by 20%. The LI 05A and ZHANG 06 limits are valid for an arbitrary strong phase.
- ¹³This LINK 05H limit is inferred from the $D^0-\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-)$ (via \overline{D}^{0}))/ $\Gamma(K^{-}\pi^{+})$ given near the end of this D^{0} Listings. Decay-time information is used to distinguish DCS decays from $D^{0}-\overline{D}^{0}$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows CP violation. The strong phase between $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}{}^0 \rightarrow K^+ \pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by 25%.
- ¹⁴ This GODANG 00 limit is inferred from the $D^0-\overline{D}^0$ mixing ratio $\Gamma(\kappa^+\pi^-)$ (via \overline{D}^0))/ $\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from $D^0-\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows CP violation. The strong phase between $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by a factor of two.
- 15 AITALA 98 allows interference between the doubly Cabibbo-suppressed and mixing amplitudes, and also allows *CP* violation in this term, but assumes that $A_D = A_R = 0$. See the note on " $D^0 - \overline{D}^0$ Mixing," above.

¹⁶ This limit is inferred from R_M for $f = K^+ \pi^-$ and $f = K^+ \pi^- \pi^+ \pi^-$. See the note on " $D^0-\overline{D}^0$ Mixing," above. Decay-time information is used to distinguish doubly Cabibbosuppressed decays from $D^0 - \overline{D}^0$ mixing.

¹⁷ This limit is inferred from R_M for $f = K^+ \ell^- \overline{\nu}_{\ell}$. See the note on " $D^0 - \overline{D}^0$ Mixing," above.

¹⁸ ANJOS 88C assumes that y = 0. See the note on " $D^0 - \overline{D}^0$ Mixing," above. Without this assumption, the limit degrades by about a factor of two.

$$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y$$

The D_1^0 and D_2^0 are the mass eigenstates of the D^0 meson, as described in the note on " $D^0 - \overline{D}^0$ Mixing," above.

Due to the strong phase difference between $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$, we exclude from the average those measurements of y' that are inferred from the $D^0-\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^- \text{ via } \overline{D}^0) / \Gamma(K^+\pi^-)$ given near the end of this D^0 Listings.

Some early results have been omitted. See our 2006 *Review* (Journal of Physics **G33** 1 (2006)).

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group, see the note on " $D^0-\overline{D}^0$ Mixing."

VALUE (un	its 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT
1. 29 +	0.14 0.18 OUR I	EVALUATION				
1.06±	0.26 OUR /	AVERAGE Erro	or includes scale fac	ctor o	f 1.3. Se	ee the ideogram
0.06+	0.92 ± 0.26		1 дан	167	ІНСВ	nn at 7 TeV
0.4 +	1.8 ± 1.0		² LEES	16D	BABR	e^+e^- , 10.6 GeV
2.22 +	0.44 ± 0.18		³ STARIC	16	BELL	$e^+e^- \rightarrow \Upsilon(nS)$
-40 +	26 ± 14			 15D	BES3	e^+e^- at $\psi(3770)$
<u> </u>			⁵ KO	14	BELL	$e^+e^- \rightarrow \Upsilon(nS)$
$0.60\pm$	$0.30^{+0.10}_{-0.17}$		⁶ PENG	14	BELL	$e^+e^- ightarrow \Upsilon(nS)$
	-0.17		⁷ AAIJ ⁸ AALTONEN	13ce 13ae	LHCB CDF	рр at 7, 8 TeV р р at 1.96 TeV
$1.44\pm$	0.36 ± 0.24		⁹ LEES	13	BABR	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.55\pm$	0.63 ± 0.41		¹⁰ AAIJ	12K	LHCB	pp at 7 TeV
$1.14\pm$	0.40 ± 0.30		¹¹ DEL-AMO-SA.	. 10 D	BABR	e ⁺ e ⁻ , 10.6 GeV
$0.22\pm$	1.22 ± 1.04		¹² ZUPANC	09	BELL	$e^+e^- \approx \Upsilon(4S)$
-1.0 \pm	$2.0\begin{array}{c}+1.4\\-1.6\end{array}$	18k	¹³ ABE	021	BELL	$e^+e^- \approx \Upsilon(4S)$
$-2.4\ \pm$	$5.0\ \pm 2.8$	3393	¹⁴ CSORNA	02	CLE2	$e^+e^-pprox \Upsilon(4S)$
$6.84\pm$	$2.78 \!\pm\! 1.48$	10k	¹³ LINK	00	FOCS	γ nucleus
$+1.6\ \pm$	$5.8\ \pm 2.1$		¹³ AITALA	99E	E791	$K^-\pi^+$, K^+K^-
• • • W	e do not use	the following da	ata for averages, fit	s, lim	its, etc.	• • •
2.32±	0.44±0.36		¹⁵ AAIJ ¹⁶ AUBERT	13N 09AI	LHCB BABR	Repl. by AAIJ 13CE See LEES 13
-0.12^{+}_{-}	$_{1.28}^{1.10}\!\pm\!0.68$		¹⁷ AUBERT	09 AN	BABR	e^+e^- at 10.58 GeV
1.4 $\stackrel{+}{_}$	4.8 5.4		¹⁸ LOWREY	09	CLEO	e^+e^- at $\psi(3770)$
$1.70\pm$	1.52	$12.7\pm0.3k$	¹⁹ AALTONEN	08E	CDF	$p\overline{p}, \sqrt{s} = 1.96 \text{ TeV}$
$2.06\pm$	$0.66 \!\pm\! 0.38$		²⁰ AUBERT	08 U	BABR	See AUBERT 09AI
$1.94\pm$	0.88 ± 0.62	4030 ± 90	¹⁹ AUBERT	07W	BABR	$e^+e^-\approx~10.6~\text{GeV}$
$2.62\pm$	0.64 ± 0.50	160k	²¹ STARIC	07	BELL	Repl. by STARIC 16
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- ¹ Model-independent measurement of the charm mixing parameters in the decay $D^0 \rightarrow K_S^0 \pi^+ \pi^-$ using 1.0 fb⁻¹ of LHCb data at $\sqrt{s} = 7$ TeV.
- ²Time-dependent amplitude analysis of $D^0 \rightarrow \pi^+ \pi^- \pi^0$.
- ³ An improved measurement of $\overline{D}^0 D^0$ mixing and a search for *CP* violation in D^0 decays to *CP*-even final states K^+K^- and $\pi^+\pi^-$ using the final Belle data sample of 976 fb⁻¹.
- ⁴ABLIKIM 15D uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$.
- ⁵ Based on 976 fb⁻¹ of data collected at Y(nS) resonances. Assumes no CP violation. Reported $x'^2 = (0.09 \pm 0.22) \times 10^{-3}$ and $y' = (4.6 \pm 3.4) \times 10^{-3}$, where $x' = x \cos(\delta)$ + $y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between $D^0 \rightarrow K^+ \pi^$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.
- ⁶ The time-dependent Dalitz-plot analysis of $D^0 \rightarrow K_S^0 \pi^+ \pi^-$ is emplored. Decaytime information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow$

 $K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm .

- ⁷ Based on 3 fb⁻¹ of data collected at $\sqrt{s} = 7$, 8 TeV. Assumes no *CP* violation. Reported $x'^2 = (5.5 \pm 4.9) \times 10^{-4}$ and $y' = (4.8 \pm 1.0) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$. ⁸ Based on 9.6 fb⁻¹ of data collected at the Tevatron. Assumes no *CP* violation. Reported
- ⁸ Based on 9.6 fb⁻¹ of data collected at the Tevatron. Assumes no *CP* violation. Reported $x'^2 = (0.08 \pm 0.18) \times 10^{-3}$ and $y' = (4.3 \pm 4.3) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.
- ⁹Obtained $y_{CP} = (0.72 \pm 0.18 \pm 0.12)\%$ based on three effective D^0 lifetimes measured in $K^{\mp}\pi^{\pm}$, K^-K^+ , and $\pi^-\pi^+$. We list $2y_{CP} = \Delta\Gamma/\Gamma$.
- ¹⁰Compared the lifetimes of D^0 decay to the CP eigenstate K^+K^- with D^0 decay to π^+K^- . The values here assume no CP violation.
- $\pi^+ K^-$. The values here assume no *CP* violation. ¹¹ DEL-AMO-SANCHEZ 10D uses 540,800 \pm 800 $K_S^0 \pi^+ \pi^-$ and 79,900 \pm 300 $K_S^0 K^+ K^$ events in a time-dependent amplitude analyses of the D^0 and \overline{D}^0 Dalitz plots. No evidence was found for *CP* violation, and the values here assume no such violation.
- ¹²ZUPANC 09 uses a method based on measuring the mean decay time of $D^0 \rightarrow K_c^0 K^+ K^-$ events for different $K^+ K^-$ mass intervals.
- ¹³LINK 00, AITALA 99E, and ABE 021 measure the lifetime difference between $D^0 \rightarrow K^- K^+$ (*CP* even) decays and $D^0 \rightarrow K^- \pi^+$ (*CP* mixed) decays, or $y_{CP} = [\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP} = \Delta\Gamma/\Gamma$.
- ¹⁴ CSORNA 02 measures the lifetime difference between $D^0 \rightarrow K^- K^+$ and $\pi^- \pi^+$ (*CP* even) decays and $D^0 \rightarrow K^- \pi^+$ (*CP* mixed) decays, or $y_{CP} = [\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP} = \Delta\Gamma/\Gamma$.
- ¹⁵ Based on 1 fb⁻¹ of data collected at $\sqrt{s} = 7$ TeV in 2011. Assumes no *CP* violation. Reported $x'^2 = (-0.9 \pm 1.3) \times 10^{-4}$ and $y' = (7.2 \pm 2.4) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.

¹⁶ This combines the $y_{CP} = (\tau_{K\pi}/\tau_{KK}) - 1$ using untagged $K^-\pi^+$ and K^-K^+ events of AUBERT 09AI with the disjoint y_{CP} using tagged $K^-\pi^+$, K^-K^+ , and $\pi^-\pi^+$, events of AUBERT 08U.

- ¹⁷ The AUBERT 09AN values are inferred from the branching ratio $\Gamma(D^0 \rightarrow K^+ \pi^- \pi^0 \text{ via}$ $\overline{D}^0)/\Gamma(D^0 \rightarrow K^- \pi^+ \pi^0)$ given near the end of this Listings. Mixing is distinguished from DCS decays using decay-time information. Interference between mixing and DCS is allowed. The phase between $D^0 \rightarrow K^+ \pi^- \pi^0$ and $\overline{D}^0 \rightarrow K^+ \pi^- \pi^0$ is assumed to be small. The width difference here is y'', which is not the same as y_{CP} in the note on $D^0-\overline{D}^0$ mixing.
- ¹⁸ LOWREY 09 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \rightarrow K^-\pi^+\pi^0$ and $D^0 \rightarrow K^-\pi^-2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $2y = (1.62 \pm 0.32) \times 10^{-2}$.
- ¹⁹ The GODANG 00, AUBERT 03Z, LINK 05H, LI 05A, ZHANG 06, AUBERT 07W, and AALTONEN 08E limits are inferred from the $D^0-\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from $D^0-\overline{D}^0$ mixing. The limits allow interference between the DCS and mixing ratios, and all except AUBERT 07W and AALTONEN 08E also allow *CP* violation. The phase between $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$ is assumed to be small. This is a measurement of y' and is not the same as the y_{CP} of our note above on " $D^0-\overline{D}^0$ Mixing."

 20 This value combines the results of AUBERT 080 and AUBERT 03P.

- ²¹STARIC 07 compares the lifetimes of D^0 decay to the *CP* eigenstates K^+K^- and $\pi^+\pi^-$ with D^0 decay to $K^-\pi^+$.
- ²² The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \rightarrow K_S^0 \pi^+ \pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This limit allows *CP* is violation.
- ²³ The ranges of AUBERT 03Z, LINK 05H, LI 05A, and ZHANG 06 measurements are for 95% confidence level.
- ²⁴ AUBERT 03P measures $Y \equiv 2 \tau^0 / (\tau^+ + \tau^-) 1$, where τ^0 is the $D^0 \rightarrow K^- \pi^+$ (and $\overline{D}^0 \rightarrow K^+ \pi^-$) lifetime, and τ^+ and τ^- are the D^0 and \overline{D}^0 lifetimes to *CP*-even states (here $K^- K^+$ and $\pi^- \pi^+$). In the limit of *CP* conservation, $Y = y \equiv \Delta\Gamma / 2\Gamma$ (we list $2y = \Delta\Gamma/\Gamma$). AUBERT 03P also uses $\tau^+ - \tau^-$ to get $\Delta Y = -0.008 \pm 0.006 \pm 0.002$.

q/p

The mass eigenstates D_1^0 and D_2^0 are related to the $C = \pm 1$ states by $|D_{1,2}\rangle = p |D^0\rangle + q |\overline{D}^0\rangle$. See the note on " $D^0 - \overline{D}^0$ Mixing" above.

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group. This would include as-yet-unpublished results, see the note on " $D^0-\overline{D}^0$ Mixing."

VALUE	<u>DOCUMENT ID</u>	<u>TECN</u> <u>COMMENT</u>
$0.92^{+0.12}_{-0.09}$ OUR EVALUATION	HFAG fit; see the	note on " $D^0 - \overline{D}^0$ Mixing."
$0.90^{+0.16+0.08}_{-0.15-0.06}$	¹ PENG	14 BELL $e^+e^- \rightarrow \Upsilon(nS)$
	² AAIJ	13CE LHCB pp at 7, 8 TeV
\bullet \bullet \bullet We do not use the followin	ng data for averages	s, fits, limits, etc. • • •
	_	

 $0.86^{+0.30+0.10}_{-0.29-0.08}$ ³ ZHANG 07B BELL Repl. by PENG 14

¹ The time-dependent Dalitz-plot analysis of $D^0 \rightarrow K_S^0 \pi^+ \pi^-$ is employed. Decaytime information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+} \pi^-$ and $\overline{D}^0 \rightarrow K^{*+} \pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm .

²Based on 3 fb⁻¹ of data collected at $\sqrt{s} = 7$, 8 TeV. Allowing for *CP* violation, the direct *CP* violation in mixing is reported 0.75 < |q/p| < 1.24 at the 68.3% CL for the $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.

 $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$. ³ The phase of p/q is $(-14 + 16 \pm 5)^\circ$. The ZHANG 07B value is from the time-dependent Dalitz-plot analysis of $D^0 \rightarrow K_S^0 \pi^+ \pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+} \pi^-$ and $\overline{D}^0 \rightarrow K^{*+} \pi^-$. This value allows *CP* violation.

AΓ

 A_{Γ} is the decay-rate asymmetry for *CP*-even final states $A_{\Gamma} = (\overline{\tau}_{+} - \tau_{+}) / (\overline{\tau}_{+} + \tau_{+})$. See the note on " $D^0 - \overline{D}^0$ Mixing" above.

VALUE (units 10 ⁻	-3)	EVTS	DOCUMENT ID		TECN	COMMENT
-0.125	5±0.52	5 OUR E\	ALUATIO	N			
-0.6	±0.4	our a	/ERAGE				
-0.3	± 2.0	± 0.7		¹ STARIC	16	BELL	$e^+e^- ightarrow ~ \Upsilon({\sf nS})$
-1.34	± 0.77	$^{+0.26}_{-0.34}$	2.3M	² AAIJ	15aa	LHCB	<i>pp</i> at 7, 8 TeV
-0.92	± 1.45	$^{+0.25}_{-0.33}$	0.8M	³ AAIJ	15aa	LHCB	<i>pp</i> at 7, 8 TeV
-0.35	± 0.62	± 0.12		⁴ AAIJ	14AL	LHCB	<i>pp</i> at 7 TeV
0.33	± 1.06	± 0.14		⁵ AAIJ	14AL	LHCB	<i>pp</i> at 7 TeV
-1.2	± 1.2		1.8M	⁶ AALTONEN	14Q	CDF	$p\overline{p},\sqrt{s}=1.96{ m TeV}$
0.9	± 2.6	± 0.6	0.7M	LEES	13	BABR	$e^+e^- \rightarrow \Upsilon(4S)$
-5.9	± 5.9	± 2.1		⁴ AAIJ	12K	LHCB	pp at 7 TeV
• • • `	We do r	not use th	e following	data for averages	, fits,	limits, e	etc. • • •
2.6	± 3.6	± 0.8		AUBERT	08 U	BABR	See LEES 13
0.1	± 3.0	± 2.5		STARIC	07	BELL	Repl. by STARIC 16
8	± 6	± 2		AUBERT	03 P	BABR	$e^+e^-pprox \Upsilon(4S)$

¹ An improved measurement of $\overline{D}^0 - D^0$ mixing and a search for *CP* violation in D^0 decays to *CP*-even final states $K^+ K^-$ and $\pi^+ \pi^-$ using the final Belle data sample of 976 fb⁻¹.

² Measured using $D^0 \rightarrow K^+ K^-$ decays, with D^0 from partially reconstructed semileptonic *B* hadron decays.

³ Measured using $D^0 \rightarrow \pi^+ \pi^-$ decays, with D^0 from partially reconstructed semileptonic *B* hadron decays.

⁴ Measured using $D^{*+} \rightarrow D^0 \pi^+$, $D^0 \rightarrow K^+ K^-$ decays (and cc).

⁵ Measured using $D^{*+} \rightarrow D^0 \pi^+$, $D^0 \rightarrow \pi^+ \pi^-$ decays (and cc).

⁶Combined result from $D^0 \rightarrow K^+ K^-$ and $D^0 \rightarrow \pi^+ \pi^-$, with D^0 from $D^{*+} \rightarrow D^0 \pi^+$ (and cc).

$\cos \delta$

δ is the $D^{0} ightarrow \ K^{+} \pi^{-}$	relative strong p	hase.		
VALUE	DOCUMENT ID		TECN	COMMENT
0.97 ± 0.11 OUR AVERAGE				
$1.02\!\pm\!0.11\!\pm\!0.06$	¹ ABLIKIM	14C	BES3	$e^+e^- ightarrow D^0 \overline{D}{}^0$, 3.77 GeV
$0.81 \substack{+0.22 + 0.07 \\ -0.18 - 0.05}$	² ASNER	12	CLEO	$e^+e^- \rightarrow D^0 \overline{D}^0$, 3.77 GeV

 \bullet \bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet

$$1.03^{+0.31}_{-0.17} \pm 0.06$$
 ³ ASNER 08 CLEO Repl. by ASNER 12

¹ Uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$ to measure the asymmetry of the branching fraction of $D^0 \rightarrow K^-\pi^+$ in *CP*-odd and *CP*-even eigenstates to be $(12.7 \pm 1.3 \pm 0.7)\%$. A fit that includes external measurements of charm mixing parameters finds the value quoted above.

² Uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where decay rates of *CP*-tagged $K\pi$ final states depend on the strong phases between the decays of $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$. The measurements obtained $\sin(\delta) = -0.01 \pm 0.41 \pm 0.04$ and $|\delta| = (10^{+28}_{-53} + 13)^\circ$ as well. A fit that includes external measurements of charm

mixing parameters finds $\cos(\delta) = 1.15 \substack{+0.19 + 0.00 \\ -0.17 - 0.08}$, $\sin(\delta) = 0.56 \substack{+0.32 + 0.21 \\ -0.31 - 0.20}$, and $|\delta| = (18 \substack{+11 \\ -17})^{\circ}$.

³ASNER 08 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where decay rates of *CP*-tagged $K\pi$ final states depend on $\cos \delta$ because of interfering amplitudes. The above measurement implies $|\delta| < 75^{\circ}$ with a confidence level of 95%. A fit that includes external measurements of charm mixing parameters finds $\cos \delta = 1.10 \pm 0.35 \pm$ 0.07. See also the note on " $D^0 - \overline{D}^0$ Mixing" p. 783 in our 2008 Review (PDG 08).

$D^0 \rightarrow K^- \pi^+ \pi^0$ COHERENCE FACTOR $R_{K\pi\pi^0}$

See the note on ${}^{0}-\overline{D}{}^{0}$ Mixing' for the definition. $R_{K\pi\pi^{0}}$ can have any value between 0 and 1. A value near 1 indicates the decay is dominated by a few intermediate states with limited interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.82±0.06	^{1,2} EVANS	16	CLEO	$e^+e^- \rightarrow D^0\overline{D}^0$ at $\psi(3770)$
\bullet \bullet \bullet We do not use the f	following data for a	/erage	s, fits, lii	mits, etc. • • •
0.82±0.07	¹ LIBBY	14	CLEO	Repl. by EVANS 16
$0.78^{+0.11}_{-0.25}$	³ LOWREY	09	CLEO	Repl. by LIBBY 14

¹ Uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$.

² A combined fit with a recent LHCb $D^0 \overline{D}^0$ mixing results in AAIJ 16F is also reported to be 0.81 ± 0.06.

³LOWREY 09 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$. A fit that includes external measurements of charm mixing parameters gets $R_{K\pi\pi^0} = 0.84 \pm 0.07$.

$D^0 \rightarrow K^- \pi^+ \pi^0$ AVERAGE RELATIVE STRONG PHASE $\delta^{K \pi \pi^0}$

The quoted value of δ	is based on the sa	me sig	gn <i>CP</i> pl	hase of D^0 and \overline{D}^0 convention.
VALUE (°)	DOCUMENT ID		TECN	COMMENT
199 ⁺¹³ ₋₁₄ 1	^{,2} EVANS	16	CLEO	$e^+e^- ightarrow D^0\overline{D}^0$ at $\psi(3770)$
\bullet \bullet We do not use the following	owing data for av	erages	s, fits, lir	mits, etc. • • •
164^{+20}_{-14}	¹ LIBBY	14	CLEO	Repl. by EVANS 16
239^{+32}_{-28}	³ LOWREY	09	CLEO	Repl. by LIBBY 14

¹Uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$.

- ²A combined fit with a recent LHCB $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to 198^{+14}_{-15} degree.
- ³LOWREY 09 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$. A fit that includes external measurements of charm mixing parameters gets $\delta^{K\pi\pi^0}$ =

 $(227 + 14 - 17)^{\circ}$.

$D^0 \rightarrow K^- \pi^- 2\pi^+$ COHERENCE FACTOR $R_{K3\pi}$

See the note on $D^0-\overline{D}^0$ Mixing' for the definition. $R_{K3\pi}$ can have any value between 0 and 1. A value near 1 indicates the decay is dominated by a few intermediate states with limited interference.

VALUE	DOCUMENT ID		TECN	COMMENT				
$0.53^{+0.18}_{-0.21}$	^{1,2} EVANS	16	CLEO	$e^+e^- \rightarrow D^0\overline{D}^0$ at $\psi(3770)$				
$\bullet \bullet \bullet$ We do not use the	ullet $ullet$ $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$							
$0.32\substack{+0.20 \\ -0.28}$	¹ LIBBY	14	CLEO	Repl. by EVANS 16				
$0.36^{+0.24}_{-0.30}$	³ LOWREY	09	CLEO	Repl. by LIBBY 14				
¹ Uses quantum correl of <i>CP</i> -tagged $K^- \pi^-$ ² A combined fit with to be $0.43^{+0.17}_{-0.13}$. ³ LOWREY 09 uses q the decay rates of 0 A fit that includes e $0.33^{+0.26}_{-0.23}$.	 ¹ Uses quantum correlations in e⁺e⁻ → D⁰D̄⁰ at the ψ(3770), where the decay rates of CP-tagged K⁻π⁻2π⁺ final states depend on R_{K3π} and δ^{K3π}. ² A combined fit with a recent LHCb D⁰D̄⁰ mixing results in AAIJ 16F is also reported to be 0.43^{+0.17}_{-0.13}. ³ LOWREY 09 uses quantum correlations in e⁺e⁻ → D⁰D̄⁰ at the ψ(3770), where the decay rates of CP-tagged K⁻π⁻2π⁺ final states depend on R_{K3π} and δ^{K3π}. A fit that includes external measurements of charm mixing parameters gets R_{K3π} = 0.33^{+0.26}_{-0.22}. 							
$D^0 \rightarrow K^- \pi^- 2\pi^+ M$		IVE S		G PHASE $\delta^{K3\pi}$				
VALUE (°)	DOCUMENT ID	ame si	gn CP p <u>TECN</u>	COMMENT				
125^{+22}_{-14}	^{1,2} EVANS	16	CLEO	$e^+e^- \rightarrow D^0\overline{D}^0$ at $\psi(3770)$				
$\bullet \bullet \bullet$ We do not use the	e following data for a	verage	s, fits, li	mits, etc. • • •				
255^{+21}_{-78}	¹ LIBBY	14	CLEO	Repl. by EVANS 16				
118^{+62}_{-53}	³ LOWREY	09	CLEO	Repl. by LIBBY 14				

¹Uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$. ²A combined fit with a recent LHCb $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported

² A combined fit with a recent LHCb $D^0 \overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(128 + 28)^\circ$.

³LOWREY 09 uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of *CP*-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$. A fit that includes external measurements of charm mixing parameters gets $\delta^{K3\pi} = (114^{+26}_{-23})^{\circ}$.

$D^0 \rightarrow K^- \pi^- 2\pi^+$, $R_{K3\pi}$ (y cos $\delta^{K3\pi}$ - x sin $\delta^{K3\pi}$)

$VALUE (10^{-3} \text{ TeV}^{-1})$	EVTS	DOCUMENT ID		TECN	COMMENT	
-3.0 ± 0.7	42.5k	¹ AAIJ	16F	LHCB	<i>pp</i> at 7, 8 TeV	
¹ From a time-dependent analysis of D mixing in $D^0 o K^+ \pi^- \pi^+ \pi^-$. This result						
uses external constraints on $R_M = 1/2$ (x 2 + y 2). Without such constraints, AAIJ 16F						
measure (0.3 \pm 1.8) $ imes$ 10 $^{-3}$, with a large correlation coefficient to R $_M$.						

$D^0 \rightarrow K^0_S K^+ \pi^-$ COHERENCE FACTOR R_{K⁰_cK π}

5			nšn	π
VALUE	DOCUMENT ID		TECN	COMMENT
0.70±0.08	¹ INSLER	12	CLEO	$e^+ e^- ightarrow D^0 \overline{D}{}^0$ at 3.77 GeV
¹ Uses quantum co	rrelations in $e^+e^- \rightarrow$	$D^0 \overline{D}^0$) at the a	$\psi(3770)$, where the signal side D
decays to $K_{S}^{\circ}K_{T}$	τ and the tag-side D de	cays to	οκπ, κ	$\pi\pi\pi$, K $\pi\pi^{\circ}$, and 10 additional
CP-even, CP-ode	d, and mixed <i>CP</i> modes	; involv	$\lim K_S^0$	or K_L^0 .
$D^0 \rightarrow K^0_S K^+ \pi^-$	- AVERAGE RELAT	IVE S	STRON	G PHASE $\delta^{K_{S}^{0}K\pi}$
The quoted va	lue of δ is based on the	same s	sign <i>CP</i>	phase of D^0 and \overline{D}^0 convention.
VALUE ($^{\circ}$)	DOCUMENT ID		TECN	COMMENT
0.1±15.7	¹ INSLER	12	CLEO	$e^+ e^- ightarrow D^0 \overline{D}{}^0$ at 3.77 GeV
1 Uses quantum co decays to $\kappa^0_S \kappa_7$	rrelations in $e^+ e^- ightarrow$ $_{ au}$ and the tag-side D de	D ⁰ D ⁰) at the π o $K\pi$, K	$\psi(3770)$, where the signal side D ($\pi\pi\pi$, $K\pi\pi^0$, and 10 additional
CP-even, CP-ode	d, and mixed <i>CP</i> modes	; involv	$\lim K_S^0$	or K_L^0 .
$D^0 \rightarrow K^* K$ COI	HERENCE FACTOR	R _{**}	K	
VALUE	DOCUMENT ID		TECN	COMMENT
0.94±0.12	¹ INSLER	12	CLEO	$e^+ e^- ightarrow D^0 \overline{D}{}^0$ at 3.77 GeV
1 Uses quantum co decays to $\kappa^0_{S}\kappa_ au$	rrelations in $e^+e^- ightarrow$ and the tag-side D de	D ⁰ D ⁰ cays to) at the π $K\pi$, K	ψ (3770), where the signal side <i>D</i> $\pi\pi\pi$, $K\pi\pi^0$., and 10 additional
CP-even, CP-ode	d, and mixed <i>CP</i> modes	; involv	ving K_S^0	or K_L^0 .

$D^0 \rightarrow K^* K$ AVERAGE RELATIVE STRONG PHASE $\delta^{K^* K}$

The quoted value of δ	is based on the same s	ign CP p	phase of D^0 and \overline{D}^0 convention.		
VALUE (°)	DOCUMENT ID	TECN	COMMENT		
-16.6 ± 18.4	¹ INSLER 12	CLEO	$e^+e^- \rightarrow D^0 \overline{D}^0$ at 3.77 GeV		
1 Uses quantum correlation	is in $e^+e^- \rightarrow D^0 \overline{D}^0$	at the q	$\psi(3770)$, where the signal side D		
decays to $K^0_S K \pi$ and the tag-side D decays to $K \pi$, $K \pi \pi \pi$, $K \pi \pi^0$, and 10 additional					
<i>CP</i> -even, CP -odd, and mixed <i>CP</i> modes involving K_S^0 or K_L^0 .					

D⁰ DECAY MODES

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K_S^0 modes, not as \overline{K}^0 modes. Nearly always it is a K_S^0 that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\Gamma(K_S^0) = \Gamma(\overline{K}^0)$.

	Mode	F	raction	(Γ _i /Γ)	Scale 1 Confidenc	actor/ e level
		Topological mo	des			
Γ_1	0-prongs	[<i>a</i>]	(15	\pm 6) %	
Γ2	2-prongs		(70	\pm 6) %	
Γ ₃	4-prongs	[<i>b</i>]	(14.5	\pm 0.5) %	
Γ ₄	6-prongs	[c]	(6.4	\pm 1.3) × 10 ⁻⁴	
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Inclusive modes

Γ ₅	e^+ anything	[d]	(6.49	\pm	0.11) %	
Г ₆	μ^+ anything		(6.7	\pm	0.6) %	
Γ ₇	K^- anything		(54.7	\pm	2.8) %	S=1.3
Г ₈	\overline{K}^0 anything + K^0 anything		(47	\pm	4) %	
Г9	K^+ anything		(3.4	\pm	0.4) %	
Г ₁₀	$K^*(892)^-$ anything		(15	\pm	9) %	
Γ_{11}	$\overline{K}^*(892)^0$ anything		(9	\pm	4) %	
Γ ₁₂	$K^*(892)^+$ anything	~	< 3.6			%	CL=90%
Г ₁₃	$K^*(892)^0$ anything		(2.8	\pm	1.3) %	
Γ ₁₄	η anything		(9.5	\pm	0.9) %	
Г ₁₅	η^\prime anything		(2.48	\pm	0.27) %	
Г ₁₆	ϕ anything		(1.05	\pm	0.11) %	
Γ ₁₇	invisibles	~	< 9.4			imes 10 ⁻⁵	CL=90%

Semileptonic modes

Г ₁₈	${\cal K}^-\ell^+ u_\ell$.		
Γ ₁₉	$K^- e^+ \nu_e$	(3.530 ± 0.028) %	S=1.1
Γ ₂₀	$K^- \mu^+ u_\mu$	(3.31 \pm 0.13)%	
Γ ₂₁	$K^{*}(892)^{-}e^{+}\nu_{e}$	(2.15 \pm 0.16) %	
Γ ₂₂	$K^{*}(892)^{-}\mu^{+} u_{\mu}$	(1.86 \pm 0.24)%	
Г ₂₃	$K^-\pi^0 e^+ \nu_e$	$(\begin{array}{ccc} 1.6 & + & 1.3 \\ - & 0.5 \end{array})$ %	
Γ ₂₄	$\overline{K}^0 \pi^- e^+ \nu_e$	$(\begin{array}{ccc} 2.7 & + & 0.9 \\ - & 0.7 \end{array})$ %	
Γ ₂₅	$K^-\pi^+\pi^-e^+\nu_e$	$(\begin{array}{ccc} 2.8 & + & 1.4 \\ - & 1.1 \end{array}) imes 10^{-4}$	
Г ₂₆	$K_1(1270)^- e^+ \nu_e$	$(\begin{array}{ccc} 7.6 & + & 4.0 \\ - & 3.1 \end{array}) \times 10^{-4}$	
Γ ₂₇	$\mathcal{K}^-\pi^+\pi^-\mu^+ u_\mu$	< 1.2 $\times 10^{-3}$	CL=90%
Γ ₂₈	$(\overline{\kappa}^*(892)\pi)^-\mu^+ u_\mu$	< 1.4 $\times 10^{-3}$	CL=90%
Γ ₂₉	$\pi^- e^+ \nu_e$	(2.91 \pm 0.04) $\times10^{-3}$	S=1.1
Г ₃₀	$\pi^- \mu^+ u_\mu$	(2.37 \pm 0.24) $\times10^{-3}$	
Г ₃₁	$\rho^- e^+ \nu_e$	(1.77 \pm 0.16) $\times10^{-3}$	

Hadronic modes with one \overline{K}

Г ₃₂	$K^{-}\pi^{+}$		(3.89 \pm 0.04)%	S=1.1
Г ₃₃	$K^+\pi^-$		($1.385 \pm 0.027) \times 10^{-4}$	
Г ₃₄	$K^0_S \pi^0$		(1.19 \pm 0.04)%	
Г ₃₅	$\kappa_L^0 \pi^0$		(10.0 \pm 0.7) $\times10^{-3}$	
Г ₃₆	$K^0_S \pi^+ \pi^-$	[e]	(2.75 \pm 0.18)%	S=1.1
Г ₃₇	$K^0_{S} ho^0$		(6.2 $\begin{array}{c} + & 0.6 \\ - & 0.8 \end{array}$) $\times \ 10^{-3}$	
Γ ₃₈	$K^0_S \omega$, $\omega ightarrow \pi^+ \pi^-$		(2.0 \pm 0.6) $ imes$ 10 $^{-4}$	
Г ₃₉	${\cal K}_{\cal S}^{ar 0}(\pi^+\pi^-)_{{\cal S}-{\sf wave}}$		(3.3 \pm 0.7) $\times10^{-3}$	

Г ₄₀	$egin{array}{lll} {\cal K}^0_{S}f_0(980),\ f_0(980)& ightarrow\pi^+\pi^- \end{array}$		(1.18	+ 0.40 - 0.23) × 10 ⁻³	
Г ₄₁	${\cal K}^0_{S}{\it f}_0(1370),\;\;{\it f}_0 o \;\pi^+\pi^-$		(2.7	$^{+\ \ 0.8}_{-\ \ 1.3}$	$) imes 10^{-3}$	
Γ ₄₂	$K^0_S f_2(1270), \ f_2 ightarrow \pi^+ \pi^-$		(9	$^{+10}_{-6}$	$) imes 10^{-5}$	
Г ₄₃	$egin{array}{lll} {\cal K}^*(892)^-\pi^+,\ {\cal K}^*(892)^- o & {\cal K}^0_{{\cal S}}\pi^- \end{array}$		(1.62	$+ 0.14 \\ - 0.17$) %	
Г ₄₄	$egin{array}{llllllllllllllllllllllllllllllllllll$		(2.63	+ 0.40 - 0.32) × 10 ⁻³	
Г ₄₅	${\cal K}_2^*(1430)^- \pi^+, \ {\cal K}_2^{*-} \to {\cal K}_5^0 \pi^-$		(3.3	$^{+}$ 1.8 $^{-}$ 1.0) × 10 ⁻⁴	
Г ₄₆	$\begin{array}{ccc} {\cal K}^*(1\widetilde{6}80)^-\pi^+, \ {\cal K}^{*-} \to \ {\cal K}^0_S\pi^- \end{array}$		(4.3	± 3.5) × 10 ⁻⁴	
Г ₄₇	$egin{array}{lll} {\cal K}^*(892)^+\pi^-,\ {\cal K}^*(892)^+ o{\cal K}^0_S\pi^+ \end{array}$	[<i>f</i>]	(1.11	$+ 0.60 \\ - 0.33$) × 10 ⁻⁴	
Г ₄₈	${egin{array}{c} {\mathcal K}^*_0(1430)^+\pi^- ,{\mathcal K}^{*+}_0 ightarrow {\mathcal K}^0_5\pi^+ \end{array}}$	[f]	< 1.4		$\times 10^{-5}$	CL=95%
Г ₄₉	${K_2^*(1430)^+\pi^-}$, ${K_2^{*+}} ightarrow K_S^0\pi^+$	[<i>f</i>]	< 3.3		imes 10 ⁻⁵	CL=95%
Γ ₅₀	${\cal K}^{0}_{S}\pi^{+}\pi^{-}$ nonresonant		(2.5	$^{+}$ 6.0 $^{-}$ 1.6	$) imes 10^{-4}$	
Γ ₅₁	$K^-\pi^+\pi^0$	[e]	(14.2	\pm 0.5) %	S=1.9
Γ ₅₂	$K^- ho^+$		(11.1	\pm 0.7)%	
Γ ₅₃	${\cal K}^- ho(1700)^+$, $ ho^+ ightarrow~\pi^+\pi^0$		(8.1	\pm 1.7	$) \times 10^{-3}$	
Г ₅₄	$egin{array}{lll} {\cal K}^*(892)^-\pi^+$, ${\cal K}^*(892)^- o ~{\cal K}^-\pi^0 \end{array}$		(2.27	$+ 0.40 \\ - 0.20$) %	
Г ₅₅	$\overline{\mathcal{K}}^*(892)^0 \pi^0,$ $\overline{\mathcal{K}}^*(892)^0 \rightarrow \mathcal{K}^- \pi^+$		(1.93	± 0.24) %	
Г ₅₆			(4.7	± 2.2) × 10 ⁻³	
Г ₅₇	$\overline{K}^*_0(1430)^0 \pi^0$, $\overline{K}^{*0}_0 ightarrow K^- \pi^+$		(5.8	$\begin{array}{rrr}+&5.0\\-&1.6\end{array}$) × 10 ⁻³	
Г ₅₈	${K^*(1680)^- \pi^+, \ K^{*-} \to K^- \pi^0}$		(1.8	± 0.7) × 10 ⁻³	
Γ ₅₉	$K^- \pi^+ \pi^0$ nonresonant		(1.14	$+ 0.50 \\ - 0.20$) %	
Г ₆₀	$K_{S}^{0}2\pi^{0}$		(9.1	\pm 1.1	$) imes 10^{-3}$	S=2.2
Γ ₆₁	$\mathcal{K}^0_{\mathcal{S}}(2\pi^0)$ -S-wave		(2.6	± 0.7) × 10 ⁻³	
Γ ₆₂	$\overline{K^{*}}(892)^{0}\pi^{0}, \ \overline{K}^{*0} \rightarrow \ K^{0}_{c}\pi^{0}$		、 (7.8	± 0.7) $\times 10^{-3}$	
Г <u>6</u> 2	$\overline{K}^*(1430)^0 \pi^0$. $\overline{K}^{*0} \rightarrow \overline{K}^0 \pi^0$		、 (4	±23	$) \times 10^{-5}$	
Г ₆₄	$\overline{K}^{*}(1680)^{0}\pi^{0}, \ \overline{K}^{*0} \rightarrow \ K_{5}^{0}\pi^{0}$		、 (1.0	± 0.4) × 10 ⁻³	
	5					

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes

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for which there are only upper limits and $\overline{K}^*(892)\rho$ submodes only appear below.)

Г ₉₅	$K^0_S \eta$	(4.80	±	0.30	$) \times 10^{-3}$	
Г ₉₆	$K_{S}^{0}\omega$	(1.11	±	0.06) %	
Г ₉₇	$K_{c}^{0}\eta'(958)$	(9.4	±	0.5) × 10 ⁻³	
Γα	$K^{-}a_{1}(1260)^{+}$	(7.9	±	1.1)%	
Γοο	$K^{-}a_{2}(1320)^{+}$	<	2			× 10 ⁻³	CL=90%
Γ ₁₀₀	$\overline{K}^*(892)^0 \pi^+ \pi^-$ total	(2.4	±	0.5) %	
Γ ₁₀₁	$\dot{K}^{*}(892)^{0}\pi^{+}\pi^{-}$ 3-body	(1.48	±	0.34)%	
Γ_{102}	$\overline{K}^{*}(892)^{0}\rho^{0}$	(1.58	±	0.35)%	
Γ_{103}	$\overline{K}^{*}(892)^{0} \rho^{0}$ transverse	(1.7	±	0.6)%	
Γ ₁₀₄	$\overline{K}^*(892)^0 \rho^0 S$ -wave	(3.0	±	0.6)%	
Γ ₁₀₅	$\overline{K}^*(892)^0 \rho^0 S$ -wave long.	<	3			× 10 ⁻³	CL=90%
Γ ₁₀₆	$\overline{K}^*(892)^0 \rho^0 P$ -wave	<	3			imes 10 ⁻³	CL=90%
Γ ₁₀₇	$\overline{K}^*(892)^0 \rho^0 D$ -wave	(2.1	±	0.6) %	
Γ ₁₀₈	$K^{-}\pi^{+}f_{0}(980)$						
Γ ₁₀₉	$\overline{K}^{*}(892)^{0} f_{0}(980)$						
Γ ₁₁₀	$K_1(1270)^- \pi^+$	[g] (1.6	±	0.8) %	
Γ_{111}	$K_1(1400)^- \pi^+$	<	1.2			%	CL=90%
Γ ₁₁₂	$K^*(1410)^- \pi^+$						
Γ ₁₁₃	$\overline{K}^{*}(892)^{0}\pi^{+}\pi^{-}\pi^{0}$	(1.9	\pm	0.9) %	
Γ ₁₁₄	$\overline{K}^*(892)^0 \eta$						
Γ ₁₁₅	$K^{-}\pi^{+}\omega$	(3.0	±	0.6) %	
Γ ₁₁₆	$\overline{K}^*(892)^0 \omega$	(1.1	\pm	0.5) %	
Γ ₁₁₇	$K^{-}\pi^{+}\eta'(958)$	(7.5	±	1.9) × 10 ⁻³	
Г ₁₁₈	$K^{*}(892)^{0} \eta'(958)$	<	1.1			imes 10 ⁻³	CL=90%
	Hadronic modes	with th	ree <i>k</i>	('s			
Г ₁₁₉	$K^0_S K^+ K^-$	(4.35	±	0.32	$) \times 10^{-3}$	
Γ ₁₂₀	$\tilde{K}^{0}_{S} a_{0}(980)^{0}$, $a^{0}_{0} \rightarrow K^{+} K^{-}$	(2.9	±	0.4	$) \times 10^{-3}$	
Γ ₁₂₁	$K^{-}a_{0}(980)^{+}, a_{0}^{+} \rightarrow K^{+}K_{c}^{0}$	(5.8	±	1.7	$) \times 10^{-4}$	
Γ122	$K^+ a_0(980)^-, a_0^- \rightarrow K^- K_0^0$	<	1.1			× 10 ⁻⁴	CI =95%
Γ ₁₀₂	$K_0^0 f_0(980)$ $f_0 \rightarrow K^+ K^-$		0			× 10 ⁻⁵	CI 95%
Γ ₁₀₄	$K_{0}^{0}\phi \phi \rightarrow K^{+}K^{-}$	(2 00	+	0 15	$) \times 10^{-3}$	CL_3370
ч 124 Гион	$K_{S}^{0}\phi, \phi \rightarrow K^{+}K^{-}$	(1.7		1 1	$) \times 10^{-4}$	
' 125 Г	$N_{S} n_{0}(1310), n_{0} \rightarrow N^{-} N^{-}$	(1.1 7 F	т ,	1.1	$) \times 10^{-4}$	C 1 2
1126 F	s_{k}	(1.5	±	0.0) \times 10 ·	S=1.3
I 127	$K' 2K \pi'$	(2.22	±	0.31	$) \times 10^{-5}$	
128	$\kappa + \kappa - \kappa^{+} (892)^{\circ}, \kappa^{+\circ} \rightarrow \kappa^{-} - \pi^{+}$	(4.4	±	1.7) × 10 °	
F120	$K^{-}\pi^{+}\phi, \phi \rightarrow K^{+}K^{-}$	(4.0	+	1.7	$) \times 10^{-5}$	
Γ ₁₂₉	$\phi \overline{K}^*(892)^0, \phi \to K^+ K^$	(1.06		0.20	$) \times 10^{-4}$	
100	$\overline{K}^{*0} \rightarrow K^- \pi^+$	(,	
Г ₁₃₁	$K^+ 2K^- \pi^+$ nonresonant	(3.3	±	1.5	$) imes 10^{-5}$	
Γ ₁₃₂	$2K_S^0 K^{\pm} \pi^{\mp}$	(5.8	±	1.2	$) \times 10^{-4}$	

 $\Gamma_{131} = K^{+2}K^{-\pi}$ $\Gamma_{132} = 2K_{S}^{0}K^{\pm}\pi^{\mp}$

Pionic modes

Γ ₁₃₃	$\pi^+\pi^-$	$(1.407 \pm 0.025) \times 10^{-3}$ S=1.1
Γ ₁₃₄	$2\pi^{0}$	(8.22 \pm 0.25) $ imes$ 10 $^{-4}$
Γ ₁₃₅	$\pi^+\pi^-\pi^0$	(1.47 \pm 0.06) % S=2.1
Γ ₁₃₆	$ ho^+\pi^-$	(10.0 \pm 0.4) $ imes$ 10 $^{-3}$
Γ ₁₃₇	$\rho^0 \pi^0$	(3.81 \pm 0.23) $ imes$ 10 ⁻³
Γ ₁₃₈	$\rho^-\pi^+$	(5.08 \pm 0.25) $ imes$ 10 $^{-3}$
Γ ₁₃₉	$ ho$ (1450) $^+\pi^-$, $ ho^+ ightarrow\pi^+\pi^0$	(1.6 \pm 2.0) $ imes$ 10 $^{-5}$
Γ ₁₄₀	$\rho(1450)^0 \pi^0$, $\rho^0 \to \pi^+ \pi^-$	$(4.4 \pm 1.9) imes 10^{-5}$
Γ ₁₄₁	$\rho(1450)^{-}\pi^{+}, \ \rho^{-} \rightarrow \pi^{-}\pi^{0}$	$(2.6 \pm 0.4) imes 10^{-4}$
Γ ₁₄₂	$ ho(1700)^+\pi^-$, $ ho^+ ightarrow \pi^+\pi^0$	$(6.0 \pm 1.5) \times 10^{-4}$
Γ ₁₄₃	$\rho(1700)^0 \pi^0$, $\rho^0 \to \pi^+ \pi^-$	$(7.3 \pm 1.7) \times 10^{-4}$
Γ ₁₄₄	$\rho(1700)^-\pi^+, \rho^- \rightarrow \pi^-\pi^0$	$(4.7 \pm 1.1) \times 10^{-4}$
Γ ₁₄₅	$f_0(980)\pi^0, f_0 \to \pi^+\pi^-$	$(3.7 \pm 0.8) \times 10^{-5}$
Γ ₁₄₆	$f_0(500)\pi^0$, $f_0 \to \pi^+\pi^-$	$(1.20 \pm 0.21) \times 10^{-4}$
Γ ₁₄₇	$(\pi^{+}\pi^{-})_{S-wave}\pi^{0}$	· · · · · ·
Γ ₁₄₈	$f_0(1370)\pi^0, f_0 \rightarrow \pi^+\pi^-$	$(5.4 \pm 2.1) imes 10^{-5}$
Γ ₁₄₉	$f_0(1500)\pi^0, f_0 \to \pi^+\pi^-$	$(5.7 \pm 1.6) \times 10^{-5}$
Γ_{150}	$f_0(1710)\pi^0, f_0 \to \pi^+\pi^-$	$(4.5 \pm 1.6) \times 10^{-5}$
Γ_{151}	$f_2(1270)\pi^0, f_2 \rightarrow \pi^+\pi^-$	$(1.94 \pm 0.21) \times 10^{-4}$
Γ_{152}	$\pi^+\pi^-\pi^0$ nonresonant	$(1.2 \pm 0.4) \times 10^{-4}$
Γ_{153}	$3\pi^{0}$	$< 3.5 \times 10^{-4} \text{ CL}=90\%$
Γ_{154}	$2\pi^+2\pi^-$	(7.45 \pm 0.20) $ imes$ 10 $^{-3}$
Γ_{155}	$a_1(1260)^+ \pi^-, a_1^+ \rightarrow$	$(4.47 \pm 0.31) \times 10^{-3}$
100	$2\pi^+\pi^-$ total	
Γ ₁₅₆	$a_1(1260)^+\pi^-, a_1^+ \rightarrow$	(3.23 \pm 0.25) $ imes$ 10 $^{-3}$
100	$\rho^0 \pi^+$ S-wave	· · · · ·
F 157	$a_1(1260)^+\pi^-, a_1^+ \rightarrow$	$(1.9 \pm 0.5) \times 10^{-4}$
157	$a^0 \pi^+ D$ -wave	(, , ,
Глго	$p \pi^{-} D^{-} wave$ a ₁ (1260) ⁺ $\pi^{-} a^{+} \rightarrow \sigma \pi^{+}$	$(62 + 07) \times 10^{-4}$
ч 158 Г. – с	$2a^{0}$ total	$(1.82 \pm 0.12) \times 10^{-3}$
159 L	$2\rho^{0}$ parallel helicities	$(1.05 \pm 0.15) \times 10^{-5}$
і 160 Гаса	$2\rho^0$, paramet helicities	$(3.2 \pm 3.2) \times 10^{-4}$
' 161 Гасо	$2\rho^0$ longitudinal helicities	$(4.0 \pm 0.0) \times 10^{-3}$
ч 162 Гасо	Reconant $(\pi^+\pi^-)\pi^+\pi^-$	$(1.23 \pm 0.10) \times 10^{-3}$
· 163	3 body total	$(1.49 \pm 0.12) \times 10$
Гаса	$\sigma \pi^+ \pi^-$	$(61 + 00) \times 10^{-4}$
· 104 Γ165	$f_{\rm c}(980)\pi^+\pi^ f_{\rm c} \rightarrow$	$(18 \pm 0.5) \times 10^{-4}$
' 165	$n_{0}(300)\pi^{-}\pi^{-}$	$(1.0 \pm 0.5) \times 10$
Г ₁₆₆	$f_2(1270)\pi^+\pi^-$, $f_2 \to \pi^+\pi^-$	$(3.7 \pm 0.6) \times 10^{-4}$
[167	$\pi^{+}\pi^{-}2\pi^{0}$	(1.00 + 0.09)%
Γ ₁₆₀	$n\pi^0$	[i] (6.7 + 0.6) × 10 ⁻⁴
L 100	.,0	$[i] (117 \pm 0.35) \times 10^{-4}$
1160		

 $\Gamma_{170} \ 2\pi^+ 2\pi^- \pi^0$ $(4.2 \pm 0.5) \times 10^{-3}$ Γ_{171} $\eta \pi^+ \pi^-$ [i] (1.09 \pm 0.16) imes 10⁻³ $\Gamma_{172}^{} \omega \pi^{+} \pi^{-}$ $\Gamma_{173}^{} 3\pi^{+} 3\pi^{-}$ [*i*] (1.6 ± 0.5) × 10⁻³ (4.2 \pm 1.2) $\times\,10^{-4}$ $\Gamma_{174} \eta'(958)\pi^0$ $(9.0 \pm 1.4) \times 10^{-4}$ Γ_{175} $\eta'(958)\pi^+\pi^ (4.5 \pm 1.7) \times 10^{-4}$ $Γ_{176}$ 2η (1.68 \pm 0.20) \times 10⁻³ $\Gamma_{177} \eta \eta' (958)$ (1.05 \pm 0.26) \times 10⁻³ Hadronic modes with a $K\overline{K}$ pair $\Gamma_{178} K^+ K^ (3.97 \pm 0.07) \times 10^{-3}$ S=1.4 $\Gamma_{179} \ 2K_{S}^{0}$ (1.70 \pm 0.12) \times 10⁻⁴ $\Gamma_{180} K_{S}^{0} K^{-} \pi^{+}$ $(3.3 \pm 0.5) \times 10^{-3}$ S=1.1 $\Gamma_{181} \qquad \frac{5}{K} (892)^0 K_S^0, \quad \overline{K}^{*0} \to$ $(8.1 \pm 1.6) \times 10^{-5}$ $\begin{array}{ccc} & K^{-} \pi^{+} \\ & K^{*}(892)^{+} K^{-}, & K^{*+} \rightarrow \\ & K^{0}_{S} \pi^{+} \\ & \overline{K}^{*}(1410)^{0} K^{0}_{S}, & \overline{K}^{*0} \rightarrow \end{array}$ Γ₁₈₂ (1.86 \pm 0.30) $\times\,10^{-3}$ Γ₁₈₃ $(1.2 \pm 1.8) imes 10^{-4}$ $\Gamma_{184} \qquad \begin{array}{c} K^{-}\pi^{+} \\ \Gamma_{184} \qquad K^{*}(1410)^{+}K^{-}, \ K^{*+} \rightarrow \\ K^{0}_{S}\pi^{+} \\ \Gamma_{185} \qquad (K^{-}\pi^{+})_{S-wave}K^{0}_{S} \end{array}$ $(3.1 \pm 1.9) \times 10^{-4}$ $(5.9 \pm 2.8) \times 10^{-4}$ $(3.8 \pm 1.0) \times 10^{-4}$ (1.3 \pm 1.4) \times 10^{-4} (2.4 ± 2.0) × 10⁻⁵ $\Gamma_{186} \quad (K_S^0 \pi^+)_{S-wave} K^$ $a_0(980)^- \pi^+, a_0^- \to K_S^0 K^ a_0(1450)^- \pi^+, a_0^- \to$ Γ₁₈₇ $a_0(1450)^-\pi^+$, $a_0^- \rightarrow$ Γ₁₈₈ $K_{S}^{0}K^{-}$ $a_{2}(1320)^{-}\pi^{+}, a_{2}^{-} \rightarrow$ Γ₁₈₉ $(5 \pm 5) \times 10^{-6}$ $K_{S}^{0}K^{-}$ $\rho(1450)^{-}\pi^{+}, \ \rho^{-} \rightarrow K_{S}^{0}K^{-}$ (4.6 ± 2.5)×10⁻⁵ (2.12 ± 0.34)×10⁻³ Γ₁₉₀ $\Gamma_{191} K^0_S K^+ \pi^-$ (2.13 \pm 0.34) $\times\,10^{-3}$ S=1.1 $\tilde{K}^{*}(892)^{0} K^{0}_{S}, K^{*0} \rightarrow$ (1.10 \pm 0.21) imes 10⁻⁴ Γ₁₉₂ $\begin{array}{c} K^{+}\pi^{-} \\ K^{*}(892)^{-}K^{+}, \ K^{*-} \rightarrow \\ K^{0}_{S}\pi^{-} \\ K^{*}(1410)^{0}K^{0}_{S}, \ K^{*0} \rightarrow \end{array}$ $(6.1 \pm 1.0) \times 10^{-4}$ Γ₁₉₃ $(5 \pm 8) \times 10^{-5}$ Γ₁₉₄ $\begin{array}{c}
K^{+}\pi^{+} \\
K^{+}(1410)^{-}K^{+}, \ K^{*-} \rightarrow \\
K^{0}_{S}\pi^{-} \\
(K^{+}\pi^{-})_{S-wave}K^{0}_{S} \\
(K^{0}_{S}\pi^{-})_{S-wave}K^{+} \\
a_{0}(980)^{+}\pi^{-}, \ a^{+}_{0} \rightarrow K^{0}_{S}K^{+} \\
\end{array}$ $(2.5 \pm 2.0) imes 10^{-4}$ Γ₁₉₅ (3.6 \pm 1.9) imes 10 $^{-4}$ Γ₁₉₆ $(\begin{array}{cccc} 1.3 & \pm \ 0.6 \end{array}) imes 10^{-4} \\ (\begin{array}{cccc} 6 & \pm \ 4 \end{array}) imes 10^{-4} \end{array}$ Γ₁₉₇ Γ₁₉₈ $a_0(1450)^+ \pi^-, \ a_0^+ \to K^0_S K^+$ $(3.2 \pm 2.5) \times 10^{-5}$ Γ₁₉₉

Γ ₂₀₀	$ ho(1700)^+\pi^-$, $ ho^+ o \ K^0_{S} K^+$	$(1.1 \pm 0.6) imes 10^{-5}$
Γ ₂₀₁	$K^+ K^- \pi^0$	$(3.37 \pm 0.15) \times 10^{-3}$
Γ ₂₀₂	$K^{*}(892)^{+}K^{-}, K^{*}(892)^{+} \rightarrow$	$(1.50 \pm 0.07) \times 10^{-3}$
Γ ₂₀₃	${\scriptstyle K^+\pi^0 \ K^+\pi^0} K^+, \ K^*(892)^- ightarrow K^-$	(5.4 \pm 0.4) $ imes$ 10 ⁻⁴
Г ₂₀₄	$(\kappa^+\pi^0)_{S-wave}^{\pi^-}\kappa^-$	(2.40 \pm 0.17) $\times10^{-3}$
Γ ₂₀₅	$(K^-\pi^0)_{S-wave}K^+$	(1.3 \pm 0.5) $ imes$ 10 $^{-4}$
Γ ₂₀₆	$f_0(980)\pi^0$, $f_0 ightarrow~K^+K^-$	(3.5 \pm 0.6) $ imes$ 10 ⁻⁴
Γ ₂₀₇	$\phi \pi^0$, $\phi \rightarrow K^+ K^-$	$(6.5 \pm 0.4) imes 10^{-4}$
Γ ₂₀₈	$K^+ K^- \pi^0$ nonresonant	
Γ ₂₀₉	$2K_{S}^{0}\pi^{0}$	$< 5.9 \times 10^{-4}$
F210	$K^{+}K^{-}\pi^{+}\pi^{-}$	$(2.44 + 0.11) \times 10^{-3}$
· 210	$\phi(\pi^+\pi^-)\epsilon$ made $\phi \rightarrow$	$(251 \pm 0.33) \times 10^{-4}$
• 211	K^+K^-	
Γ ₂₁₂	$(\phi ho^0)_{{\cal S}-wave}$, $\phi ightarrow~{\cal K}^+{\cal K}^-$	(9.3 \pm 1.2) $ imes$ 10 ⁻⁴
Γ ₂₁₃	$(\phi ho^0)_{D-wave}, \ \phi ightarrow K^+ K^-$	(8.3 \pm 2.3) $ imes$ 10 $^{-5}$
Γ_{214}	$(K^{*0}\overline{K}^{*0})_{S-wave}, K^{*0} \rightarrow$	(1.49 \pm 0.30) $ imes$ 10 ⁻⁴
211	$K^{\pm}\pi^{\mp}$	
Γ_{215}	$(K^-\pi^+)_{P-wave}$	(2.7 \pm 0.5) $ imes$ 10 ⁻⁴
	$(K^+\pi^-)s$	
Г 216	$K_1(1270)^+ K^- K^+ \rightarrow$	$(18 + 05) \times 10^{-4}$
• 210	$\kappa^{*0}\pi^{+}$	
Г ₂₁₇	$K_1(1270)^+ K^-, K_1^+ \rightarrow$	(1.14 \pm 0.26) $\times10^{-4}$
	$ ho^0 K^+$	_
Г ₂₁₈	$\begin{array}{ccc} \mathcal{K}_1(1270)^- \mathcal{K}^+, & \mathcal{K}_1^- \rightarrow & \ \overline{\mathcal{K}}^{*0} \overline{\mathcal{K}}^- \end{array}$	$(2.2 \pm 1.2) \times 10^{-5}$
Г ₂₁₉	$K_1^{-\pi} K^+, K_1^- \to$	(1.46 \pm 0.25) $\times10^{-4}$
	$\rho^0 K^-$	
Γ ₂₂₀	${\mathcal K}^{*}(1410)^{+}{\mathcal K}^{-}$, ${\mathcal K}^{*+} ightarrow$	(1.02 \pm 0.26) $\times10^{-4}$
Γ ₂₂₁	$\mathcal{K}^{*}(1410)^{-}\mathcal{K}^{+}, \mathcal{K}^{*-} \rightarrow \mathcal{K}^{*}0^{}$	(1.14 \pm 0.25) $\times10^{-4}$
Г ₂₂₂	$K^+ K^- \rho^0$ 3-body	
Γ ₂₂₃	f_0(980) $\pi^+\pi^-$, f_ $0 ightarrow K^+K^-$	
Γ ₂₂₄	$K^{*}(892)^{0} K^{\mp} \pi^{\pm} 3$ -	
	body, $K^{*0} \rightarrow K^{\pm} \pi^{\mp}$	
Γ ₂₂₅	$\mathcal{K}^{*}(892)^{0}\overline{\mathcal{K}}^{*}(892)^{0}$, $\mathcal{K}^{*0} ightarrow$	
Г ₂₂₆	$\kappa_1(1270)^\pm K^\mp$, $\kappa_1^\pm o$	
г	$K^{\pm}\pi^{+}\pi^{-}$	
I 227	$\kappa_1(1400)^+\kappa^+, \ \kappa_1^+ \rightarrow$	
	$K^{\pm}\pi^{+}\pi^{-}$	

 $\begin{array}{lll} & \Gamma_{228} & 2 {\cal K}^0_S \, \pi^+ \, \pi^- & (1.20 \, \pm \, 0.23 \,) \times 10^{-3} \\ & \Gamma_{229} & {\cal K}^0_S \, {\cal K}^- \, 2 \pi^+ \, \pi^- & < \\ & \Gamma_{230} & {\cal K}^+ \, {\cal K}^- \, \pi^+ \, \pi^- \, \pi^0 & (3.1 \, \pm \, 2.0 \,) \times 10^{-3} \end{array}$

Other $K\overline{K}X$ modes. They include all decay modes of the ϕ , η , and ω .

Radiative modes

 $\begin{array}{cccccc} \Gamma_{234} & \rho^0 \gamma & (1.76 \pm 0.31) \times 10^{-5} \\ \Gamma_{235} & \omega \gamma & < 2.4 & \times 10^{-4} \\ \Gamma_{236} & \frac{\phi}{7} & (2.74 \pm 0.19) \times 10^{-5} \\ \Gamma_{237} & \overline{K}^* (892)^0 \gamma & (4.1 \pm 0.7) \times 10^{-4} \end{array}$

Doubly Cabibbo suppressed (DC) modes or $\Delta C = 2$ forbidden via mixing (C2M) modes

Γ ₂₃₈	$K^+ \ell^- \overline{ u}_\ell$ via D^0		<	2.2		$ imes 10^{-5}$	CL=90%		
Г ₂₃₉	K^+ or $K^*(892)^+ e^- \overline{\nu}_e$ via		<	6		imes 10 ⁻⁵	CL=90%		
Γ240	$K^+\pi^-$	DC	(1.48	± 0.07) × 10 ⁻⁴	S=2.8		
Γ ₂₄₁	$K^+\pi^-$ via DCS		(1.31	± 0.08) $\times 10^{-4}$			
Γ_{242}	${\cal K}^+ \pi^-$ via $\overline{D}{}^0$		<	1.6		2×10^{-5}	CL=95%		
Γ ₂₄₃	$K^0_S \pi^+ \pi^- \text{in } D^0 \to \overline{D}{}^0$		<	1.7		$ imes 10^{-4}$	CL=95%		
Г ₂₄₄	${K^{*}(892)^{+}\pi^{-},\ K^{*+} ightarrow K^{0}_{S}\pi^{+}}$	DC	(1.11	+ 0.60 - 0.33) × 10 ⁻⁴			
Г ₂₄₅	$K_0^*(1430)^+ \pi^-$, $K_0^{*+} \rightarrow \kappa_0^{*-}$	DC	<	1.4		imes 10 ⁻⁵			
Г ₂₄₆	$K_{5}^{*}\pi^{+}$ $K_{2}^{*}(1430)^{+}\pi^{-}, K_{2}^{*+} \rightarrow K_{0}^{0}\pi^{+}$	DC	<	3.3		$\times 10^{-5}$			
F247	$K^{+}\pi^{-}\pi^{0}$	DC	(3.01	± 0.15	$) \times 10^{-4}$			
Γ_{248}	$K^+\pi^-\pi^0$ via $\overline{D}{}^0$		(7.5	± 0.5	$) \times 10^{-4}$			
Γ ₂₄₉	$K^+\pi^+2\pi^-$ via DCS		(2.45	± 0.07	$) \times 10^{-4}$			
Γ_{250}	$K^+\pi^+2\pi^-$	DC	(2.61	± 0.06	$) \times 10^{-4}$			
Γ ₂₅₁	$K^+\pi^+2\pi^-$ via $\overline{D}{}^0$		(7.8	± 2.9	$) \times 10^{-6}$			
Γ ₂₅₂	$K^+\pi^-$ or $K^+\pi^+2\pi^-$ via								
Г ₂₅₃	μ^- anything via $\overline{D}{}^0$		<	4		$ imes 10^{-4}$	CL=90%		
$\Delta C = 1$ weak neutral current (C1) modes, Lepton Family number (LF) violating modes, Lepton (L) or Baryon (B) number violating modes									
Γ ₂₅₄	$\gamma \gamma$	C1	<	8.5		imes 10 ⁻⁷	CL=90%		
Γ ₂₅₅	e ⁺ e ⁻	C1	<	7.9		imes 10 ⁻⁸	CL=90%		
Г ₂₅₆	$\mu^+\mu^-$	C1	<	6.2		imes 10 ⁻⁹	CL=90%		
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Γ ₂₅₇	$\pi^0 e^+ e^-$	C1	< 4.5	imes 10 ⁻⁵	CL=90%
Γ ₂₅₈	$\pi^{0}\mu^{+}\mu^{-}$	C1	< 1.8	imes 10 ⁻⁴	CL=90%
Γ ₂₅₉	$\eta e^+ e^-$	C1	< 1.1	$ imes 10^{-4}$	CL=90%
Γ ₂₆₀	$\eta \mu^+ \mu^-$	C1	< 5.3	$ imes 10^{-4}$	CL=90%
Г ₂₆₁	$\pi^+\pi^-e^+e^-$	C1	< 3.73	imes 10 ⁻⁴	CL=90%
Γ ₂₆₂	$ ho^0 e^+ e^-$	C1	< 1.0	$ imes 10^{-4}$	CL=90%
Γ ₂₆₃	$\pi^+\pi^-\mu^+\mu^-$	C1	< 5.5	imes 10 ⁻⁷	CL=90%
Г ₂₆₄	$ ho^0 \mu^+ \mu^-$	C1	< 2.2	imes 10 ⁻⁵	CL=90%
Γ ₂₆₅	$\omega e^+ e^-$	C1	< 1.8	imes 10 ⁻⁴	CL=90%
Γ ₂₆₆	$\omega \mu^+ \mu^-$	C1	< 8.3	imes 10 ⁻⁴	CL=90%
Γ ₂₆₇	$K^-K^+e^+e^-$	C1	< 3.15	imes 10 ⁻⁴	CL=90%
Γ ₂₆₈	$\phi e^+ e^-$	C1	< 5.2	imes 10 ⁻⁵	CL=90%
Г ₂₆₉	$K^-K^+\mu^+\mu^-$	C1	< 3.3	imes 10 ⁻⁵	CL=90%
Γ ₂₇₀	$\phi \mu^+ \mu^-$	C1	< 3.1	imes 10 ⁻⁵	CL=90%
Γ ₂₇₁	$\overline{K}^0 e^+ e^-$		[j] < 1.1	imes 10 ⁻⁴	CL=90%
Γ ₂₇₂	$\overline{K}^0 \mu^+ \mu^-$		[j] < 2.6	imes 10 ⁻⁴	CL=90%
Γ ₂₇₃	$K^-\pi^+e^+e^-$	C1	< 3.85	imes 10 ⁻⁴	CL=90%
Γ ₂₇₄	$\overline{K}^{*}(892)^{0} e^{+} e^{-}$		[j] < 4.7	imes 10 ⁻⁵	CL=90%
Γ ₂₇₅	$K^- \pi^+ \mu^+ \mu^-$	C1	< 3.59	imes 10 ⁻⁴	CL=90%
Γ ₂₇₆	${\it K^-}\pi^+\mu^+\mu^-$, 675 $<$		(4.2 ± 0.4)	$) imes 10^{-6}$	
	$m_{\mu\mu}~<$ 875 MeV				
Γ ₂₇₇	$\overline{K}^{*}(892)^{0} \mu^{+} \mu^{-}$		[j] < 2.4	imes 10 ⁻⁵	CL=90%
Γ ₂₇₈	$\pi^{+}\pi^{-}\pi^{0}\mu^{+}\mu^{-}$	C1	< 8.1	imes 10 ⁻⁴	CL=90%
Γ ₂₇₉	$\mu^{\pm} e^{\mp}$	LF	[k] < 1.3	imes 10 ⁻⁸	CL=90%
Γ ₂₈₀	$\pi^0 e^{\pm} \mu^{\mp}$	LF	[k] < 8.6	imes 10 ⁻⁵	CL=90%
Γ ₂₈₁	$\eta e^{\pm} \mu^{\mp}$	LF	[k] < 1.0	imes 10 ⁻⁴	CL=90%
Γ ₂₈₂	$\pi^+\pi^-e^\pm\mu^\mp$	LF	[k] < 1.5	imes 10 ⁻⁵	CL=90%
Γ ₂₈₃	$ ho^{0} e^{\pm} \mu^{\mp}$	LF	[k] < 4.9	imes 10 ⁻⁵	CL=90%
Г ₂₈₄	$\omega e^{\pm} \mu^{\mp}$	LF	[k] < 1.2	imes 10 ⁻⁴	CL=90%
Γ ₂₈₅	$K^-K^+ e^\pm \mu^\mp$	LF	[k] < 1.8	imes 10 ⁻⁴	CL=90%
Γ ₂₈₆	$\phi e^{\pm} \mu^{\mp}$	LF	[k] < 3.4	imes 10 ⁻⁵	CL=90%
Γ ₂₈₇	$\overline{K}^0 e^{\pm} \mu^{\mp}$	LF	[k] < 1.0	imes 10 ⁻⁴	CL=90%
Γ ₂₈₈	$K^- \pi^+ e^\pm \mu^\mp$	LF	[k] < 5.53	imes 10 ⁻⁴	CL=90%
Γ ₂₈₉	\overline{K}^* (892) $^0e^\pm\mu^\mp$	LF	[k] < 8.3	imes 10 ⁻⁵	CL=90%
Γ ₂₉₀	$2\pi^{-}2e^{+}$ + c.c.	L	< 1.12	imes 10 ⁻⁴	CL=90%
Γ ₂₉₁	$2\pi^{-}2\mu^{+}+$ c.c.	L	< 2.9	imes 10 ⁻⁵	CL=90%
Γ ₂₉₂	$K^{-}\pi^{-}2e^{+}+$ c.c.	L	< 2.06	imes 10 ⁻⁴	CL=90%
Г ₂₉₃	$K^-\pi^-2\mu^++$ c.c.	L	< 3.9	imes 10 ⁻⁴	CL=90%
Г ₂₉₄	$2K^{-}2e^{+}$ + c.c.	L	< 1.52	imes 10 ⁻⁴	CL=90%
Γ ₂₉₅	$2K^{-}2\mu^{+}+$ c.c.	L	< 9.4	imes 10 ⁻⁵	CL=90%
Г ₂₉₆	$\pi^{-}\pi^{-}e^{+}\mu^{+}+$ c.c.	L	< 7.9	imes 10 ⁻⁵	CL=90%
Γ ₂₉₇	$K^{-}\pi^{-}e^{+}\mu^{+}+$ c.c.	L	< 2.18	imes 10 ⁻⁴	CL=90%

 Γ_{301} Unaccounted decay modes $(37.9~\pm~1.3~)\,\%$ $S{=}1.1$

- [a] This value is obtained by subtracting the branching fractions for 2-, 4and 6-prongs from unity.
- [b] This is the sum of our $K^- 2\pi^+ \pi^-$, $K^- 2\pi^+ \pi^- \pi^0$, $\overline{K}^0 2\pi^+ 2\pi^-$, $K^+ 2K^- \pi^+$, $2\pi^+ 2\pi^-$, $2\pi^+ 2\pi^- \pi^0$, $K^+ K^- \pi^+ \pi^-$, and $K^+ K^- \pi^+ \pi^- \pi^0$, branching fractions.
- [c] This is the sum of our $K^- 3\pi^+ 2\pi^-$ and $3\pi^+ 3\pi^-$ branching fractions.
- [d] The branching fractions for the $K^-e^+\nu_e$, $K^*(892)^-e^+\nu_e$, $\pi^-e^+\nu_e$, and $\rho^-e^+\nu_e$ modes add up to 6.19 \pm 0.17 %.
- [e] The branching fraction for this mode may differ from the sum of the submodes that contribute to it, due to interference effects. See the relevant papers.
- [f] This is a doubly Cabibbo-suppressed mode.
- [g] The two experiments measuring this fraction are in serious disagreement. See the Particle Listings.
- [*h*] Submodes of the $D^0 \rightarrow K_S^0 \pi^+ \pi^- \pi^0$ mode with a K^* and/or ρ were studied by COFFMAN 92B, but with only 140 events. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.
- [*i*] This branching fraction includes all the decay modes of the resonance in the final state.
- [j] This mode is not a useful test for a $\Delta C=1$ weak neutral current because both quarks must change flavor in this decay.
- [k] The value is for the sum of the charge states or particle/antiparticle states indicated.
- [/] This limit is for either D^0 or \overline{D}^0 to pe^- .
- [n] This limit is for either D^0 or $\overline{D}{}^0$ to $\overline{p}e^+$.

CONSTRAINED FIT INFORMATION

An overall fit to 55 branching ratios uses 114 measurements and one constraint to determine 32 parameters. The overall fit has a $\chi^2 = 108.1$ for 83 degrees of freedom.

The following off-diagonal array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

V. a	۰ ا									
^ <u>19</u>	20	2								
×20	20	0	0							
×21	0	1	1	0						
×29	2	1	17	0	0					
x30	3 2	16	16	0	0	2				
×32		10	10	2	4	3 1	21			
^x 34		5	5	ے ۱۲	1	1	31 11	14		
^x 36	0	2	2	15	0	1	11	14	2	
^x 51	1	4	4	0	1	1	28	8	3	1 -
^x 68	2	9	9	I	2	2	55	17	0	15
×77	0	1	1	6	0	0	4	5	38	1
×81	0	2	2	0	0	0	10	3	1	3
<i>×</i> 95	1	3	3	0	1	0	16	5	2	4
^x 96	0	0	0	1	0	0	0	1	5	0
×97	1	3	3	3	1	0	18	7	19	5
<i>×</i> 126	0	0	0	3	0	0	2	3	20	1
×133	2	9	9	1	2	2	57	17	6	16
^x 134	0	1	1	0	0	0	9	3	1	2
^x 135	1	4	4	0	1	1	24	7	3	82
^x 154	1	6	6	1	1	1	37	11	4	10
×168	0	1	1	0	0	0	7	2	1	2
×174	0	1	1	0	0	0	6	2	1	2
^x 176	0	1	1	0	0	0	9	3	1	2
×177	0	1	1	0	0	0	4	1	0	1
×178	2	9	9	1	2	2	55	17	6	15
×179	0	1	1	0	0	0	6	2	1	2
×180	0	1	1	5	0	0	5	5	34	1
×191	0	1	1	5	0	0	5	5	34	1
^x 236	0	2	2	0	1	0	15	4	2	4
×240	1	3	3	0	1	1	21	7	2	6
×301	-49	-8	-25	-18	-2	-6	-35	-18	-40	-51
	×6	×19	×20	×21	×29	×30	×32	×34	×36	×51

×77	2									
×81	13	0								
×95	9	1	2							
×96	0	12	0	0						
×97	10	7	2	3	1					
×126	1	8	0	0	1	4				
<i>×</i> 133	31	2	6	9	0	10	1			
<i>×</i> 134	5	0	1	1	0	2	0	5		
×135	13	1	2	4	0	4	1	13	2	
×154	50	2	7	6	0	7	1	21	3	9
^x 168	4	0	1	1	0	1	0	4	1	2
×174	4	0	1	1	0	1	0	4	1	2
^x 176	5	0	1	1	0	2	0	5	1	2
×177	2	0	0	1	0	1	0	2	0	1
×178	30	2	6	9	0	10	1	31	5	13
×179	3	0	1	1	0	1	0	3	1	1
×180	3	13	1	1	2	7	7	3	0	1
×191	3	13	1	1	2	7	7	3	0	1
^x 236	8	1	2	2	0	3	0	8	1	3
^x 240	12	1	2	4	0	4	0	12	2	5
×301	-30	-55	-35	-8	-11	-16	_9	-20	-3	-43
	×68	×77	×81	×95	^x 96	×97	^x 126	×133	^x 134	×135
×168	3									
×174	2	0								
×176	3	1	1							
×177	1	0	0	0						
×178	20	4	3	5	2					
×179	2	0	0	1	0	3				
×180	2	0	0	0	0	3	0			
×191	2	0	0	0	0	3	0	100		
×236	5	1	1	1	1	23	1	1	1	
^x 240	8	2	1	2	1	12	1	1	1	3
×301	-19	-3	-3	-5	-3	-20	-2	-20	-20	-5
	^x 154	×168	×174	×176	×177	×178	×179	×180	×191	×236
×301	7									
	×240									

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CONSTRAINED FIT INFORMATION

An overall fit to 3 branching ratios uses 3 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 = 0.0$ for 0 degrees of freedom.

The following off-diagonal array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

<i>x</i> 2	-100		
<i>x</i> 3	-46	40	
<i>x</i> 4	0	0	0
	<i>x</i> ₁	<i>x</i> ₂	<i>x</i> 3

D⁰ BRANCHING RATIOS

Some older now obsolete results have been omitted from these Listings.

		— Topological	modes		
Γ(0-prongs)/Γ_{total} This value is ob from unity.	tained by	subtracting the	branching	g fract	Γ₁/Γ tions for 2-, 4-, and 6-prongs
VALUE		DOCUMENT	ID		
0.15±0.06 OUR FIT				-	
$\Gamma(4-\text{prongs})/\Gamma(2-\text{p})$	rongs)				Γ_3/Γ_2
VALUE	EVTS	DOCUMENT ID	TE	CN	COMMENT
0.207 ± 0.016 OUR FI	Г				
$0.207 \pm 0.016 \pm 0.004$	226	ONENGUT	05 CH	HRS	$ u_{\mu}$ emulsion, $\overline{\textit{E}}_{ u} pprox$ 27 GeV
$\Gamma(4\text{-prongs})/\Gamma_{\text{total}}$				0	Г ₃ /Г
This is the sum $2\pi^+2\pi^-$, $2\pi^+$	1 of our $2\pi^{-}\pi^{0}$,	$K^{-} 2\pi^{+} \pi^{-}, K^{-} K^{+} K^{-} \pi^{+} \pi^{-}, K^{-} \pi^{+} \pi^{-}, K^{-} K^{+} K^{-} \pi^{+} \pi^{-}, K^{+} K^{-} \pi^{+} \pi^{-}, K^{+} K^{+} K^{-} \pi^{+} \pi^{-}, K^{+} K^$	⁻ 2π ⁺ π ⁻ and K ⁺ I	⁻ π ⁰ , K π ⁻	$K^0 2\pi^+ 2\pi^-$, $K^+ 2K^- \pi^+$, $+\pi^- \pi^0$ branching fractions.
VALUE		<u>DOCUMENT</u>	ID	-	
0.145±0.005 OUR FI	Г				
0.145±0.005		PDG	12		
$\Gamma(6-prongs)/\Gamma_{total}$					Γ ₄ /Γ
This is the sum	of our K	$^-3\pi^+2\pi^-$ and $^+$	$3\pi^{+}3\pi^{-}$	bran	ching fractions.
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TE	ECN	COMMENT
6.4± 1.3 OUR FIT					
6.4± 1.3		PDG	12		
• • • We do not use	the follov	ving data for aver	ages, fits,	, limit	cs, etc. ● ● ●
$12 \begin{array}{c} +13 \\ -9 \end{array} \pm 2$	3	ONENGUT	05 CH	HRS	$ u_{\mu}$ emulsion, $\overline{E}_{ u} pprox$ 27 GeV

—— Inclusive modes ———

$\Gamma(e^+ \text{ anything})/\Gamma_{e}$				Γε /Γ
The branching fr	nal	$K^{-} + K^{*} $	$(2)^{-} + u$	-3/
modes add up to	3 - 620 + 0.17	%	$e^{\nu}e^{\nu}$	ν_e , and $\rho_e = \nu_e$
VALUE (%)	50.20 ± 0.11 EVTS	DOCUMENT ID	TECN	COMMENT
6.49±0.11 OUR AVE	RAGE			
$6.46\!\pm\!0.09\!\pm\!0.11$	6584 ± 96	¹ ASNER	10 CLEO	e^+e^- at 3774 MeV
$6.3 \pm 0.7 \pm 0.4$	290 ± 32	ABLIKIM	07G BES2	$e^+e^- \approx \psi(3770)$
$6.46\!\pm\!0.17\!\pm\!0.13$	2246 ± 57	ADAM	06A CLEO	See ASNER 10
$6.9\ \pm 0.3\ \pm 0.5$	1670	ALBRECHT	96c ARG	e^+e^-pprox 10 GeV
$6.64\!\pm\!0.18\!\pm\!0.29$	4609	KUBOTA	96B CLE2	$e^+e^-pprox~\Upsilon(4S)$
1 Using the D^+ and semileptonic width	d D^0 lifetimes s is 0.985 \pm 0	s, ASNER 10 find .015 \pm 0.024.	s that the ra	tio of the D^+ and D^0
$\Gamma(\mu^+ \text{ anything})/\Gamma_{tot}$	otal			Г ₆ /Г
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
6.7±0.6 OUR FIT				
6.4 ± 0.8 OUR AVERA	GE			
$6.8 \pm 1.5 \pm 0.8$	79 ± 10 -	^L ABLIKIM 0	8L BES2	$e^+e^- pprox \psi$ (3772)
$6.5\!\pm\!1.2\!\pm\!0.3$	36	KAYIS-TOPAK.0	5 CHRS a	$ u_{\mu}$ emulsion
$6.0\!\pm\!0.7\!\pm\!1.2$	310	ALBRECHT 9	6C ARG	$e^{+}e^{-}pprox$ 10 GeV
¹ ABLIKIM 08L finds	s the ratio of	$D^+ o \ \mu^+ X$ and	$D^0 \rightarrow \mu^+ 2$	X branching fractions to
be 2.59 \pm 0.70 \pm	0.25, in accore	d with the ratio of	D^+ and D^0	lifetimes, 2.54 \pm 0.02.
$\Gamma(K^- \text{ anything})/\Gamma$	atal			Γ ₇ /Γ
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.547±0.028 OUR AV	ERAGE Erro	or includes scale fa	ctor of 1.3. S	See the ideogram below.
$0.578 \!\pm\! 0.016 \!\pm\! 0.032$	2098 ± 59	ABLIKIM	07G BES2	$e^+e^- \approx \psi(3770)$
$0.546 \substack{+ 0.039 \\ - 0.038}$		¹ BARLAG	92c ACCM	π^- Cu 230 GeV
$0.609\!\pm\!0.032\!\pm\!0.052$		COFFMAN	91 MRK3	e^+e^- 3.77 GeV
$0.42 \hspace{0.1in} \pm 0.08$		AGUILAR	87e HYBR	πp , pp 360, 400 GeV
$0.55\ \pm 0.11$	121	SCHINDLER	81 MRK2	e^+e^- 3.771 GeV
0.35 ± 0.10	19	VUILLEMIN	78 LGW	e^+e^- 3.772 GeV

 $^1\,\textsc{BARLAG}$ 92C computes the branching fraction using topological normalization.



 Γ_{11}/Γ

DOCUMENT ID TECN 05P BES $e^+e^- \approx 3773 \text{ MeV}$ ABLIKIM

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 96 ± 44

 $0.087 \pm 0.040 \pm 0.012$

VALUE

$\Gamma(K^*(892)^+ \text{ anyth})$	ing)/Γ _{total}					Г ₁₂ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<0.036	90	ABLIKIM	06 ∪	BES2	e^+e^- at 3773	8 MeV
Г(<i>К</i> *(892) ⁰ anythi	ng)/F _{total}					Г ₁₃ /Г
VALUE	EVTS	DOCUMENT	- ID	TEC	N <u>COMMENT</u>	
$0.028 \pm 0.012 \pm 0.004$	31 ± 12	ABLIKIM	(05P BES	$e^+e^- \approx 3$	773 MeV
$\Gamma(\eta \text{ anything})/\Gamma_{tot}$ This ratio include	tal des η particles	s from η' decays				Г ₁₄ /Г
VALUE (units 10 ⁻²)	EVTS	DOCUMENT	" ID	TEC	N <u>COMMENT</u>	
9.5±0.4±0.8	4463 ± 197	HUANG	(06b CLE	$0 e^+e^-$ at ψ	(3770)
$\Gamma(\eta' \text{ anything})/\Gamma_{to}$	otal					Г ₁₅ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT	ID	TECN	COMMENT	
2.48±0.17±0.21	299 ± 21	HUANG	0	6b CLE	O e^+e^- at $\psi($	3770)
$\Gamma(\phi \text{ anything})/\Gamma_{tot}$	tal					Г ₁₆ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
$1.05 \pm 0.08 \pm 0.07$	368 ± 24	HUANG	06 B	CLEO	e^+e^- at $\psi(37)$	70)
\bullet \bullet \bullet We do not use	the following	data for average	s, fits	, limits,	etc. ● ● ●	
$1.71^{+0.76}_{-0.71}{\pm}0.17$	9	BAI	00 C	BES	$e^+e^- \rightarrow D\overline{D}$	*, <i>D</i> * D *
$\Gamma(invisibles)/\Gamma_{total}$						Г ₁₇ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<9.4 × 10 ⁻⁵	90	LAI	17	BELL	e^+e^- at $argamma(nS)$	5), n=4,5
	—— S	emileptonic m	nodes			
$\Gamma(K^-e^+\nu_e)/\Gamma_{\rm tota}$	I					Г ₁₉ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
3.530±0.028 OUR FI 3.503±0.029 OUR A	T Error inclu /ERAGE	udes scale factor	of 1.	1.		
$3.505 \pm 0.014 \pm 0.033$	71k	¹ ABLIKIM	15X	BES3	2.92 fb^{-1} , 3.7	73 GeV
$3.50 \pm 0.03 \pm 0.04$	14.1k	¹ BESSON	09	CLEO	e^+e^- at $\psi(37)$	770)
$3.45 \ \pm 0.10 \ \pm 0.19$	1.3k	² WIDHALM	06	BELL	$e^+e^-pprox \Upsilon(4)$	5)
$3.82\ \pm 0.40\ \pm 0.27$	104	ABLIKIM	04C	BES	e ⁺ e ⁻ , 3.773	GeV
$3.4 \pm 0.5 \pm 0.4$	55	ADLER	89	MRK3	e^+e^- 3.77 Ge	eV
• • • We do not use	the following	data for average	s, fits	, limits,	etc. • • •	
$3.56 \pm 0.03 \pm 0.09$		³ DOBBS	08	CLEO	See BESSON (09
$3.44 \pm 0.10 \pm 0.10$	1.3k	COAN	05 +1-:- 7	CLEO	See DOBBS 08	8
- See the form-facto	or parameters	near the end of	this L	Cistin	g. $f^{\pi}(0)$	
2 The $\pi^{-}e^{+}\nu_{e}$ and	$K^- e^+ \nu_e$ re	esults of WIDHA	LM 0	6 give -	$\frac{V_{cd}}{V_{cs}} \cdot \frac{r_+(0)}{f_+^K(0)} \Big ^2 =$	= 0.042 ±
$0.003 \pm 0.003.$. /	$f\pi(0)$			•	
³ DOBBS 08 establ	ishes $\left \frac{V_{cd}}{V_{cs}} \right $	$\left \frac{f_{+}(0)}{f_{+}^{K}(0)} \right = 0.188$	± 0.0	08 ± 0.0	002 from the <i>D</i> ⁻	$+$ and D^0
decays to $\overline{K}e^+ u_e$	and $\pi e^+ \nu_e$.	т` <i>`</i>				
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 $\Gamma(K^-e^+\nu_e)/\Gamma(K^-\pi^+)$ Γ_{19}/Γ_{32} DOCUMENT ID TECN COMMENT **0.907±0.011 OUR FIT** Error includes scale factor of 1.2. 0.930 ± 0.013 OUR AVERAGE ¹ AUBERT 07BG BABR $e^+e^- \approx \Upsilon(4S)$ $0.927 \pm 0.007 \pm 0.012$ $76k \pm 323$ ² BEAN 93C CLE2 2510 $e^+e^- \approx \Upsilon(4S)$ $0.978 \pm 0.027 \pm 0.044$ ³ CRAWFORD $0.90\ \pm 0.06\ \pm 0.06$ 584 91B CLEO $e^+e^- \approx 10.5$ GeV ⁴ ANJOS $0.91 \ \pm 0.07 \ \pm 0.11$ 250 89F E691 Photoproduction 1 The event samples in this AUBERT 07BG result include radiative photons. The $D^0 o$ $K^- e^+ \nu_e$ form factor at $q^2 = 0$ is $f_+(0) = 0.727 \pm 0.007 \pm 0.005 \pm 0.007$. 2 BEAN 93C uses ${\cal K}^-\mu^+
u_\mu$ as well as ${\cal K}^-e^+
u_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events. A pole mass of $2.00 \pm 0.12 \pm 0.18 \; {
m GeV}/c^2$ is obtained from the q^2 dependence of the decay rate. 3 CRAWFORD 91B uses ${\it K}^-e^+
u_e$ and ${\it K}^-\mu^+
u_\mu$ candidates to measure a pole mass of $2.1 \substack{+0.4 + 0.3 \\ -0.2 - 0.2} ~{\rm GeV}/c^2$ from the q^2 dependence of the decay rate. 4 ANJOS 89F measures a pole mass of $2.1 \substack{+0.4 \\ -0.2} \pm 0.2$ GeV/ c^2 from the q^2 dependence of the decay rate. $\Gamma(K^-\mu^+\nu_\mu)/\Gamma_{\rm total}$ Γ_{20}/Γ VALUE (units 10^{-2}) DOCUMENT ID EVTS TECN COMMENT 3.31±0.13 OUR FIT 06 BELL $e^+e^- \approx \Upsilon(4S)$ $3.45 {\pm} 0.10 {\pm} 0.21$ 1249 ± 43 WIDHALM $\Gamma(K^-\mu^+
u_\mu)/\Gamma(\mu^+ \text{ anything})$ Γ_{20}/Γ_{6} VALUE DOCUMENT ID TECN COMMENT 0.50 ±0.05 OUR FIT $0.472 \pm 0.051 \pm 0.040$ 232 KODAMA 94 E653 π^- emulsion 600 GeV • • • We do not use the following data for averages, fits, limits, etc. • • • $0.32 \pm 0.05 \pm 0.05$ 124 **KODAMA** EMUL pA 800 GeV 91 $\Gamma(K^-\mu^+\nu_\mu)/\Gamma(K^-\pi^+)$ Γ_{20}/Γ_{32} DOCUMENT ID TECN COMMENT 0.851±0.033 OUR FIT 0.84 ± 0.04 OUR AVERAGE 95G E687 γ Be \overline{E}_{γ} = 220 GeV 93I E687 γ Be \overline{E}_{γ} = 221 GeV ¹ FRABETTI 1897 $0.852 \pm 0.034 \pm 0.028$ ² FRABETTI 338 $0.82 \pm 0.13 \pm 0.13$ ³ CRAWFORD 91B CLEO $e^+e^- \approx 10.5 \text{ GeV}$ $0.79 \pm 0.08 \pm 0.09$ 231 1 FRABETTI 95G extracts the ratio of form factors $f_-(0)/f_+(0)=-1.3^{+3.6}_{-3.4}\pm0.6$, and measures a pole mass of $1.87 \substack{+0.11 + 0.07 \\ -0.08 - 0.06}$ GeV/ c^2 from the q^2 dependence of the decay rate. ² FRABETTI 93I measures a pole mass of 2.1 + 0.7 + 0.7 = 0.3 GeV/ c^2 from the q^2 dependence of the decay rate. 3 CRAWFORD 91B measures a pole mass of 2.00 \pm 0.12 \pm 0.18 GeV/ c^2 from the q^2 dependence of the decay rate.

 $\Gamma(K^*(892)^- e^+ \nu_e) / \Gamma_{\text{total}}$ Γ_{21}/Γ Both decay modes of the $K^*(892)^-$ are included. EVTS *VALUE* (units 10^{-2}) DOCUMENT ID TECN COMMENT 2.15 ± 0.16 OUR FIT ¹ COAN 05 CLEO e^+e^- at $\psi(3770)$ $2.16 \pm 0.15 \pm 0.08$ 219 ± 16 ¹COAN 05 uses both $K^-\pi^0$ and $K^0_5\pi^-$ events. $\Gamma(K^*(892)^- e^+ \nu_e) / \Gamma(K^0_{S} \pi^+ \pi^-)$ Γ_{21}/Γ_{36} Unseen decay modes of the $K^*(892)^-$ are included. VALUE DOCUMENT ID TECN COMMENT EVTS 0.78±0.07 OUR FIT 93C CLE2 $e^+e^- \approx \Upsilon(4S)$ ¹ BEAN $0.76 \pm 0.12 \pm 0.06$ 152 $^{1}\,{\rm BEAN}$ 93C uses ${\it K^{*-}}\,\mu^{+}\nu_{\mu}$ as well as ${\it K^{*-}}\,e^{+}\nu_{e}$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events. $\Gamma(K^*(892)^- \mu^+ \nu_{\mu}) / \Gamma(K^0_{S} \pi^+ \pi^-)$ Γ_{22}/Γ_{36} Unseen decay modes of the $K^*(892)^-$ are included. $\begin{array}{ccc} \underline{VALUE} & \underline{EVTS} & \underline{DOCUMENT ID} & \underline{TECN} & \underline{COMMENT} \\ \textbf{0.674 \pm 0.068 \pm 0.026} & 175 \pm 17 & 1 \\ \hline \textbf{LINK} & \textbf{05B} & \textbf{FOCS} & \gamma \text{ A, } \\ \overline{E}_{\sim} \approx \end{array}$ 05B FOCS $~~\gamma$ A, $\overline{E}_{\gamma} pprox ~$ 180 GeV ¹LINK 05B finds that in $D^0 \rightarrow \overline{\kappa}{}^0 \pi^- \mu^+ \nu_\mu$ the $\overline{\kappa}{}^0 \pi^-$ system is 6% in S-wave. $\Gamma(K^{-}\pi^{0}e^{+}\nu_{e})/\Gamma_{\text{total}}$ Γ_{23}/Γ DOCUMENT ID TECN COMMENT **0.016**^{+0.013}_{-0.005}±0.002 4 91 MRK3 $e^+e^- \approx 3.77$ GeV ¹ BAI $^1\,{\rm BAI}$ 91 finds that a fraction $0.79^{+0.15\,+0.09}_{-0.17\,-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+\nu_e$ (24 events) are $\overline{K}^*(892)e^+\nu_e$. BAI 91 uses 56 $K^-e^+\nu_e$ events to measure a pole mass of $1.8 \pm 0.3 \pm 0.2$ GeV/ c^2 from the q^2 dependence of the decay rate. $\Gamma(\overline{K}^0\pi^-e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{24}/Γ VALUE (units 10^{-2}) EVTS DOCUMENT ID TECN COMMENT $2.7 \stackrel{+0.9}{_{0.7}}$ OUR AVERAGE $2.61 \pm 1.04 \pm 0.28$ ABLIKIM 060 BES2 e^+e^- at 3773 MeV 9 ± 3 $2.8 \ {}^{+1.7}_{-0.8} \ \pm 0.3$ 91 MRK3 $e^+e^- \approx 3.77$ GeV ¹ BAI 6 $^1\,{\sf BAI}$ 91 finds that a fraction $0.79^{+}0.15^{+}0.09_{-}0.03$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+\nu_{\rho}$ (24 events) are $\overline{K}^*(892)e^+\nu_{\rho}$. $\Gamma(K^{-}\pi^{+}\pi^{-}e^{+}\nu_{e})/\Gamma_{\text{total}}$ Γ_{25}/Γ VALUE (units 10^{-4}) EVTS DOCUMENT ID TECN COMMENT $2.8^{+1.4}_{-11}\pm0.3$ ARTUSO 07A CLEO e^+e^- at $\Upsilon(3770)$ 8

 $\Gamma(K_1(1270)^-e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{26}/Γ *VALUE* (units 10^{-4}) DOCUMENT ID TECN COMMENT $7.6^{+4.1}_{-3.0}\pm0.9$ ¹ ARTUSO 07A CLEO e^+e^- at $\Upsilon(3770)$ 8 ¹ This ARTUSO 07A result is corrected for all decay modes of the $K_1(1270)^-$. $\frac{\Gamma(K^{-}\pi^{+}\pi^{-}\mu^{+}\nu_{\mu})/\Gamma(K^{-}\mu^{+}\nu_{\mu})}{\frac{VALUE}{2}} \xrightarrow{CL\%} \xrightarrow{DOCU}{KOD}$ Γ_{27}/Γ_{20} DOCUMENT ID TECN COMMENT KODAMA < 0.037 93B E653 π^- emulsion 600 GeV $\Gamma((\overline{K}^*(892)\pi)^-\mu^+\nu_{\mu})/\Gamma(K^-\mu^+\nu_{\mu})$ Γ_{28}/Γ_{20} $\begin{array}{c|c} \hline DOCUMENT ID \\ \hline 1 \text{ KODAMA} & 93B \end{array} \begin{array}{c} \hline TECN \\ \hline E653 \\ \hline \pi^{-} \text{ emuls} \end{array}$ VALUE <u>CL%</u> 90 < 0.043 93B E653 π^- emulsion 600 GeV ¹ KODAMA 93B searched in $K^- \pi^+ \pi^- \mu^+ \nu_{\mu}$, but the limit includes other $(\overline{K}^*(892)\pi)^$ charge states. $\Gamma(\pi^- e^+ \nu_e) / \Gamma_{\text{total}}$ Γ_{29}/Γ *VALUE* (units 10^{-2}) EVTS DOCUMENT ID TECN COMMENT 0.291±0.004 OUR FIT Error includes scale factor of 1.1. 0.293±0.004 OUR AVERAGE ¹ ABLIKIM 15x BES3 2.92 fb⁻¹, 3.773 GeV $0.295 \pm 0.004 \pm 0.003$ 6.3k ¹ BESSON 09 CLEO e^+e^- at $\psi(3770)$ $0.288 \pm 0.008 \pm 0.003$ 1.3k ² WIDHALM 06 BELL $e^+e^- \approx \Upsilon(4S)$ $0.279 \pm 0.027 \pm 0.016$ 126 • • • We do not use the following data for averages, fits, limits, etc. • • • ³ DOBBS $0.299 \pm 0.011 \pm 0.009$ 08 CLEO See BESSON 09 COAN $0.262 \pm 0.025 \pm 0.008$ 117 05 CLEO See DOBBS 08 ¹See the form-factor parameters near the end of this D^0 Listing. ² The $\pi^- e^+ \nu_e$ and $K^- e^+ \nu_e$ results of WIDHALM 06 give $\left| \frac{V_{cd}}{V_{cs}} \cdot \frac{f_{\pm}^{\pi}(0)}{f_{\pm}^{K}(0)} \right|^2 = 0.042 \pm$ 0.003 ± 0.003 . ³DOBBS 08 establishes $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_{\pm}^{\pi}(0)}{f_{\pm}^{K}(0)}| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K}e^+\nu_{\rho}$ and $\pi e^+\nu_{\rho}$. $\Gamma(\pi^- e^+ \nu_e) / \Gamma(K^- e^+ \nu_e)$ Γ_{29}/Γ_{19} DOCUMENT ID TECN COMMENT VALUE 0.0823±0.0014 OUR FIT Error includes scale factor of 1.1. 0.085 ±0.007 OUR AVERAGE 05 CLEO $e^+e^- \approx \Upsilon(4S)$ 96B E687 γ Be, $\overline{E}_{\gamma} \approx 200$ GeV ¹ HUANG $0.082\ \pm 0.006\ \pm 0.005$ ² FRABETTI $0.101 \ \pm 0.020 \ \pm 0.003$ 91 95 CLE2 < 0.156 (90% CL) $0.103 \pm 0.039 \pm 0.013$ 87 ³ BUTLER ¹HUANG 05 uses both e and μ events, and makes a small correction to the μ events to make them effectively e events. This result gives $\left|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_{+}^{\pi}(0)}{f_{-}^{K}(0)}\right|^2 =$ $0.038 \substack{+\, 0.006 + 0.005 \\ -\, 0.007 - 0.003}$

 2 FRABETTI 96B uses both e and μ events, and makes a small correction to the μ events to make them effectively *e* events. This result gives $\left|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_{\pm}^{\pi}(0)}{f_{\pm}^{K}(0)}\right|^2 = 0.050 \pm 0.011 \pm 0.002.$

³BUTLER 95 has 87 ± 33 $\pi^- e^+ \nu_e$ events. The result gives $\left|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}\right|^2 = 0.052 \pm$ $0.020 \pm 0.007.$

$\Gamma(\pi^- e^+ \nu_e) / \Gamma(\kappa^-)$	⁻ π ⁺)					Г ₂₉ /Г ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT	ID	TECN	COMMENT	
7.47±0.13 OUR FIT	Error inclu	udes scale factor	r of 1.1.			
$7.02 \pm 0.17 \pm 0.23$	375k	¹ LEES	15F	BABR	347 fb^{-1} , 10.5	58 GeV
				-		

¹See the form-factor parameters near the end of the D^0 Listing.

$\Gamma(\pi^-\mu^+\nu_\mu)/\Gamma_{\rm tota}$	I				Г ₃₀ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT	
0.237±0.024 OUR FI	т				
$0.231 \pm 0.026 \pm 0.019$	106 ± 13	WIDHALM	06 BELL	e^+e^-pprox	$\Upsilon(4S)$
$\Gamma(\pi^-\mu^+\nu_\mu)/\Gamma(\kappa^-)$	$^{-}\mu^{+}\nu_{\mu})$				Г ₃₀ /Г ₂₀
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
0.072±0.007 OUR FI	Т				
$0.074 \pm 0.008 \pm 0.007$	288 ± 29	¹ LINK	05 FOCS	γ A, $\overline{E}_{\gamma}\approx$	180 GeV
1 LINK 05 finds the	form-factor r	atio $\left f_0^{\pi}(0)/f_0^{K}(0)\right $	to be 0.85 :	\pm 0.04 \pm 0.0	$04 \pm 0.01.$
$\Gamma(ho^- e^+ u_e) / \Gamma_{ m total}$					Г ₃₁ /Г
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT	
$1.77 \pm 0.12 \pm 0.10$	305 ± 21	^{1,2} DOBBS	13 CLEO	e ⁺ e ⁻ at	$\psi(3770)$

• • • We do not use the following data for averages, fits, limits, etc. • • • 31 ± 6 COAN 05 CLEO See DOBBS 13 $1.94 \!\pm\! 0.39 \!\pm\! 0.13$ ¹ DOBBS 13 finds $\Gamma(D^0 \rightarrow \rho^- e^+ \nu_e) / 2 \Gamma(D^+ \rightarrow \rho^0 e^+ \nu_e) = 1.03 \pm 0.09^{+0.08}_{-0.02}$; isospin invariance predicts the ratio is 1.0. ² See the D^+ Listings for $D \rightarrow \rho e^+ \nu_e$ form factors.

- Hadronic modes with a single \overline{K} -

$\Gamma(K^-\pi^+)/$	/F _{total}						Г ₃₂ /Г
VALUE (units 10)^2)	EVTS	DOCUMENT ID		TECN	COMMENT	
3.89 ±0.04	OUR FIT	Error	includes scale factor	of 1.1			
3.93 ±0.05	OUR AVE	RAGE	Error includes scale	factor	of 1.1.		
3.934 ± 0.021	± 0.061		BONVICINI	14	CLEO	All CLEO-c runs	
4.007 ± 0.037	± 0.072	33.8k	AUBERT	08L	BABR	e^+e^- at $\Upsilon(4S)$	
$3.82 \ \pm 0.07$	± 0.12		¹ ARTUSO	98	CLE2	CLEO average	
$3.90 \hspace{0.1in} \pm 0.09$	± 0.12	5.4k	² BARATE	97 C	ALEP	From Z decays	
$3.41 \hspace{0.1in} \pm 0.12$	± 0.28	1.2k	² ALBRECHT	94F	ARG	$e^+e^- \approx \Upsilon(4S)$	
3.62 ± 0.34	± 0.44		² DECAMP	91J	ALEP	From Z decays	

• • We do not use the following data for averages, fits, limits, etc. • • •

3 801	+0.036	5 + 0 060			07	CLEO	See BONVICINI 14
3.091	1 ± 0.05	1 ± 0.009		200005	07	CLLO	See DONVICINI 14
3.91	± 0.08	± 0.09	10.3k	³ HE	05	CLEO	See DOBBS 07
3.81	± 0.15	± 0.16	1.2k	⁴ ARTUSO	98	CLE2	e^+e^- at $arphi(4S)$
3.69	± 0.11	± 0.16		⁵ COAN	98	CLE2	See ARTUSO 98
4.5	± 0.6	± 0.4		⁶ ALBRECHT	94	ARG	$e^+ e^- pprox \Upsilon(4S)$
3.95	± 0.08	± 0.17	4.2k	^{2,7} AKERIB	93	CLE2	See ARTUSO 98
4.5	± 0.8	± 0.5	56	² ABACHI	88	HRS	e ⁺ e ⁻ 29 GeV
4.2	± 0.4	± 0.4	0.9k	ADLER	88 C	MRK3	e^+e^- 3.77 GeV
4.1	± 0.6		0.3k	⁸ SCHINDLER	81	MRK2	e ⁺ e ⁻ 3.771 GeV
4.3	± 1.0		130	⁹ PERUZZI	77	LGW	e^+e^- 3.77 GeV

 1 This combines the CLEO results of ARTUSO 98, COAN 98, and AKERIB 93.

²ABACHI 88, DECAMP 91J, AKERIB 93, ALBRECHT 94F, and BARATE 97C use $D^*(2010)^+ \rightarrow D^0 \pi^+$ decays. The π^+ is both slow and of low p_T with respect to the event thrust axis or nearest jet ($\approx D^{*+}$ direction). The excess number of such π^+ 's over background gives the number of $D^*(2010)^+ \to D^0 \pi^+$ events, and the fraction with $D^0 \to K^- \pi^+$ gives the $D^0 \to K^- \pi^+$ branching fraction.

³DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

⁴ARTUSO 98, following ALBRECHT 94, uses D^0 mesons from $\overline{B}^0 \rightarrow$ $D^*(2010)^+ X \ell^- \overline{\nu}_{\ell}$ decays. Our average uses the CLEO average of this value with the values of COAN 98 and AKERIB 93. ⁵ COAN 98 assumes that $\Gamma(B \to \overline{D}X \ell^+ \nu) / \Gamma(B \to X \ell^+ \nu) = 1.0 - 3 |V_{ub}/V_{cb}|^2 - 1.0 - 3 |V_{ub}/V_{cb}|^2$

0.010 \pm 0.005, the last term accounting for $\overline{B} \rightarrow D_s^+ K X \ell^- \overline{\nu}$. COAN 98 is included in the CLEO average in ARTUSO 98.

⁶ALBRECHT 94 uses D^0 mesons from $\overline{B}^0 \rightarrow D^{*+} \ell^- \overline{\nu}_{\ell}$ decays. This is a different set of events than used by ALBRECHT 94F.

 7 This AKERIB 93 value includes radiative corrections; without them, the value is 0.0391 \pm 0.0008 \pm 0.0017. AKERIB 93 is included in the CLEO average in ARTUSO 98.

⁸ SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.24 ± 0.02 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

⁹ PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770))$ × branching fraction to be 0.25 ± 0.05 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$				Г ₃₃ /Г ₃₂		
VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT		
3.56 \pm 0.06 OUR AVERAGE						
3.53 ± 0.13	¹ KO	14	BELL	$e^+e^- ightarrow ~\Upsilon({ m nS})$		
3.568 ± 0.066	² AAIJ	13CE	LHCB	<i>pp</i> at 7, 8 TeV		
3.51 ± 0.35	³ AALTONEN	13AE	CDF	<i>р</i> рат 1.96 ТеV		
ullet $ullet$ $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$						
3.52 ± 0.15	⁴ AAIJ	13N	LHCB	Repl. by AAIJ 13CE		
¹ Based on 976 fb ⁻¹ of data collected at $Y(nS)$ resonances. Assumes no <i>CP</i> violation.						

²Based on 3 fb⁻¹ of data collected at $\sqrt{s} = 7$, 8 TeV. Assumes no *CP* violation.

³Based on 9.6 fb⁻¹ of data collected at the Tevatron. Assumes no *CP* violation. ⁴Based on 1 fb⁻¹ of data collected at $\sqrt{s} = 7$ TeV in 2011. Assumes no *CP* violation.

$\Gamma(K_S^0 \pi^0) / \Gamma_{\text{total}}$					Г ₃₄ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D	TECN	COMMENT
• • • We do not use t	he following	data for avera	ges, fits,	limits,	etc. ● ● ●
$1.240\!\pm\!0.017\!\pm\!0.056$	614	HE	08	CLEO	See MENDEZ 10
$\Gamma(\kappa_S^0\pi^0)/\Gamma(\kappa^-\pi^+)$	-)				Г ₃₄ /Г ₃₂
VALUE	EVTS	DOCUMENT I	D	TECN	COMMENT
• • • We do not use t	he following	data for avera	ges, fits,	limits,	etc. ● ● ●
$0.68\!\pm\!0.12\!\pm\!0.11$	119	ANJOS	92 B	E691	$\gamma\mathrm{Be}$ 80–240 GeV
$\Gamma(K_{S}^{0}\pi^{0})/[\Gamma(K^{-}\pi)]$	+) + Γ(<i>Κ</i> ⁻	$(+\pi^{-})$			$\Gamma_{34}/(\Gamma_{32}+\Gamma_{240})$
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D	TECN	COMMENT
30.4±0.9 OUR FIT					
30.4±0.3±0.9	20k	MENDEZ	10	CLEO	e^+e^- at 3774 MeV
$\Gamma(K^0_{\varsigma}\pi^0)/\Gamma(K^0_{\varsigma}\pi^+)$	$\pi^{-})$				Г ₃₄ /Г ₃₆
VALUE	EVTS	DOCUMENT	ID	TECN	COMMENT
0.432 ± 0.028 OUR FIT					
0.44 ±0.02 ±0.05 1	942 ± 64	PROCARIC	93 B	CLE2	e ⁺ e ⁻ 10.36–10.7 GeV
• • • We do not use t	ne following	data for avera	ges, fits,	limits,	etc. ● ● ●
$0.34 \ \pm 0.04 \ \pm 0.02$	92	¹ ALBRECH ⁻	Г 92р	ARG	e^+e^-pprox 10 GeV
$0.36 \pm 0.04 \pm 0.08$	104	KINOSHIT	A 91	CLEO	$e^+e^- \sim 10.7{ m GeV}$
1 This value is calcul	ated from nu	umbers in Tabl	e1 of A	LBRECH	HT 92P.
$\Gamma(\kappa_L^0 \pi^0) / \Gamma_{\text{total}}$					Г ₃₅ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D	TECN	COMMENT
0.998±0.049±0.048	1116	¹ HE	08	CLEO	e^+e^- at $\psi(3770)$
1 The difference of H	וד 08 ס ⁰ →	$K_{2}^{0}\pi^{0}$ and k	$\sqrt{20} \pi^0 h$	ranching	fractions over the sum is
$0.108 \pm 0.025 \pm 0.0$	024. This is	consistent with	` <i>L'</i> ` D' n U-spin	symmet	rv and the Cabibbo angle.
$\Gamma(K^0 \pi^+ \pi^-)/\Gamma$			•	5	
$V(1/15 (unite 10^{-2}))$	EV/7			т	
• • • We do not use t	he following	data for avera	mes fits	limits	
				04- 4	$rac{1}{2}$
$2.52 \pm 0.20 \pm 0.25$	284 ± 2			94⊦ A 97 N	$ARG e'e \approx I(45)$
$3.2 \pm 0.3 \pm 0.5$ 26 +0.8	20 ±	арге 8 2 ссни		0/ N 81 N	$/1RK2 = \frac{+}{2} = 3.771 CeV$
40 + 12	J∠⊥ 2	8 3 PFRI	771	77 I	$GW = e^{+}e^{-} 3.77 GeV$
1See the footnote of	on the ALBF	RECHT 94F m	easurem	ent of	$\Gamma(K^{-}\pi^{+})/\Gamma_{+++-1}$ for the
method used. ² SCHINDI FR 81 (M	1ARK-2) me:	asures $\sigma(e^+e^-)$	$ \rightarrow \eta/\eta$	3770))	\times branching fraction to be

² SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.30 ± 0.08 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb. ³ PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.46 ± 0.12 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb. е

 $\Gamma(K_{S}^{0}\pi^{+}\pi^{-})/\Gamma(K^{-}\pi^{+})$ Γ_{36}/Γ_{32} DOCUMENT ID TECN COMMENT 0.71±0.05 OUR FIT Error includes scale factor of 1.1. $\gamma \operatorname{Be} \overline{E}_{\gamma} = 220 \operatorname{GeV}$ $0.81 \!\pm\! 0.05 \!\pm\! 0.08$ 856 ± 35 FRABETTI 94J E687 • • We do not use the following data for averages, fits, limits, etc. • • • 80 SPEC $\gamma N \rightarrow D^{*+}$ 0.85 ± 0.40 35 AVERY 77 MRK1 e^+e^- 4.03, 4.41 GeV 1.4 ± 0.5 116 PICCOLO $\Gamma(K_{S}^{0}\rho^{0})/\Gamma(K_{S}^{0}\pi^{+}\pi^{-})$ Γ_{37}/Γ_{36} This is the "fit fraction" from the Dalitz-plot analysis. DOCUMENT ID TECN COMMENT 0.224+0.017 OUR AVERAGE Error includes scale factor of 1.7. ¹ AUBERT 0.210 ± 0.016 08AL BABR Dalitz fit, \approx 487 k evts $0.264 \pm 0.009 \substack{+\ 0.010 \\ -\ 0.026}$ MURAMATSU 02 CLE2 Dalitz fit, 5299 evts We do not use the following data for averages, fits, limits, etc. $0.267 \!\pm\! 0.011 \!+\! 0.009 \!-\! 0.028$ ASNER 04A CLEO See MURAMATSU 02 $0.350 \pm 0.028 \pm 0.067$ FRABETTI 94G E687 Dalitz fit, 597 evts $0.227 \pm 0.032 \pm 0.009$ ALBRECHT 93D ARG Dalitz fit, 440 evts 93 E691 $\gamma \text{Be 90-260 GeV}$ $0.215 \pm 0.051 \pm 0.037$ ANJOS γ Be, \overline{E}_{γ} = 221 GeV $0.20\ \pm 0.06\ \pm 0.03$ FRABETTI 92B E687 MRK3 e^+e^- 3.77 GeV $0.12 \pm 0.01 \pm 0.07$ ADLER 87 ¹The error on this AUBERT 08AL value includes both statistical and systematic uncertaities; the latter dominates. $\Gamma(K^0_S\omega, \omega \to \pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{38}/Γ_{36} This is the "fit fraction" from the Dalitz-plot analysis. VALUE DOCUMENT ID TECN COMMENT 0.0073±0.0020 OUR AVERAGE ¹ AUBERT 0.009 ± 0.010 08AL BABR Dalitz fit, \approx 487 k evts $0.0072 \!\pm\! 0.0018 \!+\! 0.0010 \\ -\! 0.0009$ MURAMATSU 02 CLE2 Dalitz fit, 5299 evts • • • We do not use the following data for averages, fits, limits, etc. • • • $0.0081 \!\pm\! 0.0019 \!+\! 0.0018 \\ -\! 0.0010$ ASNER 04A CLEO See MURAMATSU 02 ¹ The error on this AUBERT 08AL value includes both statistical and systematic uncertaities; the latter dominates. $\Gamma(K_S^0(\pi^+\pi^-)_{S-wave})/\Gamma(K_S^0\pi^+\pi^-)$ $\Gamma_{30} / \Gamma_{36}$ This is the "fit fraction" from the Dalitz-plot analysis. The $(\pi^+\pi^-)_{S-wave}$ includes

what in isobar models are the $f_0(980)$ and $f_0(1370)$; see the following two data blocks.VALUEDOCUMENT IDTECNCOMMENT0.119±0.0261 AUBERT08ALBABRDalitz fit, ≈ 487 k evts

¹ The error on this AUBERT 08AL value includes both statistical and systematic uncertaities; the latter dominates.

$\Gamma(K_{S}^{0}f_{0}(980), f_{0}(980) \rightarrow \pi^{+}\pi^{+}\pi^{-})$		Γ ₄₀ /Γ ₃₆							
VALUE	ot analyses. DOCUMENT ID		TECN	COMMENT					
$0.043 \pm 0.005 \substack{+0.012 \\ -0.006}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts					
ullet $ullet$ $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$									
$0.042\!\pm\!0.005\!+\!0.011\\-0.005$	ASNER	04A	CLEO	See MURAMATSU 02					
$0.068 \!\pm\! 0.016 \!\pm\! 0.018$	FRABETTI	94G	E687	Dalitz fit, 597 evts					
$0.046 \!\pm\! 0.018 \!\pm\! 0.006$	ALBRECHT	93 D	ARG	Dalitz fit, 440 evts					
$\frac{\Gamma(K_{S}^{0}f_{0}(1370), f_{0} \rightarrow \pi^{+}\pi^{-})}{\text{This is the "fit fraction" from }}$	$ \Gamma(K_{S}^{0}\pi^{+}\pi^{-}) $ the Dalitz-plot a <u>DOCUMENT ID</u>	analys	is. <u>TECN</u>	Г ₄₁ /Г ₃₆					
$0.099 \pm 0.011 \substack{+0.028 \\ -0.044}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts					
 • • We do not use the following data for averages, fits, limits, etc. 									
$0.098 \!\pm\! 0.014 \!+\! 0.026 \\ -0.036$	ASNER	04A	CLEO	See MURAMATSU 02					
$0.077 \!\pm\! 0.022 \!\pm\! 0.031$	FRABETTI	94G	E687	Dalitz fit, 597 evts					
$0.082 \pm 0.028 \pm 0.013$	ALBRECHT	93 D	ARG	Dalitz fit, 440 evts					
$\Gamma(K_{S}^{0} f_{2}(1270), f_{2} \to \pi^{+}\pi^{-})/\Gamma(K_{S}^{0}\pi^{+}\pi^{-}) \qquad \Gamma_{42}/\Gamma_{36}$									
VALUE	DOCUMENT ID		<u>TECN</u>	COMMENT					
0.0032+0.0035 OUR AVERAGE									
0.006 ±0.007	¹ AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts					
$0.0027 {\pm} 0.0015 {+} 0.0037 \\ {-} 0.0017$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts					
\bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet									
$0.0036 \!\pm\! 0.0022 \!+\! 0.0032 \\ -\! 0.0019$	ASNER	04A	CLEO	See MURAMATSU 02					
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	FRABETTI ALBRECHT	94G 93D	E687 ARG	Dalitz fit, 597 evts Dalitz fit, 440 evts					
¹ The error on this AUBERT 08A	L value includes	both	statistic	al and systematic uncer-					
$\Gamma(K^*(892)^-\pi^+, K^*(892)^- \rightarrow \text{This is the "fit fraction" from})$	$K_{S}^{0}\pi^{-})/\Gamma(K)$	$\frac{0}{5}\pi^+$	π ⁻)	Γ ₄₃ /Γ ₃₆					
VALUE	DOCUMENT ID		<u>TECN</u>	COMMENT					
0.588 + 0.034 OUR AVERAGE Error includes scale factor of 2.0.									
0.557±0.028	¹ AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts					
$0.657 \!\pm\! 0.013 \! \substack{+0.018 \\ -0.040}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts					
\bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet									
$0.663 \!\pm\! 0.013 \! \substack{+ 0.024 \\ - 0.043}$	ASNER	04A	CLEO	See MURAMATSU 02					
$0.625 \pm 0.036 \pm 0.026$	FRABETTI	94G	E687	Dalitz fit, 597 evts					
$0.718 \pm 0.042 \pm 0.030$ 0.480 + 0.097	ALBRECHT AN IOS	93D 93	ARG F601	Dalitz fit, 440 evts γ Be 90–260 GeV					
$0.56 \pm 0.04 \pm 0.05$	ADLER	87	MRK3	e^+e^- 3.77 GeV					
HTTP://PDG.LBL.GOV	Page 36		Creat	ed: 5/30/2017 17:22					
$^1\,{\rm The}$ error on this AUBERT 08AL value includes both statistical and systematic uncertaities; the latter dominates.

$\Gamma(K_0^*(1430)^-\pi^+, K_0^{*-} \to K_S^0)$	$\pi^{-})/\Gamma(K_{S}^{0}\pi^{+})$	$\pi^{-})$) ic	Г ₄₄ /Г ₃₆
VALUE	DOCUMENT ID	anaiys	<u>TECN</u>	COMMENT
0.095 ^{+0.014} OUR AVERAGE				
0.102±0.015	AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts
$0.073 {\pm} 0.007 {+} 0.031 \\ -0.011$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
\bullet \bullet We do not use the following d	lata for averages	, fits,	limits, e	tc. ● ● ●
$0.072 \pm 0.007 {+0.014 \atop -0.013}$	ASNER	04A	CLEO	See MURAMATSU 02
$\begin{array}{c} 0.109 \pm 0.027 \pm 0.029 \\ 0.129 \pm 0.034 \pm 0.021 \end{array}$	FRABETTI ALBRECHT	94G 93D	E687 ARG	Dalitz fit, 597 evts Dalitz fit, 440 evts
¹ The error on this AUBERT 08A taities; the latter dominates.	L value includes	both	statistic	al and systematic uncer-
$\Gamma(K_2^*(1430)^-\pi^+, K_2^{*-} \to K_S^0)$ This is the "fit fraction" from	π)/Γ(K ⁰ _S π ⁺ the Dalitz-plot a	¯ π ¯) analys	is.	Γ ₄₅ /Γ ₃₆
VALUE	DOCUMENT ID		TECN	COMMENT
0.0120 ^{+0.0070} OUR AVERAGE				
0.022 ±0.016 1	AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts
$\begin{array}{rrr} 0.011 & \pm 0.002 & +0.007 \\ & -0.003 \end{array}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following d	lata for averages	, fits,	limits, e	tc. ● ● ●
$\begin{array}{rrr} 0.011 & \pm 0.002 & +0.005 \\ & -0.003 \end{array}$	ASNER	04A	CLEO	See MURAMATSU 02
¹ The error on this AUBERT 08A taities; the latter dominates.	L value includes	both	statistic	al and systematic uncer-
$\Gamma(K^*(1680)^-\pi^+, K^{*-} \to K^0_S)$ This is the "fit fraction" from	π [—])/Γ(K ⁰ _S π ⁺ the Dalitz-plot a	¯ π ¯) analys	is.	Γ ₄₆ /Γ ₃₆
	DOCUMENT ID		TECN	COMMENT
0.007 ± 0.019 UK AVERAGE 1	AUBERT	08al	BABR	Dalitz fit, $pprox$ 487 k evts
$0.022 \pm 0.004 + 0.018$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following d	lata for averages	, fits,	limits, e	tc. ● ● ●
$0.023 \pm 0.005 \substack{+0.007 \\ -0.014}$	ASNER	04A	CLEO	See MURAMATSU 02

 $^1\,{\rm The}$ error on this AUBERT 08AL value includes both statistical and systematic uncertaities; the latter dominates.

$\Gamma(K^*(892)^+\pi^-, K^*)$ This is the "fit fr suppressed mode.	(892)⁺ → action" fron	$K_{S}^{0}\pi^{+})/Γ(K)$ the Dalitz-plot	<mark>g</mark> π ⁺ t ana	π[—]) lysis. T	Γ₄₇/Γ₃₆ his is a doubly Cabibbo-
VALUE (units 10^{-3})		DOCUMENT ID		TECN	COMMENT
4.0+2.0 4.0-12 OUR AVERAGI					
4.6±2.3	1	AUBERT	08al	BABR	Dalitz fit, $pprox$ 487 k evts
$3.4 \pm 1.3^{+4.1}$		MURAMATSU	02	CLE2	Dalitz fit. 5299 evts
 • • We do not use the 	e following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$3.4 \pm 1.3 {+3.6 \atop -0.5}$	C	ASNER	04A	CLEO	See MURAMATSU 02
¹ The error on this AU taities; the latter dor	JBERT 08AI ninates.	value includes	both	statistic	al and systematic uncer-
$\Gamma(K_0^*(1430)^+\pi^-, K_0^*)$ This is the "fit fr suppressed mode.	$f^+ \rightarrow K^0_S$ from	π ⁺)/Γ(K ⁰ _S π ⁺ n the Dalitz-plot	" π") t ana	lysis. T	Γ₄₈/Γ₃₆ his is a doubly Cabibbo-
VALUE	<u>CL%</u>	DOCUMENT ID		<u>TECN</u>	<u>COMMENT</u>
<5 × 10	95	AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts
$\Gamma(K_2^*(1430)^+\pi^-, K_2^*)$ This is the "fit fr suppressed mode.	$F_2^+ \rightarrow K_S^0$	π ⁺)/Γ(K ⁰ _S π ⁺ n the Dalitz-plot	" π") t ana	lysis. T	Γ 49/Γ₃₆ his is a doubly Cabibbo-
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
$<1.2 \times 10^{-5}$	95	AUBERT	08AL	BABR	Dalitz fit, $pprox$ 487 k evts
$\Gamma(\mathcal{K}_{S}^{0}\pi^{+}\pi^{-}$ nonreso This is the "fit fra ALBRECHT 93D (for a nonresonant	nant)/Γ(k oction" from quoted in ma component.	$({}^{0}_{S}\pi^{+}\pi^{-})$ the Dalitz-plot any of the earlier	analy subm	vsis. Nei odes of <i>i</i>	Γ_{50}/Γ_{36} ther FRABETTI 94G nor $\kappa_S^0 \pi^+ \pi^-$) sees evidence
VALUE		DOCUMENT ID		TECN	COMMENT
$0.009 \pm 0.004 + 0.020 - 0.004$	<u></u>	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • We do not use the	e tollowing d	ata for averages	, tits,	limits, e	tc. ● ● ●
$0.007 \pm 0.007 {+0.021 \atop -0.006}$		ASNER	04A	CLEO	See MURAMATSU 02
$0.263\!\pm\!0.024\!\pm\!0.041$		ANJOS	93	E691	$\gamma \operatorname{Be} 90-260 \text{ GeV}$
$0.26 \pm 0.08 \pm 0.05$		FRABETTI	92B	E687	γ Be, $E_{\gamma} = 221$ GeV
$0.33 \pm 0.05 \pm 0.10$		ADLER	87	MRK3	<i>e</i> + <i>e</i> - 3.77 GeV
$\Gamma(K^{-}\pi^{+}\pi^{0})/\Gamma_{\text{total}}$					Г ₅₁ /Г
VALUE (units 10 ⁻²)	EVTS	DOCUMENT	ID	TEC	N COMMENT
• • • We do not use the	e following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$14.57 \pm 0.12 \pm 0.38$	101 150			07 CLE	See BONVICINI 14
14.9 $\pm 0.3 \pm 0.5$ 12.2 $\pm 1.2 \pm 1.2$	$19k \pm 150$			05 CLE	10 See DOBBS 07
$13.5 \pm 1.2 \pm 1.3$ 11 7 +4 3	951 37	² SCHINDLE	R	00CIVIR 81 MR	K3 e^+e^- 3.77 GeV
1 DOBBS 07 and HE 0	5 use single-	and double-tag	ged e	vents in	an overall fit. DOBBS 07
supersedes HE 05. 2 SCHINDLER 81 (MA 0.68 \pm 0.23 nb. We	RK-2) meas use the MAI	sures $\sigma(e^+e^-$ – RK-3 (ADLER 8	→ ψ(3 8C) v	3770)) × alue of <i>o</i>	to branching fraction to be $t=5.8\pm0.5\pm0.6$ nb.
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$\Gamma(K^*(892)^-\pi^+, K^*(892)^- \rightarrow$	$K^{-}\pi^{0})/\Gamma(K)$	π^+	π ⁰)	Г ₅₄ /Г ₅₁
This is the "fit fraction" from VALUE	the Dalitz-plot a DOCUMENT ID	analys	is. TECN	COMMENT
$0.160^{+0.025}_{-0.013}$ OUR AVERAGE				
$0.161 \pm 0.007 \stackrel{+}{-} \stackrel{0.027}{-} 0.011$	КОРР	01	CLE2	Dalitz fit, \approx 7,000 evts
$0.148 \pm 0.028 \pm 0.049$	FRABETTI	9 4G	E687	Dalitz fit, 530 evts
\bullet \bullet We do not use the following d	ata for averages	, fits,	limits, e	tc. • • •
$0.084\!\pm\!0.011\!\pm\!0.012$	ANJOS	93	E691	$\gamma{ m Be}$ 90–260 GeV
$0.12 \ \pm 0.02 \ \pm 0.03$	ADLER	87	MRK3	e^+e^- 3.77 GeV
$\Gamma(\overline{K}^*(892)^0\pi^0,\overline{K}^*(892)^0\rightarrow k$	$(\pi^+)/\Gamma(K^-)$	π ⁺ 1	τ ⁰)	Г ₅₅ /Г ₅₁
This is the "fit fraction" from	the Dalitz-plot a	analys	is.	
	DOCUMENT ID		TECN	COMMENT
$0.127 \pm 0.009 \pm 0.016$	KOPP	01	CLE2	Dalitz fit. ≈ 7.000 evts
$0.165 \pm 0.031 \pm 0.015$	FRABETTI	9 4G	E687	Dalitz fit, 530 evts
\bullet \bullet \bullet We do not use the following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$0.142\!\pm\!0.018\!\pm\!0.024$	ANJOS	93	E691	$\gamma{ m Be}$ 90–260 GeV
$0.13 \ \pm 0.02 \ \pm 0.03$	ADLER	87	MRK3	e^+e^- 3.77 GeV
$\Gamma(K_0^*(1430)^-\pi^+, K_0^{*-} \to K^-$ This is the "fit fraction" from	π^{0})/ $\Gamma(K^{-}\pi^{+})$ the Dalitz-plot a	= π⁰) analys	is.	Г <u>56</u> /Г <u>51</u>
$0.033 \pm 0.006 \pm 0.014$	KOPP	01	$\frac{1100}{1100}$	Dalitz fit $\approx 7.000 \text{ evts}$
		•	0222	
$\Gamma(K_0^*(1430)^0\pi^0, K_0^{*0} \to K^-\pi)$	$^{+})/\Gamma(K^{-}\pi^{+})$	π^{0})		Γ ₅₇ /Γ ₅₁
This is the "fit fraction" from <u>VALUE</u>	the Dalitz-plot a <u>DOCUMENT ID</u>	analys	is. <u>TECN</u>	COMMENT
$0.041 {\pm} 0.006 {+} 0.032 \\ -0.009$	КОРР	01	CLE2	Dalitz fit, $\approx~$ 7,000 evts
$\Gamma(K^*(1680)^-\pi^+, K^{*-} \to K^-)$	$\pi^{0})/\Gamma(K^{-}\pi^{+})$	⁻ π ⁰)		Г ₅₈ /Г ₅₁
This is the "fit fraction" from	the Dalitz-plot a	analys	SIS. TECN	COMMENT
$0.013 \pm 0.003 \pm 0.004$	KOPP	01	CLE2	Dalitz fit. ≈ 7.000 evts
$\Gamma(\mu - + 0) = 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0$	(- + 0)	01	0222	
I (K $\pi' \pi^{\circ}$ nonresonant)/I (K This is the "fit fraction" from	$(\pi'\pi')$	nalve	ic	<u>5</u> 9/ <u>5</u> 1
VALUE EVTS	DOCUMENT ID	anaiys	TECN	COMMENT
0.080 ^{+0.040} OUR AVERAGE				
$0.075 \pm 0.009 \stackrel{+}{-} \stackrel{0.056}{-} 0.011$	КОРР	01	CLE2	Dalitz fit, \approx 7,000 evts
$0.101 \pm 0.033 \pm 0.040$	FRABETTI	9 4G	E687	Dalitz fit, 530 evts
\bullet \bullet We do not use the following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$0.036 \!\pm\! 0.004 \!\pm\! 0.018$	ANJOS	93	E691	$\gamma\mathrm{Be}$ 90–260 GeV
$0.09 \ \pm 0.02 \ \pm 0.04$	ADLER	87	MRK3	e^+e^- 3.77 GeV
0.51 ±0.22 21	SUMMERS	84	E691	Photoproduction

$\Gamma(K_S^0 2\pi^0)/\Gamma_{total}$						Г ₆₀ /Г
VALUE (units 10^{-3})	EVTS	DOCUMEN	T ID	TE	ECN COMMENT	
9.1 ±1.1 OUR AVE	RAGE E	rror includes sca	ale fac	tor of 2.	2.	
$10.58\!\pm\!0.38\!\pm\!0.73$	1259	LOWREY	/	11 C	$EO e^+e^- \approx$	3.77 GeV
$8.34 \!\pm\! 0.45 \!\pm\! 0.42$		ASNER		08 CI		
$\Gamma(K^0_S(2\pi^0)$ -S-wave	е)/Г(<i>К</i> _S	2π ⁰)				Γ ₆₁ /Γ ₆₀
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
28.9±6.3±3.1		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
$\Gamma(\overline{K}^*(892)^0\pi^0, \overline{K}^*)$	$^{0} \rightarrow K_{S}^{0}$	$\pi^0)/\Gamma(K^0_S\pi^0)$)			Г ₆₂ /Г ₃₄
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
$65.6 \pm 5.3 \pm 2.5$		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
• • • We do not use t	he followir	ng data for aver	ages, ⁻	fits, limit	s, etc. ● ● ●	
$55 \ {+13\atop -10} \ \pm 7$		PROCARIO	93 B	CLE2	Dalitz plot fit,	122 evts
Γ(Κ *(1430) ⁰ π ⁰ , Κ	$\overline{K}^{*0} \rightarrow K_{0}^{*}$	$(\kappa_{S}^{0}\pi^{0})/\Gamma(\kappa_{S}^{0}2)$	π ⁰)			Г ₆₃ /Г ₆₀
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
$0.49 {\pm} 0.45 {\pm} 2.51$		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
$\Gamma(\overline{K}^*(1680)^0\pi^0, \overline{K})$	$K^{*0} \rightarrow K^{0}$	$(\kappa_{S}^{0}\pi^{0})/\Gamma(\kappa_{S}^{0}2)$	π ⁰)			Г ₆₄ /Г ₆₀
VALUE (%)		DOCUMENT ID	*	TECN	COMMENT	
$11.2 \pm 2.7 \pm 2.5$		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
$\Gamma(K_{5}^{0}f_{2}(1270), f_{2})$	$\rightarrow 2\pi^0)/$	$\Gamma(K_S^0 2\pi^0)$				Г ₆₅ /Г ₆₀
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
$2.48 {\pm} 0.91 {\pm} 0.78$		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
$\Gamma(2K_S^0, \text{ one } K_S^0 \rightarrow$	2π ⁰)/Γ($K_S^0 2\pi^0$				Г ₆₆ /Г ₆₀
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
3.46±0.92±0.66		LOWREY	11	CLEO	Dalitz analysis,	1259 evts
$\Gamma(K_S^0 2\pi^0 \text{ nonreson})$	ant)/Г(/	$K_S^0 \pi^0$				Г ₆₇ /Г ₃₄
VALUE		<u>DOCUMENT</u>	ID	<u> </u>	<u>N COMMENT</u>	
• • • vve do not use t	ne tollowir	ng data for aver	ages, '	rits, limit	s, etc. ● ● ●	
$0.37 \pm 0.08 \pm 0.04$		PROCARIO) g	3B CLE	2 Dalitz plot f	it, 122 evts
$\Gamma(K^{-}2\pi^{+}\pi^{-})/\Gamma_{to}$	tal					Г ₆₈ /Г
VALUE (units 10^{-2})	EVTS	DOCUMENT	ID	TEC	N <u>COMMENT</u>	
• • • We do not use t	he followir	ng data for aver	ages, i	fits, limit	s, etc. ● ● ●	
$8.30\!\pm\!0.07\!\pm\!0.20$		¹ DOBBS	C	7 CLE	O See BONVI	CINI 14
$8.3 \ \pm 0.2 \ \pm 0.3$	15k	¹ HE	C	5 CLE	O See DOBBS	07
$7.9\ \pm 1.5\ \pm 0.9$		² ALBRECH	T g	94 ARG	G $e^+e^-pprox \gamma$	(45)
$6.80\!\pm\!0.27\!\pm\!0.57$	1.4k	³ ALBRECH ⁻	T g	4F AR	G $e^+e^-pprox \gamma$	(4S)
$9.1 \ \pm 0.8 \ \pm 0.8$	992	ADLER	8	88C MR	K3 e^+e^- 3.77	GeV
11.7 ± 2.5	185	⁴ SCHINDLE	R 8	81 MR	K2 e^+e^- 3.77	1 GeV
6.2 ±1.9	44	⁵ PERUZZI	7	7 LGV	V e ⁺ e ⁻ 3.77	GeV
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- ¹ DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.
- ²ALBRECHT 94 uses D^0 mesons from $\overline{B}{}^0 \rightarrow D^{*+}\ell^- \overline{\nu}_{\ell}$ decays. This is a different set of events than used by ALBRECHT 94F.
- ³See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^-\pi^+)/\Gamma_{\text{total}}$ for the method used.
- ⁴ SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.68 ± 0.11 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.
- ⁵ PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.36 ± 0.10 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

Г(К	$(-2\pi^+)$	$\pi^{-})/\Gamma(K$	$(-\pi^{+})$				Г ₆₈ /Г ₃₂
VALU	Έ		EVTS	DOCUMENT ID		TECN	COMMENT
2.08	3 ± 0.031	LOUR FIT					
2.08	7±0.032	2 OUR AVE	RAGE				
2.10	6 ± 0.013	8 ± 0.032		BONVICINI	14	CLEO	All CLEO-c runs
1.94	± 0.07	$^{+0.09}_{-0.11}$		JUN	00	SELX	Σ^- nucleus, 600 GeV
1.7	± 0.2	± 0.2	1745	ANJOS	92C	E691	$\gamma{ m Be}$ 90–260 GeV
1.90	± 0.25	± 0.20	337	ALVAREZ	91 B	NA14	Photoproduction
2.12	± 0.16	± 0.09		BORTOLETT	D88	CLEO	e^+e^- 10.55 GeV
2.17	± 0.28	± 0.23		ALBRECHT	85F	ARG	e^+e^- 10 GeV
• •	• We do	o not use th	e following d	ata for averages	, fits,	limits, e	etc. • • •
2.0	± 0.9		48	BAILEY	86	ACCM	π^- Be fixed target
2.0	± 1.0		10	BAILEY	83 B	SPEC	$\pi^- \operatorname{Be} \rightarrow D^0$
2.2	± 0.8		214	PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV

$\Gamma(K^-\pi^+ ho^0 ext{total})/\Gamma(K^-2\pi^+\pi^-)$

 Γ_{69}/Γ_{68}

This includes $K^- a_1(1260)^+$, $\overline{K^*}(892)^0 \rho^0$, etc. The next entry gives the specifically 3-body fraction. We rely on the MARK III and E691 full amplitude analyses of the $K^- \pi^+ \pi^+ \pi^-$ channel for values of the resonant substructure.

VALUE	DOCUMENT ID		TECN	COMMENT
0.835 ± 0.035 OUR AVERAG	E			
$0.80\ \pm 0.03\ \pm 0.05$	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
$0.855 \!\pm\! 0.032 \!\pm\! 0.030$	COFFMAN	92 B	MRK3	$1281 \pm 45 \ K^- 2\pi^+ \pi^-$ evts
\bullet \bullet \bullet We do not use the foll	owing data for aver	ages,	fits, limi	ts, etc. ● ● ●
$0.98\ \pm 0.12\ \pm 0.10$	ALVAREZ	91 B	NA14	Photoproduction
$\Gamma(K^-\pi^+ ho^0$ 3-body)/ $\Gamma(I$	$\kappa^- 2\pi^+\pi^-)$			Г ₇₀ /Г ₆₈
We rely on the MARI	KIII and F601 full	ampli	ituda an	alwass of the $K^- = + = + = -$
channel for values of the	he resonant substru	cture.	ituue aii	aryses of the $K = \pi + \pi + \pi$
channel for values of the VALUE	he resonant substru	cture.	TECN	<u>COMMENT</u>
channel for values of the <u>VALUE</u> 0.063±0.028 OUR AVERAG	he resonant substru <u>DOCUMENT ID</u>	cture.	<u>TECN</u>	<u>COMMENT</u>
channel for values of the WART channel for values of the VALUE <u>EVTS</u> 0.063 ± 0.028 OUR AVERAG $0.05 \pm 0.03 \pm 0.02$	he resonant substru <u>DOCUMENT ID</u> ANJOS	cture. 92C	<u>TECN</u> E691	$\frac{COMMENT}{1745 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}}$
channel for values of the WART channel for values of the WART \underline{VALUE} \underline{EVTS} 0.063 ± 0.028 OUR AVERAG $0.05 \pm 0.03 \pm 0.02$ $0.084 \pm 0.022 \pm 0.04$	E ANJOS COFFMAN	92C 92B	E691 MRK3	$\frac{COMMENT}{1745 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}}$ $1281 \pm 45 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}$
channel for values of the WARK channel for values of the VALUE <u>EVTS</u> 0.063 ± 0.028 OUR AVERAG $0.05 \pm 0.03 \pm 0.02$ $0.084 \pm 0.022 \pm 0.04$ • • • We do not use the foll	E ANJOS COFFMAN owing data for aver	92C 92B 92s	<u>TECN</u> E691 MRK3 fits, limi	$\frac{COMMENT}{1745 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}}$ $1281 \pm 45 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}$ $1281 \pm 6 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}$ $1281 \pm 6 \ K^{-} 2\pi^{+} \pi^{-} \text{ evts}$

0.85 $^{+0.11}_{-0.22}$ 180 PICCOLO 77 MRK1 e^+e^- 4.03, 4.41 GeV ¹ This value is for ρ^0 ($K^-\pi^+$)-nonresonant. ALVAREZ 91B cannot determine what frac-

tion of this is $K^{-}a_{1}(1260)^{+}$.

$\Gamma(\overline{K}^{*}(892)^{0}\rho^{0})/\Gamma(K^{-}2\pi^{+}\pi^{-})$ Γ_{102}/Γ_{68} Unseen decay modes of the $\overline{K}^*(892)^0$ are included. We rely on the MARK III and E691 full amplitude analyses of the $K^-\pi^+\pi^+\pi^-$ channel for values of the resonant substructure. VALUE <u>EVTS</u> DOCUMENT ID TECN COMMENT 1745 $K^- 2\pi^+ \pi^-$ evts $0.195 \pm 0.03 \pm 0.03$ ANJOS 92C E691 • • We do not use the following data for averages, fits, limits, etc. • $0.34 \pm 0.09 \pm 0.09$ ALVAREZ 91B NA14 Photoproduction 0.75 ± 0.3 BAILEY 83B SPEC $\pi Be \rightarrow D^0$ 5 $0.15 \begin{array}{c} +0.16 \\ -0.15 \end{array}$ MRK1 e^+e^- 4.03, 4.41 GeV 77 20 PICCOLO $\Gamma(\overline{K}^*(892)^0 \rho^0 \text{ transverse}) / \Gamma(K^- 2\pi^+ \pi^-)$ Γ_{103}/Γ_{68} Unseen decay modes of the $\overline{K}^*(892)^0$ are included. DOCUMENT ID TECN COMMENT VALUE $0.213 \pm 0.024 \pm 0.075$ COFFMAN 92B MRK3 1281 \pm 45 $K^- 2\pi^+ \pi^-$ evts $\Gamma(\overline{K}^*(892)^0 \rho^0 S$ -wave)/ $\Gamma(K^- 2\pi^+ \pi^-)$ Γ_{104}/Γ_{68} Unseen decay modes of the $\overline{K}^*(892)^0$ are included. VALUE DOCUMENT ID COMMENT TECN 1745 $K^- 2\pi^+ \pi^-$ evts $0.375 \pm 0.045 \pm 0.06$ ANJOS 92C E691 $\Gamma(\overline{K}^*(892)^0 \rho^0 S$ -wave long.)/ Γ_{total} Γ_{105}/Γ Unseen decay modes of the $\overline{K}^*(892)^0$ are included. CL% DOCUMENT ID VALUE TECN COMMENT < 0.003 90 92B MRK3 1281 \pm 45 $K^{-}2\pi^{+}\pi^{-}$ evts COFFMAN $\Gamma(\overline{K}^*(892)^0 \rho^0 P$ -wave)/ Γ_{total} Γ_{106}/Γ Unseen decay modes of the $\overline{K}^*(892)^0$ are included. VALUE CL% DOCUMENT ID TECN COMMENT < 0.003 COFFMAN 92B MRK3 1.3k $K^- 2\pi^+ \pi^-$ evts 90 • • We do not use the following data for averages, fits, limits, etc. • 1745 $K^{-}2\pi^{+}\pi^{-}$ evts < 0.009 90 ANJOS 92C E691 $\Gamma(\overline{K}^*(892)^0 \rho^0 D$ -wave)/ $\Gamma(K^- 2\pi^+ \pi^-)$ Γ_{107}/Γ_{68} Unseen decay modes of the $\overline{K}^*(892)^0$ are included. COMMENT VALUE DOCUMENT ID TECN 1745 $K^{-}2\pi^{+}\pi^{-}$ evts $0.255 \pm 0.045 \pm 0.06$ 92C E691 ANJOS $\Gamma(K^-\pi^+f_0(980))/\Gamma_{total}$ Γ_{108}/Γ CL% DOCUMENT ID TECN COMMENT • • We do not use the following data for averages, fits, limits, etc. • • • 92C E691 1745 $K^{-}2\pi^{+}\pi^{-}$ evts < 0.011 ANJOS 90 $\Gamma(\overline{K}^*(892)^0 f_0(980))/\Gamma_{\text{total}}$ Γ_{109}/Γ DOCUMENT ID VALUE CL% TECN COMMENT • • • We do not use the following data for averages, fits, limits, etc. • 1745 $K^- 2\pi^+ \pi^-$ evts ANJOS 92C E691 < 0.007 90 HTTP://PDG.LBL.GOV Page 43 Created: 5/30/2017 17:22

$\Gamma(K^{-}a_{1}(1260)^{+})$	[⊢])/Γ(<i>Κ</i> [−] 2	$\pi^+\pi^-)$			Г ₉₈ /Г ₆₈
Unseen deca	y modes of t	the $a_1(1260)^+$ a	are ind	cluded, a	ssuming that the $a_1(1260)^+$
decays entire	ely to $ ho\pi$ [or	at least to $(\pi\pi)$	I=1 7	τ].	
		DOCUMENT ID		TECN	COMMENT
0.97 ± 0.14 UUK			0.00	F601	$1745 K^{-} 2^{+} -^{-} 2^{+} + 2^{-}$
$0.94 \pm 0.13 \pm 0.20$	J	ANJUS	920	E091	$1745 \text{ K} = 2\pi + \pi \text{ evts}$
$0.984 \pm 0.048 \pm 0.10$	0	COFFINIAN	92B	WIRK3	1281 ± 45 K 2π ' π evts
Γ(<i>K</i> ⁻ <i>a</i> ₂ (1320) ⁻	⁺)/Γ _{total}	$h_{0,2}(1320)^{+}$	ro incl	udod	٦/وو٦
				TECN	COMMENT
	00		020	E601	$1745 K^{-}2\pi^{+}\pi^{-}$ outc
• • • We do not u	90 Ise the follow	ving data for ave	92C	fits limi	$1745 R 2\pi^{-1}\pi^{-1}$ evis
<0.006	90	COFFMAN	92B	MRK3	$1281 \pm 45 \ K^- 2\pi^+ \pi^-$ evts
Γ(<i>K</i> ₁ (1270) ⁻ π ⁺	[⊦])/Г(<i>К</i> [−] 2	$\pi^+\pi^-)$			Γ ₁₁₀ /Γ ₆₈
Unseen deca	y modes of t	he ${\it K}_1(1270)^-$ a	are inc	luded. T	he MARK3 and E691 experi-
ments disagr	ee consideral	oly here.			
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
0.194±0.056±0 • • • We do not u	. 088 Ise the follow	COFFMAN ing data for ave	92B rages,	MRK3 fits, limi	$1281 \pm 45 \ K^- 2\pi^+ \pi^- \text{ evts}$ its, etc. • • •
<0.013	90	ANJOS	92C	E691	1745 $K^{-}2\pi^{+}\pi^{-}$ evts
$\Gamma(K_1(1400)^-\pi^-)$	「)/「 _{total}				Г ₁₁₁ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<0.012	90	COFFMAN	92 B	MRK3	$1281 \pm 45 \ K^{-} 2\pi^{+} \pi^{-}$ evts
Γ(<i>K</i> *(1410) ⁻ π ⁻	+)/Γ _{total}				Г ₁₁₂ /Г
VALUE	<u>CL%_</u>	DOCUMENT ID		TECN	COMMENT
• • • We do not u	ise the follow	ing data for ave	rages,	fits, limi	ts, etc. ● ● ●
<0.012	90	COFFMAN	92 B	MRK3	$1281 \pm 45 \ K^- 2\pi^+ \pi^-$ evts
Γ(K *(892) ⁰ π+ This includes Unseen deca	π^- total)/ $[$ s $\overline{K}^*(892)^0 ho$ y modes of t	$\mathbf{C}(\mathbf{K}^{-}2\pi^{+}\pi^{-})^{0}$, <i>etc.</i> The next he $\overline{K}^{*}(892)^{0}$ are) t entry e inclu	gives th	Γ₁₀₀/Γ₆₈ e specifically 3-body fraction.
VALUE		DOCUMENT	ID	<u></u>	<u>COMMENT</u>
$0.30 \pm 0.06 \pm 0.03$		ANJOS		92C E69	91 1745 $K^- 2\pi^+ \pi^-$ evts
Γ(<i>K</i>*(892)⁰π⁺ Unseen deca	π[—] 3-body) y modes of t	/ Γ(Κ⁻2π⁺π he <u>K</u> *(892) ⁰ are	-) e inclu	ded.	Γ ₁₀₁ /Γ ₆₈
		DOCUMENT ID		TECN	COMMENT
$0.16 \pm 0.03 \pm 0.04$			020	E601	1745 $K^{-}2\pi^{+}\pi^{-}$ outs
$0.210 \pm 0.027 \pm 0.00$	+5 6	COFFMAN	92C 92B	MRK3	$1281 \pm 45 \ K^{-} 2\pi^{+} \pi^{-}$ evts
$\Gamma(K^-2\pi^+\pi^-)$	onresonant) /Γ(Κ2π⁺π	r [—])	TECN	Г76/Г68
0.233±0.032 OUR	AVERAGE	<u> </u>			
0.23 ±0.02 ±0.03	3	ANJOS	92C	E691	1745 $K^{-}2\pi^{+}\pi^{-}$ evts
$0.242 \pm 0.025 \pm 0.00$	6	COFFMAN	92 B	MRK3	$1281 \pm 45 \ K^- 2\pi^+ \pi^-$ evts
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 $\Gamma(K_{c}^{0}\pi^{+}\pi^{-}\pi^{0})/\Gamma_{total}$ Γ₇₇/Γ VALUE (units 10^{-2}) DOCUMENT ID TECN COMMENT 5.1±0.6 OUR FIT 92B MRK3 e^+e^- 3.77 GeV $5.2 \pm 1.1 \pm 1.2$ 140 COFFMAN • • • We do not use the following data for averages, fits, limits, etc. $6.7^{+1.6}_{-1.7}$ ¹ BARLAG 92C ACCM π^- Cu 230 GeV 1 BARLAG 92C computes the branching fraction using topological normalization. $\Gamma(K^{0}_{S}\pi^{+}\pi^{-}\pi^{0})/\Gamma(K^{0}_{S}\pi^{+}\pi^{-})$ Γ_{77}/Γ_{36} Branching fractions for submodes of this mode with narrow resonances (the η , ω , η') are fairly well determined (see below). COFFMAN 92B gives fractions of K^* and ρ submodes, but with only 140 \pm 28 events above background could not determine them with much accuracy. We omit those measurements here; they are in our 2008 Review (Physics Letters **B667** 1 (2008)). VALUE **FVTS** DOCUMENT ID TECN COMMENT 1.85 ± 0.20 OUR FIT 1.86 ± 0.23 OUR AVERAGE ¹ ALBRECHT $e^+\,e^-pprox\,$ 10 GeV $1.80 \pm 0.20 \pm 0.21$ 190 92P ARG ANJOS $2.8 \pm 0.8 \pm 0.8$ 46 92C E691 γ Be 90-260 GeV $e^+e^- \sim 10.7~{
m GeV}$ $1.85 \!\pm\! 0.26 \!\pm\! 0.30$ 158 **KINOSHITA** 91 CLEO ¹ This value is calculated from numbers in Table 1 of ALBRECHT 92P. $\Gamma(K^0_{\varsigma}\eta)/\Gamma_{\text{total}}$ Γ_{95}/Γ Unseen decay modes of the η are included. VALUE (units 10^{-3}) DOCUMENT ID TECN COMMENT \bullet \bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet $4.42\!\pm\!0.15\!\pm\!0.28$ ASNER 80 CLEO See MENDEZ 10 $\Gamma(K^0_{\varsigma}\eta)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ $\Gamma_{95}/(\Gamma_{32}+\Gamma_{240})$ Unseen decay modes of the η are included. VALUE (units 10^{-2}) DOCUMENT ID TECN COMMENT EVTS 12.3±0.8 OUR FIT CLEO e^+e^- at 3774 MeV $12.3 \pm 0.3 \pm 0.7$ 2864 ± 65 MENDEZ 10 $\Gamma(K_S^0\eta)/\Gamma(K_S^0\pi^0)$ $\Gamma_{05} / \Gamma_{34}$ Unseen decay modes of the η are included. DOCUMENT ID VALUE EVTS TECN • • We do not use the following data for averages, fits, limits, etc. • • • 225 ± 30 $0.32 \!\pm\! 0.04 \!\pm\! 0.03$ PROCARIO 93B CLE2 $\eta \rightarrow \gamma \gamma$ $\Gamma(K_{S}^{0}\eta)/\Gamma(K_{S}^{0}\pi^{+}\pi^{-})$ Γ_{95}/Γ_{36} Unseen decay modes of the η are included. **EVTS** DOCUMENT ID VALUE TECN COMMENT • • We do not use the following data for averages, fits, limits, etc. • 93B CLE2 $n \rightarrow \pi^+ \pi^- \pi^0$ PROCARIO $0.14 \pm 0.02 \pm 0.02$ 80 ± 12

 $\Gamma(K_{c}^{0}\omega)/\Gamma_{total}$ Γ_{96}/Γ Unseen decay modes of the ω are included. DOCUMENT ID TECN COMMENT VALUE (%) 1.11±0.06 OUR FIT CLEO $e^+e^- \rightarrow D^0 \overline{D}^0$. 3.77 GeV $1.12 \pm 0.04 \pm 0.05$ ASNER 08 $\Gamma(K_{\epsilon}^{0}\omega)/\Gamma(K^{-}\pi^{+})$ $\Gamma_{96} / \Gamma_{32}$ Unseen decay modes of the ω are included. VALUE DOCUMENT ID TECN COMMENT • • • We do not use the following data for averages, fits, limits, etc. • • • e^+e^- 10 GeV $0.50 \!\pm\! 0.18 \!\pm\! 0.10$ ALBRECHT 89D ARG $\Gamma(K_S^0\omega)/\Gamma(K_S^0\pi^+\pi^-)$ $\Gamma_{96} / \Gamma_{36}$ Unseen decay modes of the ω are included. VALUE EVTS DOCUMENT ID TECN COMMENT **0.402±0.033 OUR FIT** Error includes scale factor of 1.1. 0.33 \pm 0.09 OUR AVERAGE Error includes scale factor of 1.1. ¹ ALBRECHT 92P ARG $e^+e^- \approx 10 \text{ GeV}$ $0.29\ \pm 0.08\ \pm 0.05$ 16 $0.54 \pm 0.14 \pm 0.16$ 40 **KINOSHITA** CLEO $e^+e^- \sim 10.7$ GeV 91 ¹ This value is calculated from numbers in Table 1 of ALBRECHT 92P. $\Gamma(K_{S}^{0}\omega)/\Gamma(K_{S}^{0}\pi^{+}\pi^{-}\pi^{0})$ Γ_{96}/Γ_{77} Unseen decay modes of the ω are included. VALUE DOCUMENT ID TECN COMMENT 0.217 ±0.026 OUR FIT 92B MRK3 1281 \pm 45 $K^- 2\pi^+ \pi^-$ evts $0.220 \pm 0.048 \pm 0.0116$ COFFMAN $\Gamma(K^{0}_{\varsigma}\eta'(958))/[\Gamma(K^{-}\pi^{+}) + \Gamma(K^{+}\pi^{-})]$ $\Gamma_{97}/(\Gamma_{32}+\Gamma_{240})$ Unseen decay modes of the $\eta'(958)$ are included. VALUE (units 10^{-2}) EVTS DOCUMENT ID TECN COMMENT 23.9±1.3 OUR FIT 10 CLEO e^+e^- at 3774 MeV $24.3 \pm 0.8 \pm 1.1$ 1321 ± 42 MENDEZ $\Gamma(K_{\varsigma}^{0}\eta'(958))/\Gamma(K_{\varsigma}^{0}\pi^{+}\pi^{-})$ Γ_{07}/Γ_{36} Unseen decay modes of the $\eta'(958)$ are included. VALUE DOCUMENT ID TECN COMMENT 0.340 ± 0.025 OUR FIT 0.32 \pm 0.04 OUR AVERAGE 93B CLE2 $\eta' \rightarrow \eta \pi^+ \pi^-, \rho^0 \gamma$ $0.31 \ \pm 0.02 \ \pm 0.04$ 594 PROCARIO ¹ ALBRECHT 92P ARG $e^+e^- \approx 10 \text{ GeV}$ $0.37\ \pm 0.13\ \pm 0.06$ 18 ¹ This value is calculated from numbers in Table 1 of ALBRECHT 92P. $\Gamma(K^{-}\pi^{+}2\pi^{0})/\Gamma_{\text{total}}$ Γ_{80}/Γ DOCUMENT ID TECN COMMENT VALUE EVTS • • • We do not use the following data for averages, fits, limits, etc. • • • ¹ BARLAG 92C ACCM π^- Cu 230 GeV 0.177 ± 0.029 ² ADLER 88C MRK3 e^+e^- 3.77 GeV $0.149 \!\pm\! 0.037 \!\pm\! 0.030$ 24 $0.209^{+0.074}_{-0.043}\pm 0.012$ ¹ AGUILAR-... 87F HYBR πp , pp 360, 400 GeV

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¹AGUILAR-BENITEZ 87F and BARLAG 92C compute the branching fraction using topological normalization. They do not distinguish the presence of a third π^0 , and thus are not included in the average.

²ADLER 88C uses an absolute normalization method finding this decay channel opposite a detected $\overline{D}^0 \rightarrow K^+ \pi^-$ in pure $D\overline{D}$ events.

$\Gamma(K^-2\pi^+\pi^-\pi^0)/$	′Γ(<i>K</i> ⁻ π ⁺)				Г ₈₁ /Г ₃₂
VALUE	EVTS	, <u>DOCUMENT ID</u>		TECN	COMMENT	
1.09±0.10 OUR FIT		1			1	
$0.98 \pm 0.11 \pm 0.11$	225	¹ ALBRECHT	92P	ARG	$e^+e^- \approx 1$	0 GeV
¹ This value is calcu	lated from I	numbers in Table	1 of A	LBRECH	HT 9 2P.	
$\Gamma(K^{-}2\pi^{+}\pi^{-}\pi^{0})/$	′Γ(<i>K2π</i> -	$(+\pi^{-})$				Г <u>я</u> 1/Г68
VALUE	EVTS	DOCUMENT ID		TECN	<u>COMMENT</u>	01/ 00
0.52±0.05 OUR FIT 0.56±0.07 OUR AVE	RAGE					
$0.55 \pm 0.07 \substack{+0.12\\0.00}$	167	KINOSHITA	91	CLEO	$e^+e^-\sim 10$.7 GeV
-0.09 $0.57 \pm 0.06 \pm 0.05$	180	ANJOS	90 D	E691	Photoprodu	ction
	0) - (
$\Gamma(K^*(892)^{\circ}\pi^+\pi^-)$	$\pi^{o})/\Gamma(K)$	$(-2\pi^{+}\pi^{-}\pi^{0})$				Г ₁₁₃ /Г ₈₁
Unseen decay m	odes of the	$K^*(892)^0$ are inc	cluded.	TECH	601 (1 / E / T	
VALUE 0 45 ± 0 15 ± 0 15		DOCUMENT ID	000	<u>TECN</u>	<u>COMMENT</u>	ation
0.45±0.15±0.15		ANJO5	90D	E091	Photoprodu	ction
$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(l)$	$K^-\pi^+)$	\overline{K} *(902)0 and m	ara in	Judad		Γ_{114}/Γ_{32}
VALUE	EVTS	DOCUMENT ID	are inc	TECN	COMMENT	
• • • We do not use	the followin	g data for average	es, fits,	limits.	etc. ● ● ●	
$0.58 \!\pm\! 0.19 \!+\! 0.24 \!-\! 0.28$	46	KINOSHITA	91	CLEO	$e^+e^-\sim 10.$	7 GeV
Γ(Κ *(892) ⁰ η)/Γ($(K^-\pi^+\pi^0)$					Γ_{114}/Γ_{51}
Unseen decay m	odes of the	$\overline{K}^*(892)^0$ and η	are ind	cluded.		, •_
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT	
• • • We do not use	the following	g data for average	es, fits,	limits,	etc. • • •	
$0.13 \pm 0.02 \pm 0.03$	214	PROCARIO	93 B	CLE2	$\overline{K}^{*0}\eta \rightarrow k$	$(-\pi^+/\gamma\gamma)$
$\Gamma(K_{S}^{0}\eta\pi^{0})/\Gamma(K_{S}^{0})$	π ⁰)					Г ₈₅ /Г ₃₄
VALUE	<u>EVTS</u>	DOCUMENT	D	TECN	COMMENT	
$0.46 \pm 0.07 \pm 0.06$	155 ± 22	¹ RUBIN	04	CLEO	$e^+e^-\approx 1$	10 GeV
1 The η here is determined at the set of η	cted in its γ'	γ mode, but other	$\eta \mod \eta$	des are i	ncluded in the	value given
Γ(K⁰₅ a₀(980), a₀ - This is the "fit	→ $\eta \pi^0)/\Gamma$ fraction" fro	$\mathcal{L}(\mathcal{K}^{0}_{S}\eta\pi^{0})$ om the Dalitz-plot	analys	sis, with	interference.	Г ₈₆ /Г ₈₅
<u>VALUE</u>		1 DUCUMENT ID	04		COMMENT	Eauto
1			. 04			oo evts
⁺ In addition to K_2^0 0.246 \pm 0.092 \pm 0	; a ₀ (980) ar).091 for otl	nd $K^*(892)^{\circ}\eta$ m ner, undetermined	odes, mode	RUBIN s.	04 finds a fit	traction o

Γ(K *(892) ⁰ η, K *0	$\rightarrow K^0_{S}\pi^0)$	$/\Gamma(K^0_S\eta\pi^0)$				Г ₈₇ /Г ₈₅
This is the "fit fr	action" from	the Dalitz-plot	analys	sis, with	interference	е.
$0.293 \pm 0.062 \pm 0.035$	1	^L RUBIN	04	CLEO	Dalitz fit.	155 evts
1 See the note on RU	JBIN 04 in th	e preceding data	a bloci	k.	,	
$\Gamma(K^-\pi^+\omega)/\Gamma(K^-)$	π^+)	are included				Γ_{115}/Γ_{32}
VALUE	<u>EVTS</u>	DOCUMENT ID		TECN	<u>COMMENT</u>	
0.78±0.12±0.10	99	^L ALBRECHT	92 P	ARG	$e^+ e^- pprox$	10 GeV
1 This value is calcul	ated from nu	mbers in Table 1	of Al	LBRECH	IT 92P.	
Γ(Κ *(892) ⁰ ω)/Γ(<i>k</i>	(⁻ π ⁺)	·* ()				Γ ₁₁₆ /Γ ₃₂
Unseen decay mo	des of the K	*(892)° and ω	are inc	cluded.	COMMENT	
0.28+0.11+0.04	<u></u> 17	LAI BRECHT	92P	ARG	$e^+e^-\approx$	10 GeV
1 This value is calcul	ated from nu	mbers in Table 1	. of Al	LBRECH	IT 92P.	10 000
Γ(<i>K</i> ⁻ π ⁺ η′(958))/	Γ(<i>K</i> ⁻ 2π ⁺ 1	π-)				Г ₁₁₇ /Г ₆₈
Unseen decay mo	odes of the η'	(958) are includ	led.			
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT	- 0
$0.093 \pm 0.014 \pm 0.019$	286	PROCARIO	93 B	CLE2	$\eta' \rightarrow \eta \pi$	$^+\pi^-$, $ ho$ 0 γ
$\Gamma(\overline{K}^*(892)^0\eta'(958)$)/Γ(<i>K</i> ⁻ π ⁺	<i>π</i> ′(958))				Γ ₁₁₈ /Γ ₁₁₇
Unseen decay mo	odes of the K	*(892) ⁰ are incl	luded.	TECN		
<0.15	<u> </u>	PROCARIO	93 B	CLE2		
$\Gamma(K_S^0 2\pi^+ 2\pi^-)/\Gamma($	$K^0_S \pi^+ \pi^-)$					Г ₈₈ /Г ₃₆
<u>VALUE</u>	<u>EVTS</u>	DOCUMENT	ID OV	<u>TECN</u>	<u>COMMEN</u>	T
• • • We do not use t	1283 ± 57	LINK lata for average	02 s fits	imits e	γ A, E_{γ}	pprox 180 GeV
$0.07 \pm 0.02 \pm 0.01$	11		- or			~ 10 CaV
$0.07 \pm 0.02 \pm 0.01$ 0.149 ± 0.026	56	AMMAR	92 91	L CLEC) $e^+e^- \approx$	$\approx 10 \text{ GeV}$ $\approx 10.5 \text{ GeV}$
$0.18 \pm 0.07 \pm 0.04$	6	ANJOS	90	D E691	Photopro	oduction
1 This value is calcul	ated from nu	mbers in Table 1	of Al	LBRECH	IT 92P.	
$\Gamma(\kappa_{S}^{0}\rho^{0}\pi^{+}\pi^{-}, \mathrm{no})$	K*(892) [_])	$/\Gamma(K_{S}^{0}2\pi^{+}2\pi)$	r ⁻)	TECN	COMMENT	Г ₈₉ /Г ₈₈
$0.40 \pm 0.24 \pm 0.07$		<u>DOCUMENT ID</u>	04D	FOCS	$\gamma \mathbf{A} \overline{\mathbf{F}} \approx$	± 180 GeV
$\Gamma(K^*(892)^- 2\pi^+ \pi^-)$	⁻ , <i>K</i> *(892) ⁻	$^{-} \rightarrow K_{S}^{0} \pi^{-},$	no ρ^0)/Г(<i>К</i>	$\int_{S}^{0} 2\pi + 2\pi^{-1}$	⁼) Г ₉₀ /Г ₈₈
VALUE		DOCUMENT ID		TECN	<u>COMMENT</u>	
0.17±0.28±0.02		LINK	04 D	FOCS	γ A, $E_{\gamma} \approx$	≈ 180 GeV
$\Gamma(K^*(892)^- \rho^0 \pi^+,$	K*(892) [_]	$\rightarrow K_{S}^{0}\pi^{-})/\Gamma$	(K ⁰ 5	2π ⁺ 2π	·-)	Г ₉₁ /Г ₈₈
0.60±0.21±0.09		LINK	0 4D	FOCS	γ A, $\overline{E}_{\gamma} \approx$	= 180 GeV
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 $\Gamma(K_{\varsigma}^{0}2\pi^{+}2\pi^{-} \text{ nonresonant})/\Gamma(K_{\varsigma}^{0}2\pi^{+}2\pi^{-})$ Γ_{92}/Γ_{88} TECN COMMENT MENT ID 04D FOCS γ A, $\overline{E}_{\gamma} \approx 180$ GeV < 0.46 90 LINK $\Gamma(K^{-}3\pi^{+}2\pi^{-})/\Gamma(K^{-}2\pi^{+}\pi^{-})$ Γ_{04}/Γ_{68} <u>VALUE (units</u> 10^{-3}) DOCUMENT ID TECN COMMENT 04B FOCS $\gamma A, \overline{E}_{\gamma} \approx 180 \text{ GeV}$ $2.70 \pm 0.58 \pm 0.38$ 48 ± 10 LINK - Hadronic modes with three K's - $\Gamma(K_S^0 K^+ K^-) / \Gamma(K_S^0 \pi^+ \pi^-)$ Γ_{119}/Γ_{36} VALUE DOCUMENT ID <u>TECN</u> <u>COMMENT</u> 05J BABR $e^+e^- \approx \Upsilon(4S)$ $0.158 \pm 0.001 \pm 0.005$ $14k \pm 116$ AUBERT.B • • • We do not use the following data for averages, fits, limits, etc. • • • $0.20\ \pm 0.05\ \pm 0.04$ 47 FRABETTI 92B E687 γ Be, \overline{E}_{γ} = 221 GeV 91 CLEO e^+e^-pprox 10.5 GeV 0.170 ± 0.022 136 AMMAR 86 CLEO e^+e^- near $\Upsilon(4S)$ 0.24 ± 0.08 BEBEK e^+e^- 10 GeV 85b ARG 0.185 ± 0.055 52 ALBRECHT $\Gamma(K_{S}^{0}a_{0}(980)^{0},a_{0}^{0}\rightarrow K^{+}K^{-})/\Gamma(K_{S}^{0}K^{+}K^{-})$ $\Gamma_{120}/\Gamma_{119}$ This is the "fit fraction" from the Dalitz-plot analysis, with interference. TECN COMMENT VALUE DOCUMENT ID $0.664 \pm 0.016 \pm 0.070$ AUBERT,B 05J BABR Dalitz fit, 12540 \pm 112 evts $\Gamma(K^{-}a_{0}(980)^{+}, a_{0}^{+} \rightarrow K^{+}K_{S}^{0})/\Gamma(K_{S}^{0}K^{+}K^{-})$ $\Gamma_{121}/\Gamma_{119}$ This is the "fit fraction" from the Dalitz-plot analysis, with interference. VALUE TECN COMMENT DOCUMENT ID $0.134 \pm 0.011 \pm 0.037$ AUBERT.B 05J BABR Dalitz fit, 12540 \pm 112 evts $\frac{\Gamma(K^+ a_0(980)^-, a_0^- \to K^- K_S^0) / \Gamma(K_S^0 K^+ K^-)}{\text{This is a doubly Cabibbo-suppressed mode.}}$ $\Gamma_{122}/\Gamma_{119}$ <u>VA</u>LUE DOCUMENT ID <u>COMM</u>ENT <u>CL%</u> TECN < 0.025 95 AUBERT,B 05J BABR Dalitz fit, 12540 \pm 112 evts $\Gamma(K_{S}^{0}f_{0}(980), f_{0} \rightarrow K^{+}K^{-})/\Gamma(K_{S}^{0}K^{+}K^{-})$ $\Gamma_{123}/\Gamma_{119}$ CL% DOCUMENT ID TECN COMMENT < 0.021 95 AUBERT.B 05J BABR Dalitz fit, 12540 \pm 112 evts $\Gamma(K^0_S\phi,\phi\to K^+K^-)/\Gamma(K^0_SK^+K^-)$ This is the "fit fraction" from the Dalitz-plot analysis, with interference. $\Gamma_{124}/\Gamma_{119}$ VALUE DOCUMENT ID TECN COMMENT $0.459 \pm 0.007 \pm 0.007$ AUBERT,B 05J BABR Dalitz fit, 12540 \pm 112 evts $\Gamma(K_{S}^{0}f_{0}(1370), f_{0} \rightarrow K^{+}K^{-})/\Gamma(K_{S}^{0}K^{+}K^{-})$ This is the "fit fraction" from the Dalitz-plot analysis, with interference. $\Gamma_{125}/\Gamma_{119}$ DOCUMENT ID TECN COMMENT VALUE ¹ AUBERT,B $0.038 {\pm} 0.007 {\pm} 0.023$ 05J BABR Dalitz fit, 12540 \pm 112 evts $^1\,{\rm AUBERT,B}$ 05J calls the mode ${\cal K}^0_S\,{\it f}_0(1400),$ but insofar as it is seen here at all, it is certainly the same as $f_0(1370)$.

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$\Gamma(3K_{S}^{0})/\Gamma_{total}$						Г ₁₂₆ /Г
VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT	<u> </u>
7.5 \pm 0.6 OUR FIT	Error include	s scale factor of	1.3.			-
$7.21 \pm 0.33 \pm 0.44$	597	ABLIKIM	17A	BES3	$e^+e^- \rightarrow$	ψ (3770)
$\Gamma(3K_S^0)/\Gamma(K_S^0\pi^+$	$\pi^{-})$					Γ_{126}/Γ_{36}
VALUE (units 10^{-2})	EVTS	DOCUMENT	ID	TECI	COMMEN	IT
2.74 ± 0.25 OUR FIT	Error include	s scale factor of	1.1.			
3.2 ± 0.4 OUR AVE	RAGE					
$3.58\!\pm\!0.54\!\pm\!0.52$	170 ± 26	LINK	0	5A FOC	$S \gamma Be, \overline{E}$	$_{\gamma} pprox$ 180 GeV
$2.78 \pm 0.38 \pm 0.48$	61	ASNER	9	6B CLE	2 e ⁺ e ⁻	$\approx \Upsilon(4S)$
$7.0 \pm 2.4 \pm 1.2$	$10~\pm~3$	FRABETT	I 9	4J E687	7 $\gamma Be, \overline{E}$	v=220 GeV
3.2 ±1.0	22	AMMAR	9	1 CLE	0 e ⁺ e ⁻ ;	\approx 10.5 GeV
$3.4 \ \pm 1.4 \ \pm 1.0$	5	ALBRECH	Т 9	OC ARG	6 e ⁺ e ⁻ ?	pprox 10 GeV
$\Gamma(K^+ 2K^- \pi^+)/\Gamma$	$(K^-2\pi^+\pi^-)$			TECN	COMMENT	Г ₁₂₇ /Г ₆₈
0.0027 + 0.0004 OI		Error includes	scale f	<u>TECN</u>	<u> </u>	<u> </u>
$0.00257 \pm 0.00034 \pm 0.00034$.00024 143	LINK	03	G FOCS	$5 \gamma A, \overline{E}_{\gamma}$	pprox 180 GeV
0.0054 + 0.0016 + 0	.0008 18	ΑΙΤΑΙ Α	01	D F791	π^{-} A. 50	00 GeV
$0.0028 \pm 0.0007 \pm 0$.0001 20	FRABETTI	95	5c E687	γ Be, \overline{E}_{γ}	$\sim 200 \text{ GeV}$
Γ(φ Κ *(892) ⁰ , φ–	→ K ⁺ K ⁻ , k	$\overline{K}^{*0} \rightarrow K^{-} \pi^{+}$	- -)/Γ(K+2K	$(-\pi^+)$	Г ₁₃₀ /Г ₁₂₇
VALUE		DOCUMENT ID		TECN	COMMENT	
$0.48 {\pm} 0.06 {\pm} 0.01$		LINK	03 G	FOCS	γ A, $\overline{E}_{\gamma} pprox$	180 GeV
$\Gamma(K^{-}\pi^{+}\phi, \phi \to h)$	к+ <i>к</i> -)/г(/	K⁺2K⁻π⁺)		TECN	COMMENT	Г ₁₂₉ /Г ₁₂₇
0.18±0.06±0.04		LINK	03 G	FOCS	γ A, $\overline{E}_{\gamma} \approx$	180 GeV
$\Gamma(K^+ K^- \overline{K}^* (892))$	$^{0}, \overline{K}^{*0} \rightarrow K$	(⁻ π ⁺)/Γ(<i>K</i> ⁺	-2K-	- π+)	COMMENT	Γ ₁₂₈ /Γ ₁₂₇
$0.20 \pm 0.07 \pm 0.02$			0 3G	FOCS	$\gamma A. \overline{E}. \approx$	180 GeV
$\Gamma(K^+2K^-\pi^+ \text{ non }$	resonant)/Г	(Κ+2Κ⁻π+) <u>DOCUMENT ID</u>)	TECN	<u>COMMENT</u>	Γ ₁₃₁ /Γ ₁₂₇
$0.15 {\pm} 0.06 {\pm} 0.02$		LINK	03 G	FOCS	γ A, $\overline{E}_{\gamma} pprox$	180 GeV
$\Gamma(2K_{S}^{0}K^{\pm}\pi^{\mp})/\Gamma($	$(K_S^0\pi^+\pi^-)$	DOCUMENT	10	TECN	COMMENT	Γ ₁₃₂ /Γ ₃₆
	<u>EV15</u>	DOCUMENT	ישו -			1
2.12±0.38±0.20	57 ± 10	LINK	05	5A FOCS	5 γ Be, E_{γ}	$_{ m c} pprox$ 180 GeV

		Pionic modes		
$\Gamma(\pi^+\pi^-)/\Gamma(\kappa^-\pi)$	+)			Γ ₁₃₃ /Γ ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
3.62 ± 0.05 OUR FI				
3.59 ± 0.00 CON A	7334 + 97	ΑCOSTA	05C CDF	$n\overline{p}$ $\sqrt{s} = 1.96$ TeV
$3.53 \pm 0.12 \pm 0.06$	3453	LINK	03 FOCS	$\gamma \text{ A, } \overline{E}_{\gamma} \approx 180 \text{ GeV}$
$3.51\ \pm 0.16\ \pm 0.17$	710	CSORNA	02 CLE2	$e^+e^- \approx \Upsilon(4S)$
$4.0 \pm 0.2 \pm 0.3$	2043	AITALA	98C E791	π^- A, 500 GeV
\bullet \bullet \bullet We do not use	the following d	ata for averages,	fits, limits, et	
$3.62\ \pm 0.10\ \pm 0.08$	2085 ± 54	RUBIN	06 CLEO	See MENDEZ 10
$3.4 \pm 0.7 \pm 0.1$	76 ± 15	ABLIKIM	05F BES	$e^+e^\approx \psi$ (3770)
$4.3 \pm 0.7 \pm 0.3$	177	FRABETTI	94C E687	$\gamma \operatorname{Be} \overline{E}_{\gamma} = 220 \operatorname{GeV}$
$3.48 \pm 0.30 \pm 0.23$	227	SELEN	93 CLE2	$e^+e^-pprox \Upsilon(4S)$
$5.5 \pm 0.8 \pm 0.5$	120	ANJOS	91D E691	Photoproduction
$5.0 \pm 0.7 \pm 0.5$	110	ALEXANDER	90 CLEO	e^+e^- 10.5–11 GeV
$\Gamma(\pi^+\pi^-)/[\Gamma(K^-$	$\pi^+) + \Gamma(K^+)$	-π ⁻)]		Γ ₁₃₃ /(Γ ₃₂ +Γ ₂₄₀)
VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
$3.60{\pm}0.05 \text{ OUR FIT}$				
$3.70 \pm 0.06 \pm 0.09$	6210 ± 93	MENDEZ	10 CLEC) e^+e^- at 3774 MeV
$\Gamma(2\pi^0)/\Gamma_{total}$				Г ₁₃₄ /Г
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
8.22 ± 0.25 OUR FIT				
8.29±0.30 OUR AVE	RAGE			
$8.24 \pm 0.21 \pm 0.30$	6k	ABLIKIM 1	.5F BES3	e^+e^- at 3.773GeV
$8.4 \pm 0.1 \pm 0.5$	26k	LEES 1	.2L BABR	$e^+e^- \approx 10.58 \text{ GeV}$
$\Gamma(2\pi^0)/\Gamma(K^-\pi^+)$				Γ ₁₃₄ /Γ ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D TECN	COMMENT
\bullet \bullet \bullet We do not use	the following d	ata for averages,	fits, limits, et	C. ● ● ●
$2.05\!\pm\!0.13\!\pm\!0.16$	499 ± 32	RUBIN	06 CLE	O See MENDEZ 10
$2.2 \ \pm 0.4 \ \pm 0.4$	40	SELEN	93 CLE	2 $e^+e^- \rightarrow \Upsilon(4S)$
$\Gamma(2\pi^{0})/[\Gamma(K^{-}\pi^{+}$	Γ) + $\Gamma(K^+\pi^-)$	-)]		<u>Г124 /(Г22+Г240)</u>
V_{ALUE} (units 10^{-2})	FVTS		TECN	- 134/ (- 32 - 240)
2.11+0.07 OUR FIT		DOCOMENT	1201	COMMENT
$2.06 \pm 0.07 \pm 0.10$	1567 ± 54	MENDEZ	10 CLEC) e^+e^- at 3774 MeV
$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(\kappa)$	$^{-}\pi^{+})$			Γ ₁₃₅ /Γ ₃₂
VALUE (units 10 ⁻²)	EVTS	DOCUMENT ID	TECN	COMMENT
37.7±1.6 OUR FIT	Error includes	scale factor of 2.2	<u></u>	
$34.4 \pm 0.5 \pm 1.2$	$11k\pm164$	RUBIN C	6 CLEO	e^+e^- at $\psi($ 3770 $)$

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(\kappa^-\pi^+\pi^0)$					Γ_{135}/Γ_{51}
VALUE (units 10^{-2}) EVTS	DOCUMENT I	D	TECN	COMMEN	IT
10.32±0.25 OUR FIT Error include	es scale factor o	f 2.3.			
10.41±0.23 OUR AVERAGE Error	includes scale fa	actor o	of 2.0.		
$10.12 \pm 0.04 \pm 0.18$ $123k \pm 490$	ARINSTEIN	08	B BELL	. e ⁺ e ⁻ :	$\approx ~\Upsilon(4S)$
$10.59 \pm 0.06 \pm 0.13$ $60k \pm 343$	AUBERT,B	06	ix babf	R e ⁺ e [−] :	$\approx ~\Upsilon(4S)$
$\Gamma(\rho^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ This is the "fit fraction" from	om the Dalitz-r	olot a	nalvsis.	with inter	Г₁₃₆/Г₁₃₅ ference. See
GASPERO 08 and BHATTAC	HARYA 10A for	isosp	in decor	mpositions	of the $D^0 \rightarrow$
$\pi^+\pi^0\pi^-$ Dalitz plot, both ba	sed on the ampli	itudes	of AUB	ERT 07BJ.	They quantify
the conclusion that the final st $(10-2)$	ate is dominant	ly isos	pin U.	COMMENT	
	DOCUMENTID		TECN	COMMENT	
67 8+0 0+0 6	AUBERT	07B I	RARR	Dalitz fit	15k events
763+19+25		07.55	CLEO	$e^+e^- \approx$	10 GeV
10.5 ± 1.5 ± 2.5	chonnenen.	.00	CLLO	c c \sim	10 00 0
$\Gamma(ho^0\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$					$\Gamma_{137}/\Gamma_{135}$
This is the "fit fraction" from	the Dalitz-plot a	analysi	s, with i	interference	е.
VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT	
25.9 ± 1.1 OUR AVERAGE					
$26.2 \pm 0.5 \pm 1.1$	AUBERT	07BJ	BABR	Dalitz fit,	45k events
$24.4 \pm 2.0 \pm 2.1$	CRONIN-HEN.	.05	CLEO	e'e ≈	10 GeV
$\frac{\Gamma(\rho^{-}\pi^{+})}{\Gamma(\pi^{+}\pi^{-}\pi^{0})}$ This is the "fit fraction" from	the Dalitz-plot a	analysi	is, with i	interference	Γ₁₃₈/Γ₁₃₅
$\frac{\Gamma(\rho^{-}\pi^{+})}{\Gamma(\pi^{+}\pi^{-}\pi^{0})}$ This is the "fit fraction" from <i>VALUE</i> (units 10 ⁻²)	the Dalitz-plot a	analysi	s, with i <i>TECN</i>	interference COMMENT	Г₁₃₈/Г₁₃₅ ^{е.}
$\frac{\Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0})}{\text{This is the "fit fraction" from}}$ $\frac{VALUE \text{ (units } 10^{-2})}{34.6 \pm 0.8 \text{ OUR AVERAGE}}$	the Dalitz-plot a <u>DOCUMENT ID</u>	analysi	s, with i <u>TECN</u>	interference <u>COMMENT</u>	Г ₁₃₈ /Г ₁₃₅ ^{е.}
$\frac{\Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0})}{\text{This is the "fit fraction" from}}$ $\frac{VALUE \text{ (units 10^{-2})}}{34.6 \pm 0.8 \text{ OUR AVERAGE}}$ $34.6 \pm 0.8 \pm 0.3$	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT	analysi 07BJ	is, with i <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit,	Γ₁₃₈/Γ₁₃₅ e. 45k events
$\frac{\Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0})}{\text{This is the "fit fraction" from}}$ $\frac{VALUE \text{ (units } 10^{-2})}{34.6 \pm 0.8 \text{ OUR AVERAGE}}$ $34.6 \pm 0.8 \pm 0.3$ $34.5 \pm 2.4 \pm 1.3$	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN.	analysi 07BJ .05	is, with i <u>TECN</u> BABR CLEO	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$	Γ₁₃₈/Γ₁₃₅ e. 45k events 10 GeV
$\Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0})$ This is the "fit fraction" from <u>VALUE (units 10^{-2})</u> 34.6 \pm 0.8 OUR AVERAGE 34.6 ± 0.8 ± 0.3 34.5 ± 2.4 ± 1.3 $\Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0})/2$	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$	o7BJ .05	s, with i <u>TECN</u> BABR CLEO	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$	Γ₁₃₈/Γ₁₃₅ e. 45k events 10 GeV Γ₁₃₉/Γ₁₃₅
$ \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) This is the "fit fraction" from \underline{VALUE (units 10^{-2})} 34.6 \pm 0.8 \text{ OUR AVERAGE} 34.6 \pm 0.8 \pm 0.3 34.5 \pm 2.4 \pm 1.3 \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0})/ \underline{VALUE (units 10^{-2})} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u>	analysi 07вј .05	is, with i <u>TECN</u> BABR CLEO <u>TECN</u>	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u>	Γ₁₃₈/Γ₁₃₅ e. 45k events 10 GeV Γ₁₃₉/Γ₁₃₅
$ \frac{\Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0})}{\text{This is the "fit fraction" from}} $ $ \frac{VALUE (units 10^{-2})}{34.6 \pm 0.8 \text{ OUR AVERAGE}} $ $ \frac{34.6 \pm 0.8 \pm 0.3}{34.5 \pm 2.4 \pm 1.3} $ $ \frac{\Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0})}{VALUE (units 10^{-2})} $ $ 0.11 \pm 0.07 \pm 0.12 $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT	07BJ .05 07BJ	s, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit,	Γ₁₃₈/Γ₁₃₅ e. 45k events 10 GeV Γ₁₃₉/Γ₁₃₅ 45k events
$ \begin{bmatrix} (\rho^{-} \pi^{+}) / \Gamma(\pi^{+} \pi^{-} \pi^{0}) \\ \text{This is the "fit fraction" from} \\ \hline & VALUE (units 10^{-2}) \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \pm 0.3 \\ \hline & 34.5 \pm 2.4 \pm 1.3 \\ \hline & \Gamma(\rho(1450)^{+} \pi^{-}, \rho^{+} \rightarrow \pi^{+} \pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.11 \pm 0.07 \pm 0.12 \\ \hline & \Gamma(\rho(1450)^{0} \pi^{0}, \rho^{0} \rightarrow \pi^{+} \pi^{-}) / I \\ \hline & VALUE (units 10^{-2}) \\ \hline & VALUE (units 10$	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\overline{(\pi^+\pi^-\pi^0)}$	07BJ .05 07BJ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit,	Γ138/Γ135 e. 45k events 10 GeV Γ139/Γ135 45k events Γ140/Γ135
$ \begin{bmatrix} \rho^{-} \pi^{+} \end{pmatrix} / \Gamma(\pi^{+} \pi^{-} \pi^{0}) \\ This is the "fit fraction" from \\ VALUE (units 10^{-2}) \\ 34.6 \pm 0.8 OUR AVERAGE 34.6 \pm 0.8 \pm 0.3 34.5 \pm 2.4 \pm 1.3 \Gamma(\rho(1450)^{+} \pi^{-}, \rho^{+} \rightarrow \pi^{+} \pi^{0}) / \frac{VALUE (units 10^{-2})}{0.11 \pm 0.07 \pm 0.12} \Gamma(\rho(1450)^{0} \pi^{0}, \rho^{0} \rightarrow \pi^{+} \pi^{-}) / \frac{VALUE (units 10^{-2})}{0.22 \pm 0.211 \pm 0.022} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $-(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u>	07BJ .05 07BJ	s, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u>	Γ138/Γ135 e. 45k events 10 GeV Γ139/Γ135 45k events Γ140/Γ135
$ \begin{array}{l} \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ \text{This is the "fit fraction" from} \\ \hline & VALUE (units 10^{-2}) \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \pm 0.3 \\ \hline & 34.5 \pm 2.4 \pm 1.3 \\ \hline & \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.11 \pm 0.07 \pm 0.12 \\ \hline & \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.30 \pm 0.11 \pm 0.07 \end{array} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\overline{(\pi^+\pi^-\pi^0)}$ <u>DOCUMENT ID</u> AUBERT	07BJ 07BJ 07BJ 07BJ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit,	Γ 138/Γ135 e. 45k events 10 GeV Γ 139/Γ135 45k events Γ 140/Γ135 45k events
$ \begin{array}{l} \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ \text{This is the "fit fraction" from} \\ \hline \\ VALUE (units 10^{-2}) \\ \hline \\ \textbf{34.6 \pm 0.8 \text{ OUR AVERAGE}} \\ \hline \\ \textbf{34.6 \pm 0.8 \pm 0.3} \\ \hline \\ \textbf{34.5 \pm 2.4 \pm 1.3} \\ \hline \\ \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \hline \\ \hline \\ \hline \\ VALUE (units 10^{-2}) \\ \hline \\ \textbf{0.11 \pm 0.07 \pm 0.12} \\ \hline \\ \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-}) / \\ \hline \\ \hline \\ \hline \\ VALUE (units 10^{-2}) \\ \hline \\ \textbf{0.30 \pm 0.11 \pm 0.07} \\ \hline \\ \Gamma(\rho(1450)^{-}\pi^{+}, \rho^{-} \rightarrow \pi^{-}\pi^{0}) / \\ \hline \end{array} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $-(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$	07BJ .05 07BJ 07BJ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit,	Γ138/Γ135 45k events 10 GeV Γ139/Γ135 45k events Γ140/Γ135 45k events Γ141/Γ135
$ \begin{split} & \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ & \text{This is the "fit fraction" from} \\ \hline & VALUE (units 10^{-2}) \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \pm 0.3 \\ \hline & 34.5 \pm 2.4 \pm 1.3 \\ \hline & \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.11 \pm 0.07 \pm 0.12 \\ \hline & \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.30 \pm 0.11 \pm 0.07 \\ \hline & \Gamma(\rho(1450)^{-}\pi^{+}, \rho^{-} \rightarrow \pi^{-}\pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & VAL$	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\overline{(\pi^+\pi^-\pi^0)}$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> <u>DOCUMENT ID</u>	апаlysi 07ВЈ .05 07ВЈ 07ВЈ	s, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> <u>TECN</u>	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit, <u>COMMENT</u>	$ \Gamma_{138}/\Gamma_{135} $ 45k events 10 GeV $ \Gamma_{139}/\Gamma_{135} $ 45k events $ \Gamma_{140}/\Gamma_{135} $ 45k events $ \Gamma_{141}/\Gamma_{135} $
$ \begin{split} & \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ & \text{This is the "fit fraction" from} \\ \hline & VALUE (units 10^{-2}) \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ \hline & 34.6 \pm 0.8 \pm 0.3 \\ \hline & 34.5 \pm 2.4 \pm 1.3 \\ \hline & \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.11 \pm 0.07 \pm 0.12 \\ \hline & \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 0.30 \pm 0.11 \pm 0.07 \\ \hline & \Gamma(\rho(1450)^{-}\pi^{+}, \rho^{-} \rightarrow \pi^{-}\pi^{0}) / \\ \hline & VALUE (units 10^{-2}) \\ \hline & 1.79 \pm 0.22 \pm 0.12 \end{split} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT	апаlys 07вJ .05 07вJ 07вJ 07вJ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit,	F138/F135 e. 45k events 10 GeV F139/F135 45k events F140/F135 45k events F141/F135 45k events
$ \begin{split} & \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ & \text{This is the "fit fraction" from} \\ \hline & \frac{VALUE (units 10^{-2})}{34.6 \pm 0.8 \text{ OUR AVERAGE}} \\ & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ & 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ & 34.5 \pm 2.4 \pm 1.3 \\ \hline & \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \hline & \frac{VALUE (units 10^{-2})}{0.11 \pm 0.07 \pm 0.12} \\ \hline & \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-}) / \\ \hline & \frac{VALUE (units 10^{-2})}{0.30 \pm 0.11 \pm 0.07} \\ \hline & \Gamma(\rho(1450)^{-}\pi^{+}, \rho^{-} \rightarrow \pi^{-}\pi^{0}) / \\ \hline & \frac{VALUE (units 10^{-2})}{1.79 \pm 0.22 \pm 0.12} \\ \hline & \Gamma(\rho(1700)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0}) / \\ \end{split} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $-(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$	апаlysi 07ВЈ .05 07ВЈ 07ВЈ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> BABR	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit,	$\Gamma_{138}/\Gamma_{135}$ e. 45k events 10 GeV $\Gamma_{139}/\Gamma_{135}$ 45k events $\Gamma_{140}/\Gamma_{135}$ 45k events $\Gamma_{141}/\Gamma_{135}$ 45k events $\Gamma_{142}/\Gamma_{135}$
$ \begin{array}{l} \Gamma(\rho^{-}\pi^{+})/\Gamma(\pi^{+}\pi^{-}\pi^{0}) \\ \text{This is the "fit fraction" from} \\ \hline \\ \hline \\ \frac{VALUE (units 10^{-2})}{34.6 \pm 0.8 \text{ OUR AVERAGE}} \\ 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ 34.6 \pm 0.8 \text{ OUR AVERAGE} \\ 34.5 \pm 2.4 \pm 1.3 \\ \hline \\ \Gamma(\rho(1450)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0})/ \\ \hline \\ \frac{VALUE (units 10^{-2})}{0.11 \pm 0.07 \pm 0.12} \\ \hline \\ \Gamma(\rho(1450)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-})/\Gamma \\ \hline \\ \frac{VALUE (units 10^{-2})}{0.30 \pm 0.11 \pm 0.07} \\ \hline \\ \Gamma(\rho(1450)^{-}\pi^{+}, \rho^{-} \rightarrow \pi^{-}\pi^{0})/ \\ \hline \\ \frac{VALUE (units 10^{-2})}{1.79 \pm 0.22 \pm 0.12} \\ \hline \\ \Gamma(\rho(1700)^{+}\pi^{-}, \rho^{+} \rightarrow \pi^{+}\pi^{0})/ \\ \hline \\ \frac{VALUE (units 10^{-2})}{VALUE (units 10^{-2})} \\ \hline \end{array} $	the Dalitz-plot a <u>DOCUMENT ID</u> AUBERT CRONIN-HEN. $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> AUBERT $\Gamma(\pi^+\pi^-\pi^0)$ <u>DOCUMENT ID</u> <u>DOCUMENT ID</u> <u>DOCUMENT ID</u>	апаlysi 07вJ .05 07вJ 07вJ 07вJ	is, with i <u>TECN</u> BABR CLEO <u>TECN</u> BABR <u>TECN</u> BABR <u>TECN</u>	interference <u>COMMENT</u> Dalitz fit, $e^+e^- \approx$ <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit, <u>COMMENT</u> Dalitz fit, <u>COMMENT</u>	Γ138/Γ135 45k events 10 GeV Γ139/Γ135 45k events Γ140/Γ135 45k events Γ141/Γ135 45k events Γ142/Γ135

 $\Gamma(\rho(1700)^{0}\pi^{0}, \rho^{0} \rightarrow \pi^{+}\pi^{-})/\Gamma(\pi^{+}\pi^{-}\pi^{0})$ $\Gamma_{143}/\Gamma_{135}$ VALUE (units 10^{-2}) DOCUMENT ID COMMENT TECN $5.0 \pm 0.6 \pm 1.0$ AUBERT 07BJ BABR Dalitz fit. 45k events $\Gamma(\rho(1700)^-\pi^+,\rho^- \rightarrow \pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{144}/\Gamma_{135}$ VALUE (units 10^{-2}) DOCUMENT ID TECN COMMENT $3.2 \pm 0.4 \pm 0.6$ AUBERT 07BJ BABR Dalitz fit, 45k events $\Gamma(f_0(980)\pi^0, f_0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{145}/\Gamma_{135}$ VALUE (units 10^{-2}) CL% DOCUMENT ID TECN COMMENT $0.25 \pm 0.04 \pm 0.04$ AUBERT 07BJ BABR Dalitz fit, 45k events We do not use the following data for averages, fits, limits, etc. ¹ CRONIN-HEN..05 CLEO $e^+e^- \approx 10$ GeV < 0.026 95 1 The CRONIN-HENNESSY 05 fit here includes, in addition to the three $\rho\pi$ charged states, only the $f_0(980)\pi^0$ mode. See also the next entries for limits obtained in the same way for the $f_0(500)\pi^0$ mode and for an S-wave $\pi^+\pi^-$ parametrized using a K-matrix. Our $\rho\pi$ branching ratios, given above, use the fit with the K-matrix S wave. $\Gamma(f_0(500)\pi^0, f_0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{146}/\Gamma_{135}$ The $f_0(500)$ is the σ . *VALUE* (units 10^{-2}) TECN COMMENT CL% DOCUMENT ID $0.82 \pm 0.10 \pm 0.10$ AUBERT 07BJ BABR Dalitz fit, 45k events • • • We do not use the following data for averages, fits, limits, etc. • • • 95 ¹ CRONIN-HEN..05 CLEO $e^+e^- \approx 10$ GeV < 0.21 ¹See the note on CRONIN-HENNESSY 05 in the proceeding data block. $\Gamma((\pi^{+}\pi^{-})_{S-wave}\pi^{0})/\Gamma(\pi^{+}\pi^{-}\pi^{0})$ $\Gamma_{147}/\Gamma_{135}$ DOCUMENT ID TECN COMMENT CL% VALUE • • • We do not use the following data for averages, fits, limits, etc. • • • ¹ CRONIN-HEN..05 CLEO $e^+e^- \approx 10$ GeV < 0.019 95 ¹See the note on CRONIN-HENNESSY 05 two data blocks up. $\Gamma(f_0(1370)\pi^0, f_0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{148}/\Gamma_{135}$ DOCUMENT ID VALUE (units 10^{-2}) TECN COMMENT $0.37 \pm 0.11 \pm 0.09$ 07BJ BABR Dalitz fit. 45k events $\Gamma(f_0(1500)\pi^0, f_0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{149}/\Gamma_{135}$ VALUE (units 10^{-2}) DOCUMENT ID <u>TECN</u> <u>COMMENT</u> $0.39 \pm 0.08 \pm 0.07$ 07BJ BABR Dalitz fit, 45k events AUBERT $\Gamma(f_0(1710)\pi^0, f_0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{150}/\Gamma_{135}$ VALUE (units 10^{-2}) DOCUMENT ID TECN COMMENT $0.31 \pm 0.07 \pm 0.08$ AUBERT 07BJ BABR Dalitz fit, 45k events $\Gamma(f_2(1270)\pi^0, f_2 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ $\Gamma_{151}/\Gamma_{135}$ VALUE (units 10^{-2}) TECN COMMENT DOCUMENT ID $1.32 \pm 0.08 \pm 0.10$ 07BJ BABR Dalitz fit, 45k events AUBERT HTTP://PDG.LBL.GOV Page 53 Created: 5/30/2017 17:22

$\Gamma(\pi^+\pi^-\pi^0 \text{ nonrese})$	onant)/Γ(π⁼	⁺ π [−] π ⁰)			Γ ₁₅₂ /Γ ₁₃₅
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT
$0.84 \pm 0.21 \pm 0.12$		AUBERT	07 BJ	BABR	Dalitz fit, 45k events
$\Gamma(3\pi^0)/\Gamma_{\text{total}}$	CI %	DOCUMENT ID		TECN	Г ₁₅₃ /Г
<3.5 × 10 ⁻⁴	90	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$
$\Gamma(2\pi^+2\pi^-)/\Gamma(K^-$	$(-\pi^{+})$				F154/F32
VALUE (units 10^{-2})	EVTS	DOCUMENT	- ID	TEC	N COMMENT
19.1±0.5 OUR FIT					
$19.1 {\pm} 0.4 {\pm} 0.6$	7331 ± 130	RUBIN	(06 CLE	EO e^+e^- at $\psi(3770)$
$\Gamma(2\pi^+2\pi^-)/\Gamma(K^-)$	$^{-}2\pi^{+}\pi^{-})$				Γ ₁₅₄ /Γ ₆₈
VALUE (units 10^{-2})	EVTS	DOCUMENT IL)	TECN	COMMENT
9.19±0.22 OUR FIT					
9.20±0.20 OUR AV	360 + 115	LINK	074	FOCS	$\sim \text{Be} \ \overline{F} \approx 180 \text{ GeV}$
$70 \pm 18 \pm 0.5$	162		050	E BES	$\gamma^+ c^- \sim \psi(3770)$
$95 \pm 0.7 \pm 0.2$	814	FRARETTI	950	⁻ F687	$\gamma \text{Be} = \frac{\overline{F}}{F} \approx 200 \text{ GeV}$
10.2 ± 1.3	345	AMMAR	01		$\gamma^{+} e^{-} \approx 10.5 \text{ GeV}$
• • • We do not use 10.2	the following d	lata for averages	; fits	limits e	$t_{\rm C} \bullet \bullet \bullet$
	64		,		$C = 240 C_{-} V$
$11.5 \pm 2.3 \pm 1.0$ 10.9 $\pm 2.4 \pm 0.9$	64 70		1 92 02		$G \pi$ 340 GeV
$9.6 \pm 1.8 \pm 0.7$	66	ANJOS	91	E691	γ Be 80–240 GeV
					,
$\Gamma(a_1(1260)^+\pi^-, a_1)^+$ This is the fit fr	$p_1^+ o 2\pi^+\pi^-$	total)/Γ(2π e coherent amp	+2π itude	-) analysis.	Γ ₁₅₅ /Γ ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT
60.0±3.0±2.4		LINK	07A	FOCS	4-body fit, $pprox$ 5.7k evts
$\Gamma(a_1(1260)^+\pi^-, a_1)^+$	$\rho_1^+ \to \rho^0 \pi^+$	S-wave)/Γ(2π	$r^+ 2\pi$	-)	Γ ₁₅₆ /Γ ₁₅₄
I his is the fit fr 10^{-2}	action from th		itude		COMMENT
$VALUE (UNITS 10^{-})$			074		$\frac{COMMENT}{4 \text{ body fit}} \sim 5.7 \text{ k outs}$
43.3 ± 2.3 ± 1.9		LINK	07A	FUCS	4-Dody III, ≈ 5.7 k eVIS
$\Gamma(a_1(1260)^+\pi^-, a_1)$	$\rho_1^+ \rightarrow \rho^0 \pi^+$	D-wave)/Γ(2 2 e coherent amp	π⁺2π litude	r -) analysis.	Γ ₁₅₇ /Γ ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT
2.5±0.5±0.4		LINK	07A	FOCS	4-body fit, $pprox$ 5.7k evts
$\Gamma(a_1(1260)^+\pi^-, a_1)^+$	$p_1^+ \to \sigma \pi^+)$	$/\Gamma(2\pi^+2\pi^-)$			Γ ₁₅₈ /Γ ₁₅₄
I fits is the fit fr	action from th		ituae	anaiysis.	COMMENT
83+07+06			074		$\frac{\text{COMMENT}}{4 \text{ body fit}} \sim 5.7 \text{ soft}$
0.JTU.1TU.U			UTA	1003	4-DOUY IIL, \approx 5.7K eVTS

$\Gamma(2\rho^0 \text{total})/\Gamma(2\pi^4)$	$+2\pi^{-})$			l i		$\Gamma_{159}/\Gamma_{154}$
VALUE (units 10^{-2})			muue	TFCN	COMMENT	
24.5±1.3±1.0		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
Γ(2ρ⁰, parallel helic This is the fit fr.	:ities)/Γ(2π action from th	+ 2π -) ne coherent amp	olitude	analysis		Г ₁₆₀ /Г ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		<u>TECN</u>	COMMENT	
$1.1 \pm 0.3 \pm 0.3$		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
$\Gamma(2\rho^0, \text{perpendicul})$ This is the fit fr	ar helicities) action from th	$/\Gamma(2\pi^+2\pi^-)$) blitude	analysis		Г ₁₆₁ /Г ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT	
$6.4 {\pm} 0.6 {\pm} 0.5$		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
Γ(2ρ⁰, longitudinal This is the fit fr	helicities)/I action from th	Γ(2π⁺2π⁻) ne coherent amp	olitude	analysis		Г ₁₆₂ /Г ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT	
$16.8 \pm 1.0 \pm 0.8$		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
Γ (Resonant ($\pi^+\pi^-$ This is the fit fr	[■])π⁺π[−] 3-b action from th	ody total)/Γ ne coherent amp	$(2\pi^+)$	2π[—]) analysis		Γ ₁₆₃ /Γ ₁₅₄
VALUE (units 10^{-2})		DOCUMENT ID		TECN	COMMENT	
$20.0 \pm 1.2 \pm 1.0$		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
$\frac{\Gamma(\sigma \pi^+ \pi^-)}{\Gamma(2\pi^+)} \int \frac{\Gamma(2\pi^+)}{\Gamma(2\pi^+)} \int \frac{\Gamma(2\pi^+)}{\Gamma(2\pi$	⁻2π) action from th	e coherent amp	litude	analysis		Г ₁₆₄ /Г ₁₅₄
82+09+07			074	FOCS	4-body fit	\approx 5.7k evts
$\Gamma(f_0(980)\pi^+\pi^-, f_0)$ This is the fit fr	$b \to \pi^+ \pi^-$) action from the)/ $\Gamma(2\pi^+2\pi^-)$) plitude	analysis		Г ₁₆₅ /Г ₁₅₄
		DOCUMENT ID	074		<u>COMMENT</u>	
$\Gamma(f_2(1270)\pi^+\pi^-,$ This is the fit fr. <i>VALUE</i> (units 10 ⁻²)	$f_2 ightarrow \pi^+ \pi^-$ action from th	-)/Γ(2π+2π - ne coherent amp DOCUMENT ID	=) plitude	analysis TECN		~ 5.7κ evts Γ ₁₆₆ /Γ ₁₅₄
4.9±0.6±0.5		LINK	07A	FOCS	4-body fit,	pprox 5.7k evts
$\Gamma(\pi^+\pi^-2\pi^0)/\Gamma(k)$	$(-\pi^+)$					Г ₁₆₇ /Г ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMEN	t ID	<u>TEC</u>	<u>N</u> COMME	NT
25.8±1.5±1.8	2724 ± 166	RUBIN		06 CLI	±O e⊤e¯	at $\psi(3770)$
Γ(ηπ ⁰)/Γ _{total} Unseen decay m	odes of the η	are included.				Г ₁₆₈ /Г
VALUE (units 10^{-4})	EVTS	DOCUMENT II)	TECN	COMMEN	Т
6.7±0.6 OUR FIT 6.5±0.9±0.4 • • • We do not use t	75 the following c	ABLIKIM data for average	16 s, fits,	D BES3 limits, e	3 e ⁺ e ⁻ ,3 etc.•••	8773 MeV
$6.4 \pm 1.0 \pm 0.4$	156 ± 24	ARTUSO	08	CLEC	D See MEN	IDEZ 10
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$\Gamma(\eta \pi^0) / \Gamma(K^- \eta)$	π^+)	are included			Γ ₁₆₈ /Γ ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D	TECN	COMMENT
• • • We do not	use the following da	ata for averages,	fits, lin	nits, etc.	• • •
$1.47 \pm 0.34 \pm 0.11$	62 ± 14	RUBIN	06	CLEO	See ARTUSO 08
$\Gamma(\eta \pi^0) / [\Gamma(\kappa^-)]$	$(\pi^+ \pi^+) + \Gamma(K^+ \pi^-)$ ay modes of the η a	-)] are included.			$\Gamma_{168}/(\Gamma_{32}+\Gamma_{240})$
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.71±0.15 OUR F	FIT.				I
$1.74 \pm 0.15 \pm 0.11$	481 ± 40	MENDEZ	10	CLEO	e^+e^- at 3774 MeV
$\Gamma(\omega \pi^0)/\Gamma_{\text{total}}$ Unseen deca	ay modes of the ω :	are included.			Г ₁₆₉ /Г
VALUE (units 10^{-4})	CL% EVTS	DOCUMENT ID		TECN	COMMENT
$1.17 \pm 0.34 \pm 0.0$)7 45	ABLIKIM	16 D	BES3	e ⁺ e ⁻ , 3773 MeV
• • • We do not	use the following da	ata for averages,	fits, lin	nits, etc.	• • •
<2.6	90	RUBIN	06	CLEO	e^+e^- at $\psi($ 3770 $)$
$\Gamma(2\pi^+ 2\pi^- \pi^0)$	/Γ(<i>K</i> ⁻ π ⁺)				Γ ₁₇₀ /Γ ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT	ID	TECN	COMMENT
$10.7 \pm 1.2 \pm 0.5$	1614 ± 171	RUBIN	06	CLEO	e^+e^- at $\psi($ 3770 $)$
$\Gamma(\eta \pi^+ \pi^-)/\Gamma_{tc}$	otal ay modes of the η a	are included.			Г ₁₇₁ /Г
VALUE (units 10^{-4})	<u>CL%</u> EVTS	DOCUMENT IL)	TECN	COMMENT
$10.9 \pm 1.3 \pm 0.9$	257 ± 32	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not	use the following da	ata for averages,	fits, lin	nits, etc.	
<19	90	RUBIN	06	CLEO	$e \cdot e$ at $\psi(3770)$
$\Gamma(\omega \pi^+ \pi^-)/\Gamma(\omega \pi^+)/\Gamma(\omega \pi$	$\left(\mathbf{K}^{-} \pi^{+} \right)$ ay modes of the ω a	are included.			Γ ₁₇₂ /Γ ₃₂
VALUE (units 10^{-2})	EVTS	DOCUMENT I	D	TECN	COMMENT
4.1±1.2±0.4	472 ± 132	RUBIN	06	CLEO	e^+e^- at $\psi($ 3770 $)$
$\Gamma(3\pi^+3\pi^-)/\Gamma(3\pi^+3\pi^-)$	$(K^-2\pi^+\pi^-)$				Γ ₁₇₃ /Γ ₆₈
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.23±0.59±1.35	149 ± 17	LINK	04 B	FOCS	γ A, $E_{\gamma}~pprox~180~{ m GeV}$
$\Gamma(3\pi^+3\pi^-)/\Gamma($	$(K^- 3\pi^+ 2\pi^-)$	DOCUMENT ID	<u></u>	<u>ECN CO</u>	Г₁₇₃/Г₉₄ Эммент
• • • We do not	use the following da	ata for averages,	fits, lin	nits, etc.	• • •
$1.93\!\pm\!047\!\pm\!0.48$	1	LINK	04B F(DCS γ	A, $\overline{\textit{E}}_{\gamma}~pprox$ 180 GeV
1					,

¹ This LINK 04B result is not independent of other results in these Listings.

$\Gamma(\eta'(958)\pi^0)/\Gamma_{\rm tot}$	tal					Г ₁₇₄ /Г
Unseen decay n	nodes of the η'	(958) are included	1.			
VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT	
\bullet \bullet \bullet We do not use	the following d	ata for averages,	fits, li	mits, etc	. • • •	
$8.1\!\pm\!1.5\!\pm\!0.6$	$50~\pm~9$	ARTUSO	08	CLEO	See MENE	DEZ 10
$\Gamma(\eta'(958)\pi^0)/[\Gamma($	$(K^-\pi^+) + \Gamma$	$(K^+\pi^-)]$	J		Γ ₁₇₄ /(Ι	Г ₃₂ +Г ₂₄₀)
Unseen decay n	nodes of the η^{\prime}	(958) are included	1.	TECN	COMMENT	-
2.3+0.4 OUR FIT	EVIS	DOCUMENTID		TECN		
$2.3\pm0.3\pm0.2$	159 ± 19	MENDEZ	10	CLEO	e^+e^- at	3774 MeV
$\Gamma(\eta'(958)\pi^{+}\pi^{-})/$	/F _{total}					Г ₁₇₅ /Г
Unseen decay n	nodes of the η'	(958) are included	1.			
VALUE (units 10 ⁻⁴)	EVTS	DOCUMENT ID		TECN	COMMENT	
$4.5 \pm 1.6 \pm 0.5$	21 ± 8	ARTUSO	08	CLEO	e^+e^- at	ψ (3770)
Γ(2η)/Γ_{total} Unseen decay n	nodes of the η .	are included.				Г ₁₇₆ /Г
VALUE (units 10 ⁻⁴)	EVTS	DOCUMENT ID		TECN	COMMENT	
\bullet \bullet \bullet We do not use	the following d	ata for averages,	fits, li	mits, etc	. • • •	
$16.7 \pm 1.4 \pm 1.3$	255 ± 22	ARTUSO	08	CLEO	See MENE	DEZ 10
$\Gamma(2\eta)/[\Gamma(K^-\pi^+)]$	$+ \Gamma(K^+ \pi^-)$ nodes of the η)] are included.			Г ₁₇₆ /(І	Г ₃₂ +Г ₂₄₀)
<u>VALUE (units 10^{-2})</u>	EVTS	DOCUMENT ID		TECN	COMMENT	
4.3±0.5 OUR FIT 4.3±0.3±0.4	430 ± 29	MENDEZ	10	CLEO	e^+e^- at	3774 MeV
$\Gamma(nn'(958))/\Gamma_{tota}$						Г177/Г
Unseen decay n	• nodes of the n	and $n'(958)$ are in	nclude	d.		- 111/-
VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT	
• • • We do not use	the following d	ata for averages.	fits, li	mits, etc	. • • •	
$12.6 \pm 2.5 \pm 1.1$	46 ± 9	ARTUSO	08	CLEO	See MENE	DEZ 10
$\Gamma(\eta \eta'(958))/[\Gamma(k$	$(\pi^+) + \Gamma(I)$	$(\pi^{+}\pi^{-})]$			Г ₁₇₇ /(I	Г ₃₂ +Г ₂₄₀)
Unseen decay n	nodes of the η	and $\eta'(958)$ are in	nclude	d.		
$\frac{VALUE (units 10^{-2})}{27\pm07 \text{ OLIB FIT}}$	EVIS	DOCUMENT ID		TECN	COMMENT	
$2.7 \pm 0.6 \pm 0.3$	66 ± 15	MENDEZ	10	CLEO	e^+e^- at	3774 MeV
	— Hadronic	modes with a	κ κ	pair —		
$\Gamma(K^+K^-)/\Gamma_{\text{total}}$						Г ₁₇₈ /Г
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT	
3.97±0.07 OUR FIT	Error includes	s scale factor of 1	.4.			
\bullet \bullet \bullet We do not use	the following d	ata for averages,	fits, li	mits, etc	. • • •	
$4.08\!\pm\!0.08\!\pm\!0.09$	4746 ± 74	BONVICINI	08	CLEO	See MEN	DEZ 10
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 $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ Γ_{178}/Γ_{32} VALUE EVTS DOCUMENT ID TECN COMMENT 0.1021±0.0015 OUR FIT Error includes scale factor of 1.7. 0.1010±0.0016 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below. $0.122\ \pm 0.011\ \pm 0.004$ $242\,\pm\,20$ ABLIKIM 05F BES $e^+e^- \approx \psi(3770)$ $p\overline{p}, \sqrt{s}=1.96 \text{ TeV}$ $0.0992 \pm 0.0011 \pm 0.0012$ $16k \pm 200$ ACOSTA 05C CDF γ nucleus, $E_{\gamma} \approx$ LINK 03 FOCS $0.0993 \pm 0.0014 \pm 0.0014$ 11k 180 GeV $e^+e^- \approx \Upsilon(4S)$ $0.1040 \pm 0.0033 \pm 0.0027$ 1900 **CSORNA** 02 CLE2 $0.109 \ \pm 0.003 \ \pm 0.003$ 3317 AITALA 98C E791 π^- nucleus, 500 GeV $e^+e^- \approx \Upsilon(4S)$ $0.116 \ \pm 0.007 \ \pm 0.007$ 1102 ASNER 96B CLE2 $0.109 \pm 0.007 \pm 0.009$ 581 FRABETTI 94C E687 $\gamma \operatorname{Be} \overline{E}_{\gamma} = 220 \operatorname{GeV}$ 193 $0.107 \ \pm 0.010 \ \pm 0.009$ ANJOS 91D E691 Photoproduction $0.117 \ \pm 0.010 \ \pm 0.007$ 249 90 CLEO e^+e^- 10.5–11 GeV ALEXANDER • • We do not use the following data for averages, fits, limits, etc. • 103 $0.107 \ \pm 0.029 \ \pm 0.015$ ADAMOVICH 92 OMEG π^- 340 GeV $\gamma \operatorname{Be}$ $0.138\ \pm 0.027\ \pm 0.010$ 155 FRABETTI 92 E687 0.16 ± 0.05 34 ALVAREZ 91B NA14 Photoproduction $e^+e^- \approx 10 \text{ GeV}$ 0.10 $\pm 0.02 \pm 0.01$ 131 ALBRECHT 90C ARG BALTRUSAIT...85E MRK3 e^+e^- 3.77 GeV $0.122\ \pm 0.018\ \pm 0.012$ 118 79D MRK2 e^+e^- 3.77 GeV $0.113\ \pm 0.030$ ABRAMS WEIGHTED AVERAGE 0.1010±0.0016 (Error scaled by 1.4) Values above of weighted average, error, and scale factor are based upon the data in this ideogram only. They are not necessarily the same as our 'best' values, obtained from a least-squares constrained fit utilizing measurements of other (related) quantities as additional information. χ^2 05F BES ABLIKIM ACOSTA 05C CDF 1.2 LINK 03 FOCS 0.7 CSORNA 02 CLE2 0.5 AITALA 98C E791 3.5 ASNER 96B CLE2 2.3 FRABETT 94C E687 ANJOS 91D E691 ALEXANDER 90 CLEO 8.3 (Confidence Level = 0.081) 0.09 0.1 0.11 0.12 0.13 0.14 0.15 $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$

 $\Gamma(K^+K^-)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ $\Gamma_{178}/(\Gamma_{32}+\Gamma_{240})$ VALUE (units 10^{-2}) COMMENT DOCUMENT ID TECN 10.18 ± 0.15 OUR FIT Error includes scale factor of 1.7. $10.41 \pm 0.11 \pm 0.12$ CLEO e^+e^- at 3774 MeV 13.8k MENDEZ 10 $\Gamma(K^+K^-)/\Gamma(\pi^+\pi^-)$ $\Gamma_{178}/\Gamma_{133}$ The unused results here are redundant with $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ and $\Gamma(\pi^+\pi^-)/\Gamma(\kappa^-\pi^+)$ measurements by the same experiments. VALUE EVTS DOCUMENT ID TECN COMMENT • • • We do not use the following data for averages, fits, limits, etc. • • • $2.760 \pm 0.040 \pm 0.034$ ACOSTA 05C CDF $p\overline{p}, \sqrt{s}=1.96$ TeV 7334 FOCS γ nucleus, $\overline{E}_{\gamma} \approx 180$ GeV $2.81 \pm 0.10 \pm 0.06$ LINK 03 $e^+e^- \approx \Upsilon(4S)$ $2.96\ \pm 0.16\ \pm 0.15$ 710 **CSORNA** 02 CLE2 98C E791 π^- nucleus, 500 GeV $2.75 \pm 0.15 \pm 0.16$ AITALA $2.53\ \pm 0.46\ \pm 0.19$ 94C E687 $\gamma \operatorname{Be} \overline{E}_{\gamma} = 220 \operatorname{GeV}$ FRABETTI $2.23\ \pm 0.81\ \pm 0.46$ OMEG π^- 340 GeV ADAMOVICH 92 $1.95 \pm 0.34 \pm 0.22$ 91D E691 Photoproduction ANJOS e^+e^-pprox 10 GeV 2.5 ± 0.7 ALBRECHT 90C ARG CLEO e^+e^- 10.5–11 GeV $2.35 \pm 0.37 \pm 0.28$ ALEXANDER 90 $\Gamma(2K_{S}^{0})/\Gamma_{total}$ Γ_{179}/Γ VALUE (units 10^{-4}) **EVTS** DOCUMENT ID TECN COMMENT 1.70±0.12 OUR FIT 17A BES3 $e^+e^- \rightarrow \psi(3770)$ $1.67 \pm 0.11 \pm 0.11$ 576 ABLIKIM • • • We do not use the following data for averages, fits, limits, etc. • • • $1.46\!\pm\!0.32\!\pm\!0.09$ 68 ± 15 BONVICINI 80 CLEO See MENDEZ 10 $\Gamma(2K_{S}^{0})/[\Gamma(K^{-}\pi^{+})+\Gamma(K^{+}\pi^{-})]$ $\Gamma_{179}/(\Gamma_{32}+\Gamma_{240})$ <u>VALUE</u> (units 10^{-2}) DOCUMENT ID TECN COMMENT 0.436±0.030 OUR FIT CLEO e^+e^- at 3774 MeV $0.41 \pm 0.04 \pm 0.02$ $215\,\pm\,23$ 10 MENDEZ $\Gamma(2K_{s}^{0})/\Gamma(K_{s}^{0}\pi^{+}\pi^{-})$ Γ_{179}/Γ_{36} This is the same as $\Gamma(K^0\overline{K}^0) / \Gamma(\overline{K}^0\pi^+\pi^-)$ because $D^0 \to K^0_S K^0_I$ is forbidden by CP conservation. VALUE <u>EVTS</u> DOCUMENT ID TECN COMMENT 0.0062±0.0006 OUR FIT 0.0120±0.0022 OUR AVERAGE $0.0144 \pm 0.0032 \pm 0.0016 \ \ 79 \pm 17$ 05A FOCS γ Be, $\overline{E}_{\gamma} \approx 180$ GeV LINK 96B CLE2 $e^+e^- \approx \Upsilon(4S)$ $0.0101 \pm 0.0022 \pm 0.0016$ 26 ASNER $\gamma \operatorname{Be} \overline{E}_{\gamma} = 220 \operatorname{GeV}$ $0.039 \pm 0.013 \pm 0.013$ 20 ± 7 FRABETTI 94J E687 • • We do not use the following data for averages, fits, limits, etc. • • • $0.021 \begin{array}{c} +0.011 \\ -0.008 \end{array} \pm 0.002$ ALEXANDER 90 CLEO e^+e^- 10.5–11 GeV 5

$\Gamma(K^0_S K^- \pi^+) / \Gamma(I$	$K^{-}\pi^{+})$					l ₁₈₀ /l ₃₂
VALUE		DOCUMENT ID	611	<u>TECN</u>	<u>COMMENT</u>	
).084±0.013 OUR FI).08 ±0.03	Error in	1 AN IOS	01 Of I.I	E601	~ Ro 20 21	0.00/
1 The factor 100 at	the top of	column 2 of Table			should be a	omitted
	10 + -1					
$(K_{S}^{*}K_{\pi'})/(I_{\pi'})$	$\kappa_{S}\pi'\pi$			TECN	COMMENT	180/136
0.118±0.017 OUR F	IT Error in	Icludes scale factor	of 1.1	<u>TECN</u>	COMMENT	
0.119 ± 0.021 our a	VERAGE E	Error includes scale	facto	r of 1.3.		
0.108 ± 0.019	61	AMMAR	91	CLEO	$e^+e^- \approx$	10.5 GeV
$0.16 \pm 0.03 \pm 0.02$	39	ALBRECHT	90 C	ARG	$e^+e^- \approx$	10 GeV
F (K*(892)⁰ K⁰S, F Fit fraction from and 992 MeV is	₹*⁰ → K[−] m Dalitz plo s 0.370 ± 0.	⁻ π ⁺)/Γ(K ⁰ _S K ⁻ t analyses. The fra .003 ± 0.012.	$\pi^+)$	for the <i>I</i>	$\kappa^0_S \pi^+$ mass	F₁₈₁/F₁₈₀ between 792
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
2.47±0.15±0.23	113k	1 AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives re model with LASS	esults for tw parametriza	o S-wave parameter ation, and the diffe	erisatio rence	ons. We as a syst	take the va tematic unce	lues from the ertainty.
$\Gamma(\nu * (000) + \nu -$	$K^{*+} \rightarrow K$	$(S^0 \pi^+) / \Gamma(K^0_S K)$	$^{-}\pi^{+})$)		$\Gamma_{182}/\Gamma_{180}$
Fit fraction from	m Dalitz plo	ot analyses.				
Fit fraction from <i>VALUE</i> (units 10 ⁻²)	m Dalitz plo <u>EVTS</u>	t analyses. DOCUMENT ID		TECN	COMMENT	
Fit fraction from $VALUE$ (units 10^{-2}) $56.9 \pm 0.6 \pm 1.1$	m Dalitz plo <u>EVTS</u> 113k	DOCUMENT ID 1 AAIJ	16N	<u>TECN</u> LHCB	<u>COMMENT</u> Dalitz plot	fit
Fit fraction from <i>VALUE</i> (units 10 ⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS F (<i>K</i> *(1410)0 <i>K</i> 0	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza	$\frac{DOCUMENT \ ID}{1}$ To S-wave parameter ation, and the difference $T = \pi + 1 / \Gamma (K^0 K)$	16N erisatio rence	<u>TECN</u> LHCB ons. We as a syst	<u>COMMENT</u> Dalitz plot take the va tematic unce	fit lues from the ertainty.
Fit fraction from <i>VALUE</i> (units 10 ⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS F (<i>K</i> *(1410) ⁰ K ⁰ _S , Fit fraction from	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza K*⁰ → K m Dalitz plo	t analyses. <u>DOCUMENT ID</u> 1 AAIJ to S-wave parameter ation, and the differ $(-\pi^+)/\Gamma(\kappa_S^0 \kappa)$ to analyses.	16Ν erisatio rence - π+)	<u>TECN</u> LHCB ons. We as a syst	<u>COMMENT</u> Dalitz plot take the va tematic unce	fit lues from the ertainty. F₁₈₃/F₁₈₀
<pre>Fit fraction from VALUE (units 10⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS T(K*(1410)⁰ K⁰_S, Fit fraction from VALUE (units 10⁻²)</pre>	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u>	t analyses. <u>DOCUMENT ID</u> 1 AAIJ to S-wave parameter ation, and the differ $(\pi - \pi^+)/\Gamma(K_S^0 K)$ t analyses. <u>DOCUMENT ID</u>	16Ν erisatio rence – π+)	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u>	<u>COMMENT</u> Dalitz plot take the va tematic unce	fit lues from the ertainty. Г₁₈₃/Г₁₈₀
<pre>Fit fraction from VALUE (units 10⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS T(K*(1410)⁰ K⁰S, Fit fraction from VALUE (units 10⁻²) 3.8±0.5±5.6</pre>	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K^{*0}} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k	t analyses. $\frac{DOCUMENT ID}{1}$ AAIJ To S-wave parameter ation, and the differ $\pi^{-}\pi^{+})/\Gamma(K_{S}^{0}K)$ at analyses. $\frac{DOCUMENT ID}{1}$	16N erisatio rence – π+) 16N	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot	fit lues from the ertainty. F183/F180 fit
<pre>Fit fraction from VALUE (units 10⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS T(K*(1410)⁰ K⁰S, Fit fraction from VALUE (units 10⁻²) 3.8±0.5±5.6 ¹ AAIJ 16N gives re model with LASS dominates)</pre>	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza	$\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the difference $\pi = \pi^+) / \Gamma (K_S^0 K)$ To analyses. $\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the difference	16Ν erisatio rence - π+) 16Ν erisatio	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a unce	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va ortainty (which	fit lues from the ertainty. F183/F180 fit lues from the ch in this cas
<pre>Fit fraction from VALUE (units 10⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re model with LASS T(K*(1410)⁰ K⁰_S, Fit fraction from VALUE (units 10⁻²) 3.8±0.5±5.6 ¹ AAIJ 16N gives re model with LASS dominates) T(K*(1410)⁺ K⁻, Fit fraction from</pre>	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $K^{*+} \rightarrow I$ m Dalitz plo	$\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the difference $\pi = \pi^+) / \Gamma (K_S^0 K)$ At analyses. $\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the difference $K_S^0 \pi^+) / \Gamma (K_S^0 K)$ by analyses.	$\frac{16N}{rrence} = \pi + \frac{1}{2}$ $\frac{16N}{rrence} = \frac{1}{2}$	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a unce	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va trainty (which	fit lues from the ertainty. $\Gamma_{183}/\Gamma_{180}$ fit lues from the ch in this case $\Gamma_{184}/\Gamma_{180}$
<pre>Fit fraction from VALUE (units 10⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives re- model with LASS T(K*(1410)⁰ K⁰₀, Fit fraction from VALUE (units 10⁻²) 3.8±0.5±5.6 ¹ AAIJ 16N gives re- model with LASS dominates) T(K*(1410)⁺ K⁻, Fit fraction from VALUE (units 10⁻²)</pre>	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $K^{*+} \rightarrow I$ m Dalitz plo <u>EVTS</u>	$\frac{DOCUMENT \ ID}{1}$ AAIJ To S-wave parameter ation, and the differ $(-\pi^+)/\Gamma(K_S^0K)$ to analyses. $\frac{DOCUMENT \ ID}{1}$ AAIJ To S-wave parameter to S-wave parameter to AIJ $(K_S^0\pi^+)/\Gamma(K_S^0K)$ by analyses. <u>DOCUMENT \ ID</u>	$\frac{16N}{rence} = \pi^+$	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We is a unce	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va ertainty (which	fit lues from the ertainty. $\Gamma_{183}/\Gamma_{180}$ fit lues from the ch in this case $\Gamma_{184}/\Gamma_{180}$
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Fit fraction from VALUE (units 10 ⁻²) 56.9±0.6±1.1 ¹ AAIJ 16N gives reamodel with LASS F (K*(1410) ⁰ K ⁰ _S , Fit fraction from VALUE (units 10 ⁻²) 3.8±0.5±5.6 ¹ AAIJ 16N gives reamodel with LASS dominates) F (K*(1410) ⁺ K ⁻ , Fit fraction from VALUE (units 10 ⁻²) 9.6±1.1±5.4 ¹ AAIJ 16N gives reamodel with LASS dominates F (K*(1410) ⁺ K ⁻ , Fit fraction from VALUE (units 10 ⁻²) 9.6±1.1±5.4 ¹ AAIJ 16N gives reamodel with LASS in this case dominates	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $K^{*+} \rightarrow I$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza nates).	$\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the difference $T = \pi^+)/\Gamma(K_S^0K)$ To S-wave parameter 1 AAIJ To S-wave parameter $K_S^0\pi^+)/\Gamma(K_S^0F)$ To S-wave parameter 1 AAIJ	$\frac{16N}{rence} = \pi + \frac{1}{2}$ $\frac{16N}{rence} = \pi + \frac{1}{2}$ $\frac{16N}{rence} = \pi + \frac{1}{2}$	TECN LHCB ons. We as a syst TECN LHCB ons. We as a unce TECN LHCB ons. We as a syste	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va ortainty (which <u>COMMENT</u> Dalitz plot take the va ematic uncer	fit lues from the ertainty. $\Gamma_{183}/\Gamma_{180}$ fit lues from the ch in this case $\Gamma_{184}/\Gamma_{180}$ fit lues from the rtainty (which
Fit fraction from VALUE (units 10^{-2}) 56.9±0.6±1.1 ¹ AAIJ 16N gives re- model with LASS $\Gamma(\overline{K}^*(1410)^0 K_S^0, Fit fraction from$ VALUE (units 10^{-2}) 3.8±0.5±5.6 ¹ AAIJ 16N gives re- model with LASS dominates) $\Gamma(K^*(1410)^+ K^-, Fit fraction from$ VALUE (units 10^{-2}) 9.6±1.1±5.4 ¹ AAIJ 16N gives re- model with LASS in this case domin $\Gamma((K^-\pi^+)_{S-wave})$ Fit fraction from	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $K^{*+} \rightarrow h$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza ates). $F(S)/\Gamma(K)$	$\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parametriation, and the different of the different	$\frac{16N}{rence} = \pi + \frac{1}{2}$ $\frac{16N}{rence} = \frac{1}{2}$ $\frac{16N}{rence} = \frac{1}{2}$	TECN LHCB ons. We as a syst TECN LHCB ons. We as a unce TECN LHCB ons. We as a syste	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va <u>COMMENT</u> Dalitz plot take the va ematic unce	fit lues from the ertainty. $\Gamma_{183}/\Gamma_{180}$ fit lues from the ch in this case $\Gamma_{184}/\Gamma_{180}$ fit lues from the rtainty (which $\Gamma_{185}/\Gamma_{180}$
Fit fraction from VALUE (units 10^{-2}) 56.9±0.6±1.1 ¹ AAIJ 16N gives re- model with LASS $\Gamma(\overline{K^*(1410)^0 K_{S,}^0}$, Fit fraction from VALUE (units 10^{-2}) 3.8±0.5±5.6 ¹ AAIJ 16N gives re- model with LASS dominates) $\Gamma(K^*(1410)^+ K^-,$ Fit fraction from VALUE (units 10^{-2}) 9.6±1.1±5.4 ¹ AAIJ 16N gives re- model with LASS in this case domin $\Gamma((K^-\pi^+)_{S-wave})$ Fit fraction from VALUE (units 10^{-2})	m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $\overline{K}^{*0} \rightarrow K$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza $K^{*+} \rightarrow I$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriza hates). $F(S)/\Gamma(K)$	$\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter ation, and the differ $(-\pi^+)/\Gamma(K_S^0K)$ at analyses. $\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter attion, and the differ $K_S^0\pi^+)/\Gamma(K_S^0F)$ analyses. $\frac{DOCUMENT ID}{1 \text{ AAIJ}}$ To S-wave parameter attion, and the differ $K_S^0K^-\pi^+)$ at analyses. $\frac{DOCUMENT ID}{1 \text{ AAIJ}}$	$\frac{16N}{rence}$ $= \pi + \frac{1}{2}$ $\frac{16N}{rence}$ $\frac{7}{16N}$ $\frac{7}{16N}$ $\frac{16N}{rence}$	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a unce <u>TECN</u> LHCB ons. We as a syste	<u>COMMENT</u> Dalitz plot take the va tematic unce <u>COMMENT</u> Dalitz plot take the va rtainty (which <u>COMMENT</u> Dalitz plot take the va ematic uncer	fit lues from the ertainty. $\Gamma_{183}/\Gamma_{180}$ fit lues from the ch in this case $\Gamma_{184}/\Gamma_{180}$ fit lues from the ctainty (which $\Gamma_{185}/\Gamma_{180}$

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Fit fraction from	, K)/I (/ n Dalitz nk	$K_{S}^{\vee}K^{-}\pi^{+})$			Γ ₁₈₆ /Γ ₁₈₆
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$1.7 \pm 1.0 \pm 2.3$	113k	¹ AAIJ	16N	LHCB	Dalitz plot fit
¹ AAIJ 16N gives re model with LASS	sults for tw parametriz	vo S-wave paramet ation, and the diffe	erisatio erence	ons. We as a syst	take the values from th tematic uncertainty.
$(a_0(980)^-\pi^+, a_0^-)$ Fit fraction from	$\frac{1}{5} \rightarrow K^0_S I$ n Dalitz plo	K ⁻)/Γ(K ⁰ _S K ⁻ 1 ot analyses.	τ+)		Γ ₁₈₇ /Γ ₁₈₀
/ALUE (units 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT
.0±0.7±4.1	113k	¹ AAIJ	16N	LHCB	Dalitz plot fit
and the second	sults for two parametrizates). $a_{a}^{-} \rightarrow K_{a}^{0}$	wo S-wave paramet ation, and the diffe	π^{\pm}	ons. VVe as a syste	take the values from th ematic uncertainty (whic Γιοο /Γιο
Fit fraction from	n Dalitz plo	ot analyses.	.)		- 100/ - 100
/ALUE (units 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT
.74±0.15±0.57	113k	¹ AAIJ	16N	LHCB	Dalitz plot fit
$(a_2(1320)^-\pi^+, a_3)^{-}$	$a_2^- \rightarrow K_S^0$	- K⁻)/Г(К⁰_SK⁻ <i>DOCUMENT ID</i>	$\pi^+)$	TECN	Г ₁₈₉ /Г ₁₈₀
$f(a_2(1320)^-\pi^+, a_2)^{-15\pm0.06\pm0.14}$	$a_2^- \rightarrow K_S^0$ $- \frac{EVTS}{113k}$, Κ⁻)/Γ(Κ⁰5 Κ⁻ 1 AAIJ	π+) 16N	<u>TECN</u> LHCB	Γ₁₈₉/Γ₁₈₀ <u>COMMENT</u> Dalitz plot fit
$\frac{(a_2(1320)^- \pi^+, a_2)^-}{(a_2(1320)^- \pi^+, a_2)^-}$ 1.15±0.06±0.14 ¹ AAIJ 16N gives remodel with LASS ($\rho(1450)^- \pi^+, \rho^-$) Fit fraction from	$a_2^- \rightarrow K_S^0$ $- \frac{EVTS}{113k}$ $a_2 = 100 \text{ solution}$ $a_3 = 100 \text{ solution}$ $a_4 = 100 \text{ solution}$ $a_5 = $	$(K^-)/\Gamma(K_S^0 K^-)$ $\frac{DOCUMENT ID}{1}$ 1 AAIJ wo S-wave parametric parametri parametri parametric	(π^+) 16N erisation erence (π^+)	<u>TECN</u> LHCB ons. We as a syst	Γ ₁₈₉ /Γ ₁₈₀ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. Γ ₁₉₀ /Γ ₁₈₀
$(a_2(1320)^- \pi^+, a_2)^{-1}$ $(a_2(1320)^- \pi^+, a_3)^{-2}$ $(a_2(1320)^- \pi^+, a_3)^{-1}$ $(a_2(1320)^- \pi^+, a_3)^{-1}$ $(a_2(1320)^- \pi^+, a_3)^{-1}$ $(a_3(1320)^- \pi^+, a_3)^{-1}$ $(a_4(1450)^- \pi^+, a_3)^{-1}$ $(a_4(1450)^- \pi^+, a_3)^{-1}$ $(a_4(1450)^- \pi^+, a_3)^{-1}$ $(a_4(1450)^- \pi^+, a_3)^{-1}$	$a_2^- \rightarrow K_S^0$ 113k $a_2 EVTS$ 113k $a_3 Barbon Solution a_4 Barbon Solution a_5 Barbon Solutiona_5 Barbon Solution a_5 Barbon Solutiona_5 Barbon Solutiona$	$(K^-)/\Gamma(K_S^0 K^-)$ $\frac{DOCUMENT \ ID}{1}$ AAIJ wo S-wave paramet ation, and the difference $(K^-)/\Gamma(K_S^0 K^-)$ ot analyses. $\frac{DOCUMENT \ ID}{1}$	π^+) 16N erisation erence π^+)	<u>TECN</u> LHCB ons. We as a syst	$\Gamma_{189}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $\Gamma_{190}/\Gamma_{180}$ <u>COMMENT</u>
$\frac{(a_2(1320)^- \pi^+, a_2)^-}{(a_2(1320)^- \pi^+, a_2)^-}$ $\frac{ALUE (units 10^{-2})^-}{(15\pm 0.06\pm 0.14)^-}$ $\frac{1}{AAIJ} 16N \text{ gives remodel with LASS}$ $\frac{(\rho(1450)^- \pi^+, \rho)^-}{Fit \text{ fraction from }}$ $\frac{ALUE (units 10^{-2})^-}{(14\pm 0.2\pm 0.7)^-}$	$a_2 \rightarrow K_S^0$ \underline{EVTS} 113k 113k 113k 113k 113k m parametriz m $M_S^0 R$ m Dalitz plo \underline{EVTS} 113k	$(K^-)/\Gamma(K_S^0 K^-)$ $\frac{DOCUMENT \ ID}{1}$ 1 AAIJ vo S-wave paramet vo S-wave paramet vo S-wave paramet $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$ $(K^-)/\Gamma(K_S^0 K^-)$	π^+) 16N erisation erence π^+) 16N	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB	Γ ₁₈₉ /Γ ₁₈₀ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. Γ ₁₉₀ /Γ ₁₈₀ <u>COMMENT</u> Dalitz plot fit
$\frac{(a_2(1320)^- \pi^+, a_2)^{-1}}{(a_2(1320)^- \pi^+, a_2)^{-1}}$ $\frac{ALUE (units 10^{-2})^{-1}}{(a_2 + 1)^{-1}}$ $\frac{(a_2(1320)^- \pi^+, a_2)^{-1}}{(a_2 + 1)^{-2}}$	$a_2^- \rightarrow K_S^0$ 113k 113k 113k 113k 113k 113k $- \rightarrow K_S^0 I$ n Dalitz plo - EVTS 113k 11	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet tation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ ot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe	(π^+) 16N erisation (π^+) 16N erisation erisation erisation	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst	Γ ₁₈₉ /Γ ₁₈₀ <u>COMMENT</u> Dalitz plot fit take the values from the tematic uncertainty. Γ190/Γ180 <u>COMMENT</u> Dalitz plot fit take the values from the tematic uncertainty.
$\frac{(a_2(1320)^- \pi^+, a_2)^-}{(ALUE (units 10^{-2})^-)}$ 9.15±0.06±0.14 ¹ AAIJ 16N gives remodel with LASS -(ρ(1450)^- π^+, ρ) Fit fraction from <i>ALUE</i> (units 10^{-2}) 4±0.2±0.7 ¹ AAIJ 16N gives remodel with LASS -(K⁰_SK⁺π⁻)/Γ(K)	$a_{2}^{-} \rightarrow K_{S}^{0}$ $\xrightarrow{EVTS}{113k}$ $a_{sults} \text{ for tw} \text{ parametriz}$ $a_{1} \rightarrow K_{S}^{0} H$ $a_{1} \text{ Dalitz pla}$ $a_{1} - \sum_{k=1}^{EVTS} H$ $a_{sults} \text{ for tw} \text{ parametriz}$ $a_{k} - \pi^{+}$	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ ot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe	π^+) 16N erisation erence π^+) 16N erisation erence	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst	Γ189/Γ180 COMMENT Dalitz plot fit take the values from th COMMENT Dalitz plot fit take the values from th COMMENT
$\frac{(a_2(1320)^{-}\pi^{+}, a_2)}{(ALUE (units 10^{-2}))}$ $\frac{ALUE (units 10^{-2})}{(ALUE (units 10^{-2})^{-}\pi^{+}, \rho^{-})}$ $\frac{(\rho(1450)^{-}\pi^{+}, \rho^{-})}{(\mu(1450)^{-}\pi^{+}, \rho^{-})}$ $\frac{(\mu(1450)^{-}\pi^{+}, \rho^{-})}{(\mu(1450)^{-}\pi^{+}, \rho^{-})}$ $\frac{(\mu(1450)^{-}\pi^{+}, \rho^{-})}{(\mu(1450)^{-}\pi^{+}, \rho^{-})}$	$a_2^- \rightarrow K_S^0$ <u>EVTS</u> 113k Esults for tw parametriz → K_S n Dalitz plo <u>EVTS</u> 113k Esults for tw parametriz $(-\pi^+)$ the following	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet tation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ tot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet tation, and the diffe	π^+) 16N erisation erence π^+) 16N erisation erence π^+	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits of	$ \Gamma_{189}/\Gamma_{180} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $\Gamma_{190}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. Γ_{191}/Γ_{32} <u>COMMENT</u> etc. • • •
$(a_2(1320)^- \pi^+, a_2)^+$ (ALUE (units 10 ⁻²) 15±0.06±0.14 ¹ AAIJ 16N gives remodel with LASS (ρ(1450)^- π^+, ρ) Fit fraction from (ALUE (units 10 ⁻²) 4±0.2±0.7 ¹ AAIJ 16N gives remodel with LASS (K⁰_S K⁺ π⁻)/Γ(K) (ALUE • We do not use 05±0.025	$a_2^- \rightarrow K_S^0$ EVTS 113k EVTS $T= K_S^0 I$ $T= K_S^0 I$ T= EVTS 113k EVTS	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ ot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe <u>DOCUMENT ID</u> ng data for average	π^+) 16N erisation erence π^+) 16N erisation erence es, fits, 01	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits, o	$ \Gamma_{189}/\Gamma_{180} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{190}/\Gamma_{180} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{191}/\Gamma_{32} $ <u>COMMENT</u> etc. • • • a Ro 80, 240 CoV
$\frac{ALUE (units 10^{-2})}{15\pm0.06\pm0.14}$ ¹ AAIJ 16N gives remodel with LASS $\frac{(\rho(1450)^{-}\pi^{+}, \rho)}{Fit fraction from}$ $\frac{ALUE (units 10^{-2})}{14\pm0.2\pm0.7}$ ¹ AAIJ 16N gives remodel with LASS $\frac{(K_{S}^{0}K^{+}\pi^{-})}{\Gamma(K_{ALUE}^{0})}$ • • We do not use $\frac{105\pm0.025}{1}$	$a_2^- \rightarrow K_S^0$ <u>EVTS</u> 113k esults for tw parametriz → K_S n Dalitz plo <u>EVTS</u> 113k esults for tw parametriz $K^- \pi^+$) the following	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet vation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ tot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe <u>DOCUMENT ID</u> ng data for average 1 ANJOS	π^+) 16N erisation erence π^+) 16N erisation erence es, fits, 91 h of Al	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits, o E691	$\Gamma_{189}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $\Gamma_{190}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. Γ_{191}/Γ_{32} <u>COMMENT</u> etc. • • • γ Be 80–240 GeV should be amitted
$\frac{(a_2(1320)^- \pi^+, a_2)^-}{(ALUE (units 10^{-2})^-)}$ 9.15±0.06±0.14 ¹ AAIJ 16N gives remodel with LASS -(ρ(1450)^- π^+, ρ) Fit fraction from <i>ALUE</i> (units 10^{-2}) 1.4±0.2±0.7 ¹ AAIJ 16N gives remodel with LASS -(K⁰_S K⁺ π⁻)/Γ(H) -(K⁰_S K⁺ π⁻)/Γ(H) -(K⁰_S K⁺ π⁻)/Γ(H)) -(K⁰_S K⁺ π⁻))	$a_2^- \rightarrow K_S^0$ <u>EVTS</u> 113k esults for tw parametriz → K_S^0 I m Dalitz plo <u>EVTS</u> 113k esults for tw parametriz $K^- \pi^+$) the followin the top of	K ⁻)/Γ(K ⁰ _S K ⁻ <u>DOCUMENT ID</u> 1 AAIJ wo S-wave paramet ation, and the diffe K ⁻)/Γ(K ⁰ _S K ⁻ ot analyses. <u>DOCUMENT ID</u> 1 AAIJ wo S-wave paramet ation, and the diffe <u>DOCUMENT ID</u> ng data for average 1 ANJOS column 2 of Table	π^+) 16N erisation erence π^+) 16N erisation erence es, fits, 91 I of Al	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits, a E691 NJOS 91	$ \Gamma_{189}/\Gamma_{184} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{190}/\Gamma_{184} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{191}/\Gamma_{32} $ etc. • • • γ Be 80–240 GeV should be omitted.
$= (a_2(1320)^- \pi^+, i)$ $= (a_2(1320)^- \pi^+$	$a_2^- \rightarrow K_S^0$ <u>EVTS</u> 113k esults for tw parametriz $- \rightarrow K_S^0 I$ m Dalitz plo <u>EVTS</u> 113k esults for tw parametriz $K^- \pi^+$) the followin the top of $K_S^0 \pi^+ \pi^-$ <u>EVTS</u>	K ⁻)/Γ(K§K ⁻) DOCUMENT ID 1 AAIJ vo S-wave paramet vation, and the diffe K ⁻)/Γ(K§K ⁻) tation, and the diffe MOCUMENT ID 1 AAIJ vo S-wave paramet 1 AAIJ vo S-wave paramet ation, and the diffe DOCUMENT ID ng data for average 1 ANJOS column 2 of Table DOCUMENT ID	π^+) 16N erisation erence π^+) 16N erisation erence es, fits, 91 I of Al	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits, o E691 NJOS 91 <u>TECN</u>	$ \Gamma_{189}/\Gamma_{180} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{190}/\Gamma_{180} $ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $ \Gamma_{191}/\Gamma_{32} $ <u>COMMENT</u> etc. • • • γ Be 80–240 GeV . should be omitted. $ \Gamma_{191}/\Gamma_{32} $ <u>COMMENT</u>
$\Gamma(a_{2}(1320)^{-}\pi^{+}, i)$ $\frac{VALUE (units 10^{-2})}{D.15 \pm 0.06 \pm 0.14}$ ¹ AAIJ 16N gives remodel with LASS $\Gamma(\rho(1450)^{-}\pi^{+}, \rho)$ Fit fraction from <i>VALUE</i> (units 10^{-2}) 1.4 \pm 0.2 \pm 0.7 ¹ AAIJ 16N gives remodel with LASS $\Gamma(K_{S}^{0}K^{+}\pi^{-})/\Gamma(K_{ALUE}^{-})$ •• We do not use 0.05 \pm 0.025 ¹ The factor 100 at $\Gamma(K_{S}^{0}K^{+}\pi^{-})/\Gamma(K_{ALUE}^{-})$ •• We do not use	$a_2^- \rightarrow K_S^0$ <u>EVTS</u> 113k esults for tw parametriz → K_S I n Dalitz plo <u>EVTS</u> 113k esults for tw parametriz K- π+) the followin the top of K_S π+ π- <u>EVTS</u> the followin	K ⁻)/Γ(K ⁶ SK ⁻ <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe K ⁻)/Γ(K ⁶ SK ⁻ ot analyses. <u>DOCUMENT ID</u> 1 AAIJ vo S-wave paramet ation, and the diffe <u>DOCUMENT ID</u> ng data for average 1 ANJOS column 2 of Table) <u>DOCUMENT ID</u> ng data for average	π^+) 16N erisation erence π^+) 16N erisation erence es, fits, 91 I of Al es, fits,	<u>TECN</u> LHCB ons. We as a syst <u>TECN</u> LHCB ons. We as a syst <u>TECN</u> limits, o E691 NJOS 91 <u>TECN</u> limits, o	$\Gamma_{189}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. $\Gamma_{190}/\Gamma_{180}$ <u>COMMENT</u> Dalitz plot fit take the values from th tematic uncertainty. Γ_{191}/Γ_{32} <u>COMMENT</u> etc. • • • γ Be 80–240 GeV should be omitted. Γ_{191}/Γ_{30} <u>COMMENT</u> etc. • • •

$\Gamma(K_{S}^{0}K^{+}\pi^{-})/\Gamma(K^{0}K^{+}\pi^{-}))$	${}^{0}_{6}K^{-}\pi^{+})$					$\Gamma_{191}/\Gamma_{180}$
VALUE	<u>EVTS</u>	DOCUMENT ID		TECN	COMMENT	
0.654±0.007 OUR FIT 0.654±0.007 OUR AVE	ERAGE					
$0.655 \!\pm\! 0.004 \!\pm\! 0.006$	76k,113k	AAIJ	16N	LHCB	<i>pp</i> at 7, 8	TeV
$0.592\!\pm\!0.044\!\pm\!0.018$		INSLER	12	CLEO	$e^+e^- \rightarrow 3.77 \text{ Ge}^+$	<i>D⁰ </i>
Γ(K*(892)⁰ K⁰ _S , K * Fit fraction from	${}^{0} \rightarrow K^{+} \pi$ Dalitz plot a	$-)/\Gamma(K_S^0 K^+)$	$\pi^{-})$			Г ₁₉₂ /Г ₁₉₁
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
$5.17 {\pm} 0.21 {\pm} 0.47$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives resu model with LASS p	ults for two s arametrization	S-wave paramete on, and the diffe	erisatio rence	ons. We as a syst	take the va tematic unce	lues from the ertainty.
Γ(K*(892) ⁻ K ⁺ , K Fit fraction from	* → K S Dalitz plot a	$\pi^-)/\Gamma(K^0_SK^-)$ analyses.	⁺ π ⁻))		Г ₁₉₃ /Г ₁₉₁
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
$28.8 \pm 0.4 \pm 1.5$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives resu model with LASS p	ults for two s arametrization	S-wave paramete on, and the diffe	erisatio rence	ons. We as a syst	take the va tematic unce	lues from the ertainty.
Γ(K*(1410)⁰ K⁰ _S , K Fit fraction from	(*⁰ → K + Dalitz plot a	π⁺)/Γ(K⁰_SK ⁼ analyses.	$+\pi^{-}$)		Г ₁₉₄ /Г ₁₉₁
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
$2.2 \pm 0.6 \pm 3.7$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
AAIJ 16N gives resumed and the model with LASS pairs in this case domination of the model of the model with the model with the model of the model o	ults for two sarametrization tension $K^{*-} \rightarrow K_{s}^{*}$	S-wave parameters on, and the differ $g_{\pi^{-}}/\Gamma(\kappa_{S}^{0}\kappa_{S})$	erisatio ence a (+ π =	ons. We as a syste =)	take the va ematic uncer	lues from the tainty (which $\Gamma_{195}/\Gamma_{191}$
Fit fraction from	Dalitz plot a	analyses.		,		
VALUE (units 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT	
$11.9 \pm 1.5 \pm 9.1$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives resumed and the model with LASS pairs in this case domination of the second secon	ults for two s arametrizatio tes).	S-wave paramete on, and the differ	erisatio ence a	ons. We as a syste	take the va ematic uncer	lues from the tainty (which
$\Gamma((\kappa^+\pi^-)_{S-wave})$ Fit fraction from	K <mark>0</mark>)/Γ(KS Dalitz plot a	κ+ π ⁻) analyses.				Г ₁₉₆ /Г ₁₉₁
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
$17 \pm 2 \pm 8$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives resumed at the model with LASS p	ults for two s arametrization	S-wave paramete on, and the diffe	erisatio rence	ons. We as a syst	take the va tematic unce	lues from the ertainty.
$\Gamma((K^0_{S}\pi^-)_{S-wave})$ Fit fraction from	<⁺)/Γ(K⁰ Dalitz plot a	κ+π-) analyses.				Г ₁₉₇ /Г ₁₉₁
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
6.3±0.9±2.3	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives resumed and the model with LASS p	ults for two s arametrizatio	S-wave paramete on, and the diffe	erisatio rence	ons. We as a syst	take the va tematic unce	lues from the ertainty.
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Fit fraction fron	n Dalitz plo	t analyses.				
/ALUE (units 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT	
$6\pm2\pm18$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives re model with LASS in this case domin	sults for two parametriza ates).	o S-wave paramete tion, and the differ	erisatic rence a	ons. We is a syste	take the va ematic unce	lues from the rtainty (which
$f(a_0(1450)^+\pi^-, a)$ Fit fraction from	$k_0^+ \rightarrow K_S^0$ n Dalitz plo	K⁺)/Γ(K⁰_SK⁺ t analyses.	π-)			Г ₁₉₉ /Г ₁₉₁
ALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
.5±0.3±1.1	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
model with LASS in this case domin $(\rho(1700)^+\pi^-, \rho^-)$	parametriza ates). $+ \rightarrow K_{c}^{c} F$	(+)/ $\Gamma(K_{2}^{0}K^{+}\pi)$	rence a π^{-}	is a syste	ematic uncer	Tainty (which
Fit fraction from	n Dalitz plo	t analyses.	,			- 200/ - 191
/ALUE (units 10 ⁻²)	EVTS	DOCUMENT ID		TECN	COMMENT	
$.53 \pm 0.11 \pm 0.23$	76k	¹ AAIJ	16N	LHCB	Dalitz plot	fit
¹ AAIJ 16N gives re model with LASS	sults for two parametriza	o S-wave paramete	erisatio	ons. We	take the va	lues from the
「(K*(892) ⁰ K ⁰ ₅ , K	$f^{*0} \rightarrow K^+$	$\pi^{-})/\Gamma(\overline{K}^{*}(892))$	2) ⁰ K	g, <u></u> K ∗0	$\rightarrow K^{-}\pi^{+}$	-) Γ ₁₉₂ /Γ ₁₈₁
$(K^*(892)^0 K_S^0, K_S^0)$	$\zeta^{*0} \rightarrow K^+$ $\frac{CL\%}{7}$ 1 the followin 90	π^{-})/ $\Gamma(\overline{K}^*(892))$ $\frac{DOCUMENT ID}{INSLER 12}$ g data for average AMMAR 91	2) ⁰ K 2) ⁰ K 2 2 2 3 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	b , ★*0 v <u>COM</u> 0 e ⁺ 0 limits, e 0 e ⁺ 0	$\rightarrow K^{-}\pi^{+}$ $\xrightarrow{MMENT} D^{0}\overline{L}$ etc. • • • $e^{-} \approx 10.5$	Γ₁₉₂/Γ₁₈₁ Γ 192/Γ ₁₈₁ <u> </u>
$(K^*(892)^0 K_S^0, K_S^0)$ (ALUE) $0.356 \pm 0.034 \pm 0.000$ $\bullet \bullet We do not use 1000000000000000000000000000000000000$	$f^{*0} \rightarrow K^+$ $- \frac{CL\%}{7}$ 1 the followin 90 relations in and the tag and mixed	$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{1}$ INSLER 12 g data for average AMMAR 91 $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ g-side D decays to CP modes involvi	$\frac{TECP}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECP}{2} CLE$ TEC	by as a system by \mathcal{K}^{*0} , \mathcal{K}^{*0} conversion \mathcal{K}^{*0} conversion \mathcal{K}^{0} conversion \mathcal{K}^{0}	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MMENT} p^{0} \overline{p}$ etc. • • • $p^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and	GeV Signal side <i>L</i> 10 additiona
$\frac{F(K^*(892)^0 K_S^0, K_S^0)}{0.356 \pm 0.034 \pm 0.000}$ $= 0.000 \times 0.000$		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{1}$ INSLER 12 g data for average AMMAR 91 $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ g-side D decays to CP modes involvi	$\frac{TECI}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECI}{2} CLE$ $\frac{1}{2} CLE$ $\frac{1}{2$	b, \overline{K}^{*0} $V = \frac{CON}{e^+ \alpha}$ limits, e $0 = e^+ \alpha$ $\psi(3770)$ $\langle \pi \pi \pi$, or K_L^0 .	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{p}$ etc. • • • $p^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and	Γ192/Γ181 Γ192/Γ181 Ο ⁰ , 3.77 GeV GeV signal side <i>L</i> 10 additiona Γ₂₀₁/Γ₅₁
$\frac{(K^*(892)^0 K_S^0, K_S^0, K_S^0)}{(K^*(892)^0 K_S^0, K_S^0)} = \frac{(K^*(892)^0 K_S^0, K_S^0)}{(K^*(892)^0 K_S^0)} = \frac{(K^*(892)^0 K_S^0)}{(K^*(8)^0 K_S^0)} = \frac{(K^*(892)^0 K_S^0)}{(K^*(8)^0 K_S^0)} = \frac{(K^*(8)^0 K_S^0)}{(K^*(8)^0 K_$		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{1}$ INSLER 12 g data for average AMMAR 91 $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ g-side D decays to CP modes involvi	$\frac{TECI}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECI}{2} CLE$ $\frac{1}{2} CLE$ $K \pi, F$	b, \overline{K}^{*0} $V = \frac{CON}{e^+ e^-}$ limits, e^- $\psi(3770)$ $\langle \pi \pi \pi, \gamma \rangle$ or K_L^0 .	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{p}^{0}$ etc. • • • $p^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and	Γ₁₉₂/Γ₁₈₁ Γ 192/Γ ₁₈₁ Γ ⁰ , 3.77 GeV GeV signal side <i>L</i> 10 additiona Γ₂₀₁/Γ₅₁
$\frac{(K^*(892)^0 K_S^0, K_S^0)}{(ALUE)}$ $\frac{(ALUE)}{(ALUE)}$ $\frac{(ALUE)}{(ALUE)}$ $\frac{(ALUE)}{(ALUE)}$ $\frac{(K^+ K^- \pi^0)}{(K^+ K^- \pi^0)}$	$\begin{array}{c} \mathbf{x}^{\bullet 0} \rightarrow \mathbf{K}^{\bullet} \\ \hline 7 & 1 \\ 7 & 1 \\ 7 & 1 \\ 7 & 1 \\ 7 & 1 \\ 90 \\ 7 & 1 \\ 90 \\ 7 & 1 \\ 90 \\ 7 & 1 \\ 90 \\ 7 & 1 \\ 10$	$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\overline{DOCUMENT ID}$ INSLER 12 g data for average AMMAR 91 $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ g-side D decays to CP modes involvi $\frac{DOCUMEN}{2}$ AUBERT, g data for average	$\frac{TECI}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECI}{2}$ $\frac{TECI}{2}$ $\frac{TECI}{2}$ $\frac{TECI}{2}$ $\frac{TECI}{2}$ $\frac{TECI}{2}$ $\frac{TID}{2}$	by as a system by \mathcal{K}^{*0} , \mathcal{K}^{*0} conversion \mathcal{K}^{0} , \mathcal{K}^{*0} conversion \mathcal{K}^{0} , \mathcal{K}^{0} conversion \mathcal{K}^{0} , \mathcal{K}^{0} conversion \mathcal{K}^{0} ,	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{p}$ etc. • • • • • • • • • • • • • • • • • • •	F_{192}/F_{181} $\overline{F_{192}/F_{181}}$ $\overline{F_{0}}, 3.77 \text{ GeV}$ $F_{0}, 3.77 \text{ GeV}$
$(K^*(892)^0 K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 •• We do not use <0.010 ¹ Uses quantum corr decays to $K_S^0 K \pi$ <i>CP</i> -even, <i>CP</i> -odd, $(K^+ K^- \pi^0) / \Gamma(K_S^0)$ (ALUE (units 10 ⁻²) 2.37±0.03±0.04 •• We do not use 0.95±0.26	$f^{*0} \rightarrow K^+$ $f^{-} \frac{CL\%}{7}$ 1 the followin 90 relations in and the tag and mixed $f^{-} \pi^+ \pi^0$ $f^{-} \frac{EVT}{11k \pm 12}$ the followin 15	π^{-})/ $\Gamma(\overline{K}^{*}(892))$ $\overline{DOCUMENT ID}$ INSLER 12 g data for average AMMAR 91 $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ g-side D decays to CP modes involvi $\frac{TS}{2}$ <u>DOCUMEN</u> 2 AUBERT, g data for average 1 ASNER	$\frac{TECP}{2} K_{S}^{0} K_{S}^{0}$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2} CLE$ $K \pi, F$	by as a system by \mathcal{K}^{*0} , \mathcal{K}^{*0} conversion \mathcal{K}^{0} , \mathcal{K}^{*0} conversion \mathcal{K}^{0} , \mathcal{K}^{0}	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MMENT} p^{0} \overline{D}$ $e^{-} \rightarrow D^{0} \overline{D}$ $e^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\frac{K}{K} \pi \pi^{0}$, and $\frac{K}{K} e^{+} e^{-}$ etc. • • • • • • • • • • • • • • • • • • •	Frequency. $\Gamma_{192}/\Gamma_{181}$ $\overline{D^0}$, 3.77 GeV GeV Signal side <i>E</i> 10 additiona Γ_{201}/Γ_{51} $\overline{\Lambda T}$ $\approx \Upsilon(4S)$ $\approx \Upsilon(4S)$
$(K^*(892)^0 K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 •• We do not use <0.010 ¹ Uses quantum corr decays to $K_S^0 K \pi$ CP-even, CP -odd, $(K^+ K^- \pi^0) / \Gamma(K_S^0)$ (ALUE (units 10 ⁻²) 2.37±0.03±0.04 •• We do not use 0.95±0.26 $(K^*(892)^+ K^-, K_S^0)$ This is the "fit f		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{INSLER}$ 12 $g \ data \ for \ average$ $AMMAR \qquad 91$ $e^{+}e^{-} \rightarrow D^{0}\overline{D^{0}}$ $g \ data \ D \ decays \ to$ $CP \ modes \ involvi$ $\frac{TS}{2} \qquad AUBERT,$ $g \ data \ for \ average$ $1 \qquad ASNER$ $\rightarrow K^{+}\pi^{0})/\Gamma(I)$ for the Dalitz-plot	$\frac{TECP}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2} CLE$ $K \pi, F$	b, $\overline{K^{*0}}$ $V = \frac{CON}{e^+ c}$ limits, $e^- c$ $\psi(3770)$ $\langle \pi \pi \pi, \pi, \pi \rangle$ or K_L^0 $\int \frac{TEC}{06x}$ $\int BA $ limits, $e^- \pi^0$ is with i	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{p}$ etc. • • • $p^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\overrightarrow{K} \pi e^{+} e^{-}$ etc. • • $E2 e^{+} e^{-}$ interference.	r_{192}/Γ_{181} $\overline{D^0}, 3.77 \text{ GeV}$ GeV $signal side L$ 10 additiona r_{201}/Γ_{51} $\frac{NT}{\approx \Upsilon(4S)}$ $\approx \Upsilon(4S)$ $\Gamma_{202}/\Gamma_{201}$
$\Gamma(K^*(892)^0 K_S^0, K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 •• We do not use <0.010 1 Uses quantum corr decays to $K_S^0 K \pi$ <i>CP</i> -even, <i>CP</i> -odd, $\Gamma(K^+ K^- \pi^0) / \Gamma(K_S^0)$ (ALUE (units 10 ⁻²) 2.37±0.03±0.04 •• We do not use 0.95±0.26 $\Gamma(K^*(892)^+ K^-, K_S^0)$ This is the "fit for the fit	$\chi^{*0} \rightarrow \chi^{+}$ $\frac{CL\%}{7}$ 1 the followin 90 relations in and the tag and mixed $\chi^{-}\pi^{+}\pi^{0}$ $\frac{EV7}{11k\pm 12}$ the followin 15 $\chi^{*}(892)^{+}$ fraction" from	$\frac{DOCUMENT \ ID}{T} (\overline{K}^* (892))$ $\frac{DOCUMENT \ ID}{T} (\overline{K}^* (892))$ $\frac{DOCUMENT \ ID}{T} (\overline{K}^* (892))$ $\frac{DOCUMENT \ ID}{T} (1)$ $\frac{DOCUMENT \ ID}{T} (1)$ $\frac{DOCUMENT \ ID}{T} (1)$ $\frac{DOCUMENT \ ID}{T} (1)$	$\frac{TECP}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2}$	b, $\overline{K^{*0}}$ V = COM $O = + \alpha$ limits, ϵ $O = + \alpha$ $\psi(3770)$ $\langle \pi \pi \pi, \pi \rangle$ $\langle \sigma r K_L^0$ $\langle \sigma r K_L^0$ (σK_L^0) (σK_L^0) ($\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{D}$ $e^{-} \rightarrow D^{0} \overline{D}$ $e^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\frac{W}{BR} \frac{COMME}{e^{+}e^{-}}$ etc. • • • $E_{2} e^{+}e^{-}$ interference. $\underline{COMMENT}$	Frequency. F192/F181 $\overline{D^0}$, 3.77 GeV GeV Signal side <i>E</i> 10 additiona Γ_{201}/Γ_{51} $\overline{\Gamma_{201}}$ $\approx \Upsilon(4S)$ $\approx \Upsilon(4S)$ $\Gamma_{202}/\Gamma_{201}$
$F(K^*(892)^0 K_S^0, K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 •• We do not use <0.010 ¹ Uses quantum corr decays to $K_S^0 K \pi$ CP-even, CP -odd, $F(K^+ K^- \pi^0) / \Gamma(K_S^0)$ (ALUE (units 10 ⁻²) 2.37±0.03±0.04 •• We do not use 0.95±0.26 $F(K^*(892)^+ K^-, K_S^0)$ This is the "fit for the fit for the fi		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{INSLER}$ 12 $g \ data \ for \ average$ $AMMAR \qquad 91$ $e^{+}e^{-} \rightarrow D^{0}\overline{D^{0}}$ $g \ side \ D \ decays \ to$ $CP \ modes \ involvi$ $\frac{TS}{2} \qquad AUBERT,$ $g \ data \ for \ average$ $1 \qquad ASNER$ $\rightarrow K^{+}\pi^{0})/\Gamma(I)$ for the Dalitz-plot $\frac{DOCUMENT \ ID}{AUBERT}$	$\frac{TECP}{2} K_{2}^{0} K_{2}^{0}$ $\frac{TECP}{2} CLE$ $\frac{TECP}{2} CLE$ $K \pi, F$ K^{0} K^{0	b, \mathcal{K}^{*0} $V = \frac{CON}{e^+ e^-}$ limits, e $0 = e^+ e^-$ $\psi(3770)$ $\langle \pi \pi \pi, \pi,$	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{D}$ $e^{-} \rightarrow D^{0} \overline{D}$ $e^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\frac{EN}{BR} e^{+} e^{-}$ $ETE e^{-} e^{-} e^{-} e^{-}$ $ETE e^{-} e^{-} e^{-} e^{-} e^{-}$ $ETE e^{-} e^$	Frequency. F192/F181 $\overline{D^0}$, 3.77 GeV GeV Signal side L 10 additiona Γ_{201}/Γ_{51} $\frac{NT}{\approx \Upsilon(4S)}$ $\approx \Upsilon(4S)$ $\Gamma_{202}/\Gamma_{201}$ I, 11k evts
$\Gamma(K^*(892)^0 K_S^0, K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 • • We do not use $(0,010)^{-1}$ Uses quantum corrected decays to $K_S^0 K \pi$ CP-even, CP -odd, $\Gamma(K^+ K^- \pi^0) / \Gamma(K_S^0)$ (ALUE (units $10^{-2})^{-2}$ 2.37±0.03±0.04 • • We do not use $(0,05\pm0.26)^{-2}$ $\Gamma(K^*(892)^+ K^-, K_S^0)$ This is the "fit $(ALUE (units 10^{-2})^{-2})^{-2}H.4±0.8±0.6• • We do not use (0,01)^{-2}$		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{INSLER}$ 12 $g \ data \ for \ average$ $AMMAR \qquad 91$ $e^{+}e^{-} \rightarrow D^{0}\overline{D^{0}}$ $g \ data \ for \ average$ $CP \ modes \ involvi$ $\frac{TS}{2} \qquad AUBERT,$ $g \ data \ for \ average$ $AUBERT,$ $DOCUMENT \ ID \\AUBERT$ $g \ data \ for \ average$	$\frac{T = CLE}{CLE}$ $\frac{T = CLE}{CLE}$ $\frac{T = CLE}{K\pi, F}$ $\frac{T = LD}{K\pi, F}$ $\frac{T = LD}{R}$ $\frac{T = L}{R}$ T	b, $\overline{K^{*0}}$ $V = \frac{CON}{e^+ c}$ limits, $e^- c$ $\psi(3770)$ $\langle \pi \pi \pi, \pi, \pi \rangle$ or K_L^0 $\langle \pi \pi \pi, \pi, \pi \rangle$ or K_L^0 $\int \frac{TEC}{06X}$ BABR limits, $e^- \pi^0$	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} p^{0} \overline{p}$ etc. • • • $e^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\frac{W}{ER} e^{+} e^{-}$ etc. • • • $\Xi e^{+} e^{-}$ interference. $\frac{COMMENT}{Dalitz fit II}$ etc. • •	Fitality. F192/F181 $\overline{D^0}$, 3.77 GeV GeV signal side <i>E</i> 10 additiona Γ_{201}/Γ_{51} $\overline{\Lambda T}$ $\approx \Upsilon(4S)$ $\kappa \Upsilon(4S)$ $\Gamma_{202}/\Gamma_{201}$ I, 11k evts
$F(K^*(892)^0 K_S^0, K_S^0, K_S^0)$ (ALUE 0.356±0.034±0.00 • • We do not use <0.010 ¹ Uses quantum corr decays to $K_S^0 K \pi$ CP-even, CP -odd, $F(K^+ K^- \pi^0)/\Gamma(K_S^0)$ (ALUE (units 10 ⁻²) 2.37±0.03±0.04 • • We do not use 0.95±0.26 $F(K^*(892)^+ K^-, K_S^0)$ This is the "fit for the fit for the fi		$\pi^{-})/\Gamma(\overline{K}^{*}(892))$ $\frac{DOCUMENT \ ID}{INSLER \ 12}$ $g \ data \ for \ average$ $AMMAR \ 91$ $e^{+}e^{-} \rightarrow D^{0}\overline{D}^{0}$ $g \ data \ for \ average$ $CP \ modes \ involvi$ $\frac{TS}{2} \qquad \frac{DOCUMENT}{2} \qquad AUBERT,$ $g \ data \ for \ average$ $1 \qquad ASNER$ $\rightarrow K^{+}\pi^{0})/\Gamma(I)$ $DOCUMENT \ ID \qquad AUBERT$ $g \ data \ for \ average$ $1 \qquad CAWLFIELD$	$\frac{T ECl}{2} K_{S}^{0} K_{S}^{0}$ $\frac{T ECl}{2} CLE$ $\frac{T ECl}{2} CLE$ $K \pi, F$ $K \pi, F$ $K \pi, K$ $\frac{T ID}{B}$ $K^{0} K_{S}^{0}$ $\frac{T ID}{B}$	b, \mathcal{K}^{*0} $V = \frac{CON}{e^+ o}$ $O = e^+ o$ $\psi(3770)$ $\langle \pi \pi \pi, \pi \rangle$ $\langle \sigma r K_L^0$ $\langle \sigma r K_L^0$ (σK_L^0) (σK_L^0)	$\rightarrow \mathbf{K}^{-} \pi^{+}$ $\xrightarrow{MENT} e^{-} \rightarrow D^{0} \overline{L}$ etc. • • • $e^{-} \approx 10.5$), where the $K \pi \pi^{0}$, and $\overrightarrow{K} \pi \pi^{0}$, and $\overrightarrow{K} \pi \pi^{0}$, and $\overrightarrow{K} \pi \pi^{0}$ etc. • • • $\overrightarrow{L} = e^{+} e^{-}$	Frequency. Fig2/Fig2/Fig1 $\overline{D^0}$, 3.77 GeV GeV Signal side <i>L</i> 10 additiona Γ_{201}/Γ_{51} $\approx \Upsilon(4S)$ $\approx \Upsilon(4S)$ $\Gamma_{202}/\Gamma_{201}$ I, 11k evts $\overline{D^0}$, 3.77 GeV $\approx \Gamma(4S)$

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	$F \to K^- \pi^0) / \Gamma(K)$	(+ <i>K</i>	- π⁰)	interference	$\Gamma_{203}/\Gamma_{201}$
$V_{\Delta I IIF}$ (units 10^{-2})		anatys	TECN	COMMENT	
15.9±0.7±0.6	AUBERT	07⊤	BARR	Dalitz fit II	11k evts
• • • We do not use the follow	ving data for averages	s, fits,	limits, e	etc. • • •	IIK CVL5
12.3±2.2	¹ CAWLFIELD	06A	CLEO	Dalitz fit, 62	27 ± 30 evts
1 The error on this CAWLFIE	ELD 06A result is stat	istical	only.		
$\Gamma((K^+\pi^0)_{S-wave}K^-)/\Gamma$ This is the "fit fraction"	(K⁺ K⁻ π⁰) from the Dalitz-plot	analys	is with i	interference.	Г ₂₀₄ /Г ₂₀₁
$VALUE$ (units 10^{-2})	DOCUMENT ID		TECN	COMMENT	
71.1±3.7±1.9	¹ AUBERT	07 T	BABR	Dalitz fit II,	11k evts
¹ The only major difference mode, where the fit-I fracti	between fits I and II on is (16.3 \pm 3.4 \pm 2	in the 2.1)%.	AUBE	RT 07⊤ analy	rsis is in this
$\Gamma((K^-\pi^0)_{S-wave}K^+)/\Gamma$	$(K^+K^-\pi^0)$	analys	is with i	interference	$\Gamma_{205}/\Gamma_{201}$
VALUE (units 10^{-2})	DOCUMENT ID	unurys	TECN	COMMENT	
3.9±0.9±1.0	AUBERT	07T	BABR	Dalitz fit II,	11k evts
$\Gamma(f_0(980)\pi^0, f_0 \to K^+ K^-$ This is the "fit fraction"	$^{-})/\Gamma(K^{+}K^{-}\pi^{0})$ from the Dalitz-plot	analys	is with i	interference.	Γ ₂₀₆ /Γ ₂₀₁
VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT	
10.5±1.1±1.2	¹ AUBERT	07T	BABR	Dalitz fit II,	11k evts
1 When AUBERT 07T replace negligibly different (11.0 \pm	te the $f_0(980) \pi^0$ modes $1.5 \pm 1.2)\%.$	le wit	h <i>a</i> ₀ (980	0) π^{0} , the fit	fraction is a
$\Gamma(\phi \pi^0, \phi \to K^+ K^-) / \Gamma(K)$ This is the "fit fraction"	K⁺ K⁻ π⁰) from the Dalitz-plot	analys	is with i	interference.	$\Gamma_{207}/\Gamma_{201}$
VALUE (units 10 ⁻²)	DOCUMENT ID		TECN	COMMENT	
	ALIBEDT	07-	RARR		
19.4±0.6±0.5 • • • We do not use the follow	ving data for averages	071 3. fits.	limits.	Dalitz fit II, etc. ● ● ●	11k evts
19.4±0.6±0.5 • • • We do not use the follow 14.9+1.6	ving data for averages	071 3, fits, 06A	limits, e	Dalitz fit II, etc. • • • Dalitz fit. 6	11k evts 27 ± 30 evts
 19.4±0.6±0.5 ● ● We do not use the follow 14.9±1.6 ¹ The error on this CAWLFIE 	ving data for averages ¹ CAWLFIELD ELD 06A result is stat	071 s, fits, 06A istical	limits, e CLEO only.	Dalitz fit II, etc. • • • Dalitz fit, 62	11 k evts 27 ± 30 evts
19.4 \pm 0.6 \pm 0.5 • • We do not use the follow 14.9 \pm 1.6 ¹ The error on this CAWLFIE F(K⁺ K⁻ π^{0} nonresonant) This is the "fit fraction"	ving data for averages ¹ CAWLFIELD ELD 06A result is stati /Γ($K^+ K^- \pi^0$) from the Dalitz-plot	071 s, fits, 06A istical analys	Iimits, e CLEO only.	Dalitz fit II, etc. • • • Dalitz fit, 6: interference.	11k evts 27 ± 30 evts Γ₂₀₈/Γ₂₀₁
19.4 \pm 0.6 \pm 0.5 • • We do not use the follow 14.9 \pm 1.6 ¹ The error on this CAWLFIE Г($\mathcal{K}^+ \mathcal{K}^- \pi^0$ nonresonant) This is the "fit fraction" VALUE • • We do not use the follow	ving data for averages ¹ CAWLFIELD ELD 06A result is stat /Γ(K+K-π ⁰) from the Dalitz-plot is <u>DOCUMENT ID</u> ving data for averages	071 s, fits, 06A istical analys	Iimits, e CLEO only. is with i <u>TECN</u> limits e	Dalitz fit II, etc. • • • Dalitz fit, 62 interference. <u>COMMENT</u>	11k evts 27 ± 30 evts F₂₀₈/F₂₀₁
19.4 \pm 0.6 \pm 0.5 • • We do not use the follow 14.9 \pm 1.6 ¹ The error on this CAWLFIE F($K^+K^-\pi^0$ nonresonant) This is the "fit fraction" <u>VALUE</u> • • We do not use the follow 0.360 \pm 0.037	ving data for averages ¹ CAWLFIELD ELD 06A result is stati /Γ($K^+ K^- \pi^0$) from the Dalitz-plot <u>DOCUMENT ID</u> ving data for averages ¹ CAWLEIELD	071 s, fits, 06A istical analys ., fits, 06A	Iimits, e CLEO only. is with i <u>TECN</u> limits, e	Dalitz fit II, etc. • • • Dalitz fit, 6: interference. <u>COMMENT</u> etc. • •	11k evts 27 \pm 30 evts $\Gamma_{208}/\Gamma_{201}$ 27 \pm 30 evts
 19.4±0.6±0.5 • We do not use the follow 14.9±1.6 The error on this CAWLFIE F(K⁺ K⁻ π⁰ nonresonant) This is the "fit fraction" <i>VALUE</i> • We do not use the follow 0.360±0.037 The error is statistical only. nonresonant background we significant improvement in the statistical only. 	ving data for averages ¹ CAWLFIELD ELD 06A result is stati $/\Gamma(K^+K^-\pi^0)$ from the Dalitz-plot <u>DOCUMENT ID</u> ving data for averages ¹ CAWLFIELD CAWLFIELD 06A also ith broad S-wave κ ⁼ the fit, and K ^{*±} K ⁼	071 s, fits, 06A istical analys $\overline{}$ s, fits, 06A so fits $\pm \rightarrow$ and ϕ	limits, e CLEO only. is with i <u>TECN</u> limits, e CLEO the Dal $K^{\pm} \pi^{0}$ π^{0} resul	Dalitz fit II, etc. • • • Dalitz fit, 62 interference. <u>COMMENT</u> etc. • • Dalitz fit, 62 litz plot repla resonances. Its are not mu	11k evts 27 \pm 30 evts $\Gamma_{208}/\Gamma_{201}$ 27 \pm 30 evts cing this flat There is no uch changed.
19.4 \pm 0.6 \pm 0.5 • • We do not use the follow 14.9 \pm 1.6 ¹ The error on this CAWLFIE $\Gamma(K^+K^-\pi^0 \text{ nonresonant})$ This is the "fit fraction" <u><i>VALUE</i></u> • • We do not use the follow 0.360 \pm 0.037 ¹ The error is statistical only. nonresonant background w significant improvement in $\Gamma(2K_S^0\pi^0)/\Gamma_{total}$	ving data for averages ¹ CAWLFIELD ELD 06A result is stat $/\Gamma(K^+K^-\pi^0)$ from the Dalitz-plot a <u>DOCUMENT ID</u> ving data for averages ¹ CAWLFIELD CAWLFIELD 06A also ith broad <i>S</i> -wave κ^{\pm} the fit, and $K^{*\pm}K^{\mp}$	071 s, fits, 06A istical analys $_{s}$, fits, 06A so fits $\pm \rightarrow$ and ϕ	limits, e CLEO only. is with i <u>TECN</u> limits, e CLEO the Dal $K^{\pm} \pi^{0}$ π^{0} result	Dalitz fit II, etc. • • • Dalitz fit, 62 interference. <u>COMMENT</u> etc. • • • Dalitz fit, 62 litz plot repla resonances. Its are not mu	11k evts 27 \pm 30 evts $\Gamma_{208}/\Gamma_{201}$ 27 \pm 30 evts cing this flat There is no uch changed. Γ_{209}/Γ
19.4 \pm 0.6 \pm 0.5 • • We do not use the follow 14.9 \pm 1.6 ¹ The error on this CAWLFIE $\Gamma(K^+K^-\pi^0$ nonresonant) This is the "fit fraction" <i>VALUE</i> • • We do not use the follow 0.360 \pm 0.037 ¹ The error is statistical only. nonresonant background w significant improvement in the significant improvement improvement in the significant improvement improvem	ving data for averages ¹ CAWLFIELD ELD 06A result is stat $/\Gamma(K^+K^-\pi^0)$ from the Dalitz-plot <u>DOCUMENT ID</u> ving data for averages ¹ CAWLFIELD CAWLFIELD 06A also with broad S-wave κ^{-1} the fit, and $K^{*\pm}K^{\mp}$	071 s, fits, 06A istical analys , fits, 06A so fits $\pm \rightarrow$ and ϕ	limits, e CLEO only. is with i <u>TECN</u> limits, e CLEO the Dal $K^{\pm} \pi^{0}$ π^{0} resul	Dalitz fit II, etc. • • • Dalitz fit, 62 interference. <u>COMMENT</u> etc. • • • Dalitz fit, 62 litz plot repla resonances. Its are not mu <u>COMMENT</u>	11k evts 27 \pm 30 evts F ₂₀₈ / F ₂₀₁ 27 \pm 30 evts cing this flat There is no ich changed. F ₂₀₉ / F

$\Gamma(\phi\pi^0)/\Gamma(\kappa^+\kappa^-)$	-)					Г ₂₃₁ /Г ₁₇₈
VALUE	<u>EVTS</u>	DOCUMENT ID	. C	<u>TECN</u>	<u>COMMENT</u>	
• • • vve do not use	e the following	data for average	es, tits,	, limits, e		
$0.194 \pm 0.006 \pm 0.009$	1254	TAJIMA	04	BELL	e^+e^- at	$\Upsilon(4S)$
$\Gamma(\phi\eta)/\Gamma(K^+K^-)$)					$\Gamma_{232}/\Gamma_{178}$
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT	
3.59±1.14±0.18	31	TAJIMA	04	BELL	e^+e^- at	$\Upsilon(4S)$
$\Gamma(\phi\omega)/\Gamma_{total}$						Г ₂₃₃ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	<u>COMMENT</u>	
<0.0021	90	ALBRECHT	941	ARG	$e^+e^- \approx 1$	0 GeV
$\Gamma(K^+K^-\pi^+\pi^-)$	/Γ(<i>K</i> ⁻ 2π ⁺	$\pi^{-})$				Г ₂₁₀ /Г ₆₈
VALUE (units 10 ⁻²)	EVTS	DOCUMENT	ID	TECN	COMMEN	Г
3.00 ± 0.13 OUR AVI	2660 ± 101		0		$a_{Ba} \overline{E}$	$\sim 190 \text{ CeV}$
$2.95 \pm 0.11 \pm 0.00$	2009 ± 101		0		$-$, L_{γ}	$\approx 100 \text{ GeV}$
$3.13 \pm 0.37 \pm 0.30$ 3.5 $\pm 0.4 \pm 0.2$	130 ± 15 244 ± 26		9 I 0	60 E191 50 E687	π nucle	$\simeq 200 \text{ GeV}$
$0.5 \pm 0.4 \pm 0.2$	244 ± 20	data for average	n fite	limite	, DC, L_{γ}	\sim 200 GeV
			25, IILS, 0	r = D C		
4.4 \pm 1.0 \pm 0.5	19 ± 0 114 ± 20		T O		e e ≈	$\psi(3770)$
$4.1 \pm 0.7 \pm 0.3$ 3.14 ± 1.0	114 ± 20 89 ± 29	AMMAR	1 9 [.] 0	1 CIFC) $e^+e^- \approx$	10 Gev 10 5 GeV
$\frac{2.8}{2.8} + 0.8$	05 ± 25	ANJOS	9	1 F691	γ Be 80–	240 GeV
¹ LINK 05G uses a that gives the res $\Gamma(\phi(\pi^+\pi^-)_{S-wa})$ This is the frac VALUE (%)	smaller, clean sults in the nex sver $\phi \rightarrow K^+$ ction from a co	er subset of 1279 t data blocks. K⁻)/Г(K+ bherent amplitud DOCUMENT ID	$\Theta \pm 48$ $K^-\pi^-$ le anal	³ events + π ⁻) ysis. TECN	for the amp	itude analysis Γ ₂₁₁ /Γ ₂₁₀
10.3±1.0±0.8		ARTUSO	12	CLEO	Fitting 295	9 evts.
• • • We do not use	the following	data for average	es, fits,	, limits, e	etc. • • •	
1 ± 1		LINK	05 G	FOCS	Fits 1279 :	\pm 48 evts.
$\Gamma((\phi \rho^0)_{S-wave}, \phi)$ This is the fraction	$\phi \rightarrow K^+ K^-$)/Γ(K+K⁻π pherent amplitud	r⁺π − le anal	ysis.	COMMENT	Г ₂₁₂ /Г ₂₁₀
29 3 ± 2 5 ± 2 9		APTUSO	10		Eitting 205	0 outo
• • • We do not use	the following	data for average	⊥∠ es. fits.	Limits. e	etc. ● ● ●	ig evis.
29 $\pm 2 \pm 1$		LINK	05G	FOCS	Fits 1279 :	\pm 48 evts.
$\Gamma((\phi \rho^0)_{D-wave}, VALUE(\%))$	$\phi \rightarrow K^+ K^-$	-)/Г(К+К-1 <u>document id</u>	π ⁺ π ⁻)	COMMENT	Г ₂₁₃ /Г ₂₁₀
3.4±0.7±0.6		ARTUSO	12	CLEO	Fitting 295	9 evts.
Г((К* ⁰ К * ⁰) _{S-wa}	ave, $K^{*0} \rightarrow$	Κ[±]π[∓])/Γ(Κ <u>DOC</u> UMENT ID	+ <i>K</i> -	π+π-) <u>τ</u> εςΝ) <u>COMMENT</u>	Γ ₂₁₄ /Γ ₂₁₀
$6.1 \pm 0.8 \pm 0.9$		ARTUSO	12	CLEO	Fitting 295	9 evts.
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$\Gamma((K^{-}\pi^{+})_{P-wave}, (K^{+}\pi^{-})_{S})$	-wave ,)/Γ(K DOCUMENT ID	+ <i>K</i> -	- π+π - _{TECN}	-) COMMENT	$\Gamma_{215}/\Gamma_{210}$
10.9±1.2±1.7	ARTUSO	12	CLEO	Fitting 2959) evts.
$\Gamma(K_1(1270)^+ K^-, K_1^+ \to K^{*0})$ VALUE (%)	π⁺)/Г(К⁺К DOCUMENT ID	π^+	π⁻) TECN	COMMENT	Γ ₂₁₆ /Γ ₂₁₀
7.3±0.8±1.9	ARTUSO	12	CLEO	Fitting 2959	evts.
$\frac{\Gamma(K_1(1270)^+ K^-, K_1^+ \to \rho^0 K)}{VALUE(\%)}$	+)/Г(К+К -	$\pi^+\pi$	г[—]) <u>тесм</u>	COMMENT	Γ ₂₁₇ /Γ ₂₁₀
4.7±0.7±0.8	ARTUSO	12	CLEO	Fitting 2959	evts.
$\frac{\Gamma(K_1(1270)^- K^+, K_1^- \rightarrow \overline{K}^{*0})}{(N+1)^{N+1} (N+1)^{N+1} (N+1)^{N+1}$	π ⁻)/Γ(K+K <u>DOCUMENT ID</u> ARTUSO	$=\pi^+$	π ⁻) <u>TECN</u>	<u>COMMENT</u>	Γ ₂₁₈ /Γ ₂₁₀
$\Gamma(K_1(1270)^- K^+, K_1^- \to \rho^0 K)$ VALUE (%)	-)/Г(К+К- 	π^+	r=) <u>TECN</u>	COMMENT	Γ ₂₁₉ /Γ ₂₁₀
6.0±0.8±0.6	ARTUSO	12	CLEO	Fitting 2959) evts.
$\Gamma(K^*(1410)^+ K^-, K^{*+} \rightarrow K^{*0})$ VALUE (%)	⁰ π⁺)/Г(К⁺ I DOCUMENT ID	(⁻ π	+π ⁻) _{TECN}	COMMENT	Г ₂₂₀ /Г ₂₁₀
4.2±0.7±0.8	ARTUSO	12	CLEO	Fitting 2959) evts.
$\Gamma(K^*(1410)^- K^+, K^{*-} \rightarrow \overline{K}^{*0})$ VALUE (%)	⁰ π)/Г(К+ I DOCUMENT ID	(⁻ π	+ π -) _{TECN}	COMMENT	$\Gamma_{221}/\Gamma_{210}$
4.7±0.7±0.7	ARTUSO	12	CLEO	Fitting 2959	evts.
$\frac{\Gamma(K^+ K^- \rho^0 3\text{-body})}{\Gamma(K^+ K^- \mu^0 3\text{-body})}$	- π+π-) erent amplitude <u>DOCUMENT ID</u>	analy	/sis. <u>TECN</u>	COMMENT	Г ₂₂₂ /Г ₂₁₀
• • We do not use the following d	ata for averages	, fits,	limits, e	tc. • • •	
2±2±2	LINK	05G	FOCS	Fits 1279 \pm	48 evts.
$\Gamma(f_0(980)\pi^+\pi^-, f_0 \rightarrow K^+K^-)$ This is the fraction from a con-) /Γ(K⁺K⁻π herent amplitude	. + π - analy	r) /sis. 	COMMENT	Γ ₂₂₃ /Γ ₂₁₀
• • • We do not use the following d	ata for averages	, fits,	limits, e	tc. $\bullet \bullet \bullet$	
15±3±2	LINK	05 G	FOCS	Fits 1279 \pm	48 evts.
$\Gamma(K^*(892)^0 K^\mp \pi^\pm 3\text{-body}, K^{*0})$ This is the fraction from a coh	$\to K^{\pm}\pi^{\mp})/k$ herent amplitude	Г (К ⁼ analy	+ K −π ∕sis.	$^{+}\pi^{-})$	Г ₂₂₄ /Г ₂₁₀
VALUE (%)	DOCUMENT ID	fite	<u>TECN</u>	COMMENT	
$11\pm2\pm1$	LINK	, nts, 05G	FOCS	Fits 1279 ±	48 evts.

Γ(K*(892)⁰ π *((892)⁰, K*($0 \rightarrow K^{\pm}\pi^{\mp})$	$/\Gamma(K^+K^-\pi^+)$	π) Γ ₂₂₅ /Γ ₂₁₀
VALUE (%)		DOCUMEN	<u>T ID</u>	COMMENT
• • • We do not u	ise the follow	ing data for ave	erages, fits, limits	, etc. ● ● ●
$3\pm 2\pm 1$		LINK	05G FOC	5 Fits 1279 \pm 48 evts.
Γ(K₁(1270)[±] K [±] This is the fr	F , $K_1^{\pm} \rightarrow K_1^{\pm}$	K [±] π ⁺ π ⁻)/Γ a coherent amp	$(K^+K^-\pi^+\pi^-)$ litude analysis.	⁻) Γ ₂₂₆ /Γ ₂₁₀
VALUE (%)		DOCUMEN	T ID TECN	COMMENT
• • • We do not u	ise the follow	ing data for ave	erages, fits, limits	, etc. ● ● ●
$33\pm 6\pm 4$		¹ LINK	05G FOC	5 Fits 1279 \pm 48 evts.
¹ This LINK 05 $\kappa^{*}(892)^{0}\pi^{\pm}.$	G value incl	udes <i>K</i> ₁ (1270)	$^{\pm} \rightarrow \rho^0 K^{\pm},$	$ ightarrow$ $\kappa_0^*(1430)^0 \pi^\pm$, and
Γ(K₁(1400)[±]K [±] This is the fr VALUE (%)	$F, K_1^{\pm} \rightarrow K_1$	K [±] π ⁺ π ⁻)/Γ a coherent amp DOCUMEN	$\begin{array}{l} \mathbf{K} + \mathbf{K}^{-} \mathbf{\pi}^{+} \mathbf{\pi}^{-} \\ \text{litude analysis.} \\ \mathbf{T} \ \mathbf{ID} \\ \end{array}$	-) Γ ₂₂₇ /Γ ₂₁₀
• • • We do not u	se the follow	ing data for ave	erages, fits, limits	, etc. ● ● ●
$22\pm3\pm4$		LINK	05G FOC	5 Fits 1279 \pm 48 evts.
$\Gamma(2K_S^0\pi^+\pi^-)/$	$\Gamma(K_S^0\pi^+\pi$	-)		Г ₂₂₈ /Г ₃₆
VALUE (units 10^{-2})	<u>EVTS</u>	DOCUM	ENT ID TEO	CN COMMENT
4.3 ±0.8 OUR A	VERAGE			_
$4.16 \pm 0.70 \pm 0.42$	113 =	± 21 LINK	05A FO	$CS \gamma \; Be, \; E_{\gamma} \approx \; 180 \; GeV$
$6.2 \pm 2.0 \pm 1.6$	25	ALBRE	CHT 941 AR	$G e^+e^- \approx 10 \text{ GeV}$
$\Gamma(K_{S}^{0}K^{-}2\pi^{+}\pi^{-})$	⁻)/Γ(<i>K</i> ⁰ _S 2	$2\pi^+2\pi^-)$		Г <u>229</u> /Г ₈₈
<0.054	<u> </u>	LINK	04D FOC	$\gamma \text{ A, } \overline{E}_{\gamma} \approx 180 \text{ GeV}$
$\Gamma(\kappa^+\kappa^-\pi^+\pi^-)$	$(\pi^0)/\Gamma_{\rm total}$	I		Г ₂₃₀ /Г
VALUE		DOCUMEN	T ID TECN	COMMENT
0.0031 ± 0.0020		¹ BARLAG	92c ACC	M π^- Cu 230 GeV
¹ BARLAG 92C o	computes the	branching fract	ion using topolog	gical normalization.
		— Radiative	modes ——	_
$\Gamma(\rho^0\gamma)/\Gamma(\pi^+\pi)$	-)			Γ ₂₃₄ /Γ ₁₃₃
VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN C	COMMENT
$1.25 \pm 0.21 \pm 0.05$	500	NANUT	17 BELL ε	γ^+e^- at $\Upsilon({\sf nS})$, ${\sf n}{=}2,3,4,5$
$\Gamma(\omega\gamma)/\Gamma_{\text{total}}$		DOCUMENT		Г ₂₃₅ /Г
$\sim 10^{-4}$	<u> </u>	DUCUMEN		_
<2.4 X 10 ·	90	ASNER	98 CLE2	

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$\Gamma(\phi\gamma)/\Gamma(K^+K^-)$						Г ₂₃₆ /Г ₁₇₈
VALUE (units 10^{-3})	VTS	DOCUMENT ID	TE	CN CON	IMENT	
6.9 ±0.5 OUR FIT						
$6.88 {\pm} 0.47 {\pm} 0.21$	524	NANUT	17 BE	LL e^+	e $^-$ at $arGamma(r)$	S), n=2,3,4,5
• • • We do not use	the followi	ng data for aver	ages, fits,	limits, e	tc. ● ● ●	
$6.31^{+1.70}_{-1.48}{}^{+0.30}_{-0.36}$	28	ΤΑͿΙΜΑ	04 BE	LL See	NANUT 1	.7
$\Gamma(\phi\gamma)/\Gamma(K^-\pi^+)$						Г ₂₃₆ /Г ₃₂
$\frac{VALUE \text{ (units } 10^{-4})}{2.1 \text{ (units } 10^{-4})}$	EV1	<u>DOCUM</u>	ENT ID	TECI	V <u>COMM</u>	ENT
7.1 \pm 0.5 OUR FIT 7.15 \pm 0.78 \pm 0.60	242 ⊥ 2		ο τ ($P a^+ a^-$	$\sim 10.6 \text{ CeV}$
7.15±0.76±0.09	243 ± 2	5 AUDER		JOAL DAL	on e'e	$\approx 10.0 \text{ GeV}$
$\Gamma(\overline{K}^*(892)^0\gamma)/\Gamma(k$	$K^{-}\pi^{+})$					Г ₂₃₇ /Г ₃₂
<u>VALUE (units 10^{-3})</u> <u>E</u>	<u>VTS</u>	DOCUMENT ID		<u>CN</u> <u>CON</u>	<i>IMENT</i>	
10.5 \pm 1.7 UUR AVE	EKAGE E	rror includes sca	ale factor	of 3.1.	$- + \gamma($	C)
$11.9 \pm 0.5 \pm 0.5$	9.1K			$PP + e^+$	e at /(r ∝ [—] ~10.6	(5), n=2,3,4,5
$0.43 \pm 0.31 \pm 0.70$	2.2N	AUBERT	UUAL DA	IDIX E	$e \sim 10.0$	Gev
—— De	oubly Ca	bibbo-suppres	sed / M	ixing m	odes —	
This is a limit or decays that occ $(\Gamma_1 - \Gamma_2)/\Gamma$ th D^0 Listings. <u>VALUE</u>	I (K & R _M withour when u at come fr <u>CL%</u>	out the complica using hadronic n rom the best mi <u>DOCUMENT</u>	tions of p nodes. Fr xing limit <i>ID</i>	ossible do or the lin , see nea <u>TECN</u>	oubly Cabit nits on <i>m</i> or the begi	238/18 bo-suppressed $1 - m_2$ and nning of these
$< 6.1 \times 10^{-4}$	90	¹ BITENC	08	BELL	e^+e^- , 10).58 GeV
• • • We do not use	the followi	ng data for aver	ages, fits,	limits, e	tc. • • •	
$< 50 \times 10^{-4}$	90	² AITALA	96 C	E791	π^- nuclei	ıs, 500 GeV
¹ The BITENC 08 ri	ght-sign sa	mple includes a	bout 15%	of <i>D</i> ⁰ —	$\kappa^{-}\pi^{0}\ell^{-}$	$^+ u_\ell$ and other
² AITALA 96C uses	$D^{*+} \rightarrow I$	$D^0\pi^+$ (and cha	rge conju	gate) dec	avs to iden	tify the charm
at production and at decay.	$D^0 \rightarrow K^-$	$\ell^+ u_\ell$ (and cha	irge conju	gate) dec	ays to ider	tify the charm
$\Gamma(K^+ \text{ or } K^*(892)^+)$	e $\overline{ u}_e$ via	$\overline{D}^{0})/[\Gamma(K^{-}$	e ⁺ ν _e) -	+Γ(<i>K</i> *((892) [—] e [⊣]	$\nu_{e})]$
					Г239	/(Г ₁₉ +Г ₂₁)
I his is a limit or	R_M with	out the complica	tions of p	ossible do	oubly Cabib	bo-suppressed
decays that occu	ur when us	ing hadronic mo	des. The	experime	ents use D'	$^{*+} \rightarrow D^{\circ} \pi^{+}$
the e to identify	jugate) de the charn	n at decay. The	e limits c	n at prou lo not all	ow CP viol	ation For the
limits on $ m_1 $ –	$m_{\mathcal{D}}$ and	$(\Gamma_1 - \Gamma_2)/\Gamma$ that	t come fr	om the b	est mixing	limit, see near
the beginning of	f these D^0	Listings.			5	
VALUE	<u>CL%</u>	DOCUMENT	ID	TECN	COMMENT	
<0.001	90	BITENC	05	BELL	$e^+e^- pprox$	10.6 GeV
$\bullet \bullet \bullet$ We do not use	the followi	ng data for aver	ages, fits,	limits, e	tc. ● ● ●	
-0.0013 < R < +0.002	L2 90	AUBERT	07 AE	BABR	$e^+e^-\approx$	10.58 GeV

-0.0013 < R < +0.0012	90	AUBERT	07AB BABR	e^+e^-pprox 10.58 GeV
<0.0078	90	CAWLFIELD	05 CLEO	e^+e^-pprox 10.6 GeV
<0.0042	90	AUBERT,B	04Q BABR	See AUBERT 07AB

$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$

Γ_{240}/Γ_{32}

This is *R*, the time-integrated wrong-sign rate compared to the right-sign rate. See the note on " $D^0-\overline{D}^0$ Mixing," near the start of the D^0 Listings.

The experiments here use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born. The $D^0 \rightarrow K^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \rightarrow \overline{D}^0$ mixing followed by $\overline{D}^0 \rightarrow K^+\pi^-$ decay. Some of the experiments can use the decaytime information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio. See the next data block for values of the DCS ratio R_D , and the following data block for limits on the mixing ratio R_M . See the section on CP-violating asymmetries near the end of this D^0 Listing for values of A_D , and the note on " $D^0-\overline{D}^0$ Mixing" for limits on x' and y'.

Some early limits have been omitted from this Listing; see our 1998 edition (The European Physical Journal **C3** 1 (1998)) and our 2006 edition (Journal of Physics **G33** 1 (2006)).

VALUE (units 10^{-3})	EVTS	TS DOCUMENT ID		TECN	COMMENT
3.79 ± 0.18 OUR FIT	Error includes	scale factor of 3.3	3.		
3.79 ± 0.18 OUR AVE	RAGE Error in	ncludes scale facto	r of 3	.3. See	the ideogram below.
$4.15 \!\pm\! 0.10$	$12.7\pm0.3k$	¹ AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s}=1.96~{ m TeV}$
$3.53\!\pm\!0.08\!\pm\!0.04$	4030 ± 90	² AUBERT	07W	BABR	e^+e^-pprox 10.6 GeV
$3.77\!\pm\!0.08\!\pm\!0.05$	4024 ± 88	¹ ZHANG	06	BELL	e^+e^-
$\bullet \bullet \bullet$ We do not use	the following d	ata for averages, fi	ts, lin	nits, etc.	
$4.05\!\pm\!0.21\!\pm\!0.11$	$2.0\pm0.1 \text{k}$	³ ABULENCIA	06X	CDF	See AALTONEN 08E
$3.81\!\pm\!0.17\!+\!0.08\\-0.16$	845 ± 40	² LI	05A	BELL	See ZHANG 06
$4.29^{+0.63}_{-0.61}{\pm}0.27$	234	⁴ LINK	05H	FOCS	γ nucleus
$3.57\!\pm\!0.22\!\pm\!0.27$		⁵ AUBERT	03z	BABR	See AUBERT 07W
$4.04\!\pm\!0.85\!\pm\!0.25$	149	⁶ LINK	01	FOCS	γ nucleus
$3.32^{+0.63}_{-0.65}{\pm}0.40$	45	1 GODANG	00	CLE2	e ⁺ e ⁻
$6.8 \begin{array}{c} +3.4 \\ -3.3 \end{array} \pm 0.7$	34	² AITALA	98	E791	π^- nucl., 500 GeV

¹GODANG 00, ZHANG 06, and AALTONEN 08E allow *CP* violation.

²AITALA 98, LI 05A, and AUBERT 07W assume no *CP* violation.

³This ABULENCIA 06X result assumes no mixing.

⁴ This LINK 05H result assumes no mixing but allows *CP* violation. If neither mixing nor *CP* violation is allowed, $R = (4.29 \pm 0.63 \pm 0.28) \times 10^{-3}$.

⁵ This AUBERT 03z result allows *CP* violation. If *CP* violation is not allowed, $R = c_{0.00359 \pm 0.00020 \pm 0.00027}$.

⁶ This LINK 01 result assumes no mixing or *CP* violation.



$\Gamma(\mathcal{K}^+\pi^- \text{via DCS})/\Gamma(\mathcal{K}^-\pi^+)$ This is R_D , the doubly Cabibbo-suppressed ratio when mixing is allowed.

 Γ_{241}/Γ_{32}

VALUE (units 10^{-3}) CL%	EVTS	DOCUMENT ID	TECN	COMMENT
3.37 \pm 0.21 OUR AVER	RAGE Error inc	ludes scale factor	of 1.8. See	the ideogram below.
$3.04\pm$ 0.55	$12.7\pm0.3k$	AALTONEN	08E CDF	$p \overline{p}$, $\sqrt{s} = 1.96$ TeV
$3.03 \pm 0.16 \pm 0.10$	4030 ± 90	¹ AUBERT	07W BABR	e^+e^-pprox 10.6 GeV
$3.64\pm$ 0.17	4024 ± 88	² ZHANG	06 BELL	e^+e^-
$5.17^{+}_{-}~ {}^{1.47}_{1.58} {\pm} 0.76$	234	³ LINK	05н FOCS	γ nucleus
$4.8~\pm~1.2~\pm0.4$	45	⁴ GODANG	00 CLE2	e^+e^-
$\bullet \bullet \bullet$ We do not use the	e following data	for averages, fits	, limits, etc.	• • •
2.87± 0.37	845 ± 40	LI	05A BELL	See ZHANG 06
$2.3 < R_D < 5.2$ 95		⁵ AUBERT	03z BABR	See AUBERT 07W
$9.0 \begin{array}{c} +12.0 \\ -10.9 \end{array} \pm 4.4$	34	⁶ AITALA	98 E791	π^- nucl., 500 GeV

¹ This AUBERT 07W result is the same whether or not *CP* violation is allowed. ² This ZHANG 06 assumes no *CP* violation.

³ This LINK 05H result allows *CP* violation. Allowing mixing but not *CP* violation, $R_D =$ $(3.81^{+1.67}_{-1.63} \pm 0.92) \times 10^{-3}$

⁴ This GODANG 00 result allows *CP* violation. ⁵ This AUBERT 03Z result allows *CP* violation. If only mixing is allowed, the 95% confidence level interval is $(2.4 < R_D < 4.9) \times 10^{-3}$.

⁶ This AITALA 98 result assumes no CP violation.



$\Gamma(K^+\pi^- \operatorname{via} \overline{D}{}^0)/\Gamma(K^-\pi^+)$

Γ_{242}/Γ_{32}

This is R_M in the note on " $D^0-\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<0.00040	95	¹ ZHANG	06	BELL	e ⁺ e ⁻
\bullet \bullet \bullet We do not use the	following	data for averages	, fits,	limits, e	etc. ● ● ●
<0.00046	95	² LI	05A	BELL	See ZHANG 06
<0.0063	95	³ LINK	05H	FOCS	γ nucleus
<0.0013	95	⁴ AUBERT	03Z	BABR	e^+e^- , 10.6 GeV
<0.00041	95	⁵ GODANG	00	CLE2	e ⁺ e ⁻
<0.0092	95	⁶ BARATE	98W	ALEP	e^+e^- at Z^0
<0.005	90	⁷ ANJOS	88C	E691	Photoproduction

¹ This ZHANG 06 result allows CP violation, but the result does not change if CP violation is not allowed.

 2 This LI 05A result allows *CP* violation. The limit becomes < 0.00042 (95% CL) if *CP* violation is not allowed.

³LINK 05H obtains the same result whether or not CP violation is allowed.

⁴ This AUBERT 03Z result allows *CP* violation and assumes that the strong phase between $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$ is small, and limits only $D^0 \rightarrow \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is 0.0016.

- ⁵ This GODANG 00 result allows *CP* violation and assumes that the strong phase between $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$ is small, and limits only $D^0 \rightarrow \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is $\epsilon^{0.0017.}$
- ⁶ This BARATE 98W result assumes no interference between the DCS and mixing amplitudes (y' = 0 in the note on " $D^0 - \overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.036 (95%CL).
- ⁷ This ANJOS 88C result assumes no interference between the DCS and mixing amplitudes $(y' = 0 \text{ in the note on } "D^0 \overline{D}" \text{ Mixing" near the start of the } D^0 \text{ Listings})$. When interference is allowed, the limit degrades to 0.019.

$\Gamma(K^{0}_{S}\pi^{+}\pi^{-} \text{ in } D^{0} \to \overline{D}^{0}) / \Gamma(K^{0}_{S}\pi^{+}\pi^{-}) \qquad \Gamma_{243}/\Gamma_{36}$ This is R_{M} in the note on " $D^{0}-\overline{D}^{0}$ Mixing" near the start of the D^{0} Listings. The

This is R_M in the note on " $D^0-\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0063	95	¹ ASNER	05	CLEO	e^+e^-pprox 10 GeV

 1 This ASNER 05 limit allows CP violation. If CP violation is not allowed, the limit is 0.0042 at 95% CL.

$\Gamma(K^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$

The experiments here use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born. The $D^0 \rightarrow K^+\pi^-\pi^0$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \rightarrow \overline{D}^0$ mixing followed by $\overline{D}^0 \rightarrow K^+\pi^-\pi^0$ decay.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT		
2.12 ± 0.07 OUR A	VERAGE						
2.01 ± 0.11		¹ EVANS	16	CLEO	$e^+e^- \rightarrow$	$D^0 \overline{D}{}^0$ at $\psi(3770)$	
$2.14\!\pm\!0.08\!\pm\!0.08$	763	² AUBERT,B	06N	BABR	$e^+e^- pprox$	$\Upsilon(4S)$	
$2.29 {\pm} 0.15 {+} 0.13 {-} 0.09$	1.9k	TIAN	05	BELL	$e^+e^- \approx$	$\Upsilon(4S)$	
$4.3 \begin{array}{c} +1.1 \\ -1.0 \end{array} \pm 0.7$	38	BRANDENB	01	CLE2	$e^+e^-\approx$	$\Upsilon(4S)$	

¹A combined fit with a recent LHCb $D^0 \overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(2.00 \pm 0.11) \times 10^{-3}$.

² This AUBERT, B 06N result assumes no mixing.

$\Gamma(K^+\pi^-\pi^0$ via $\overline{D}{}^0)/\Gamma(K^-\pi^+\pi^0)$

Γ_{248}/Γ_{51}

 Γ_{247}/Γ_{51}

This is R_M in the note on " $D^0 - \overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.
VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
$5.25^{+0.25}_{-0.31}\pm0.12$		AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
\bullet \bullet We do not use the	following d	ata for averages	, fits,	limits, e	tc. ● ● ●

<0.54 95 ¹ AUBERT,B 06N BABR $e^+e^- \approx \Upsilon(4S)$

¹ This AUBERT,B 06N limit assumes no *CP* violation. The measured value corresponding to the limit is $(2.3^{+1.8}_{-1.4} \pm 0.4) \times 10^{-4}$. If *CP* violation is allowed, this becomes $(1.0^{+2.2}_{-0.7} \pm 0.3) \times 10^{-4}$.

$\Gamma(K^+\pi^+2\pi^-)$	а DCS)/Г(<i>К</i>	$(-2\pi^{+}\pi^{-})$			Г ₂₄₉ /Г ₆₈
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$3.03 \ \pm 0.07 \ \text{OUR}$	AVERAGE				
$3.025 \!\pm\! 0.077$	42k,11M	¹ AAIJ	16F	LHCB	<i>pp</i> at 7, 8 TeV
$3.03 \hspace{0.1in} \pm 0.13$		² EVANS	16	CLEO	$e^+e^- ightarrow~D^0\overline{D}{}^0$ at
					$\psi(3770)$

¹ This result uses external input on the mixing parameters x, y. Without this input, the result is $(3.215 \pm 0.136) \times 10^{-3}$.

² A combined fit with a recent LHCb $D^0 \overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(3.01 \pm 0.07) \times 10^{-3}$.

$\Gamma(K^+\pi^+2\pi^-)/\Gamma(K^-2\pi^+\pi^-)$

Γ_{250}/Γ_{68}

The experiments here use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born. The $D^0 \rightarrow K^+\pi^-\pi^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \rightarrow \overline{D}^0$ mixing followed by $\overline{D}^0 \rightarrow K^+\pi^-\pi^+\pi^-$ decay. Some of the experiments can use the decay-time information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio; in the next data block we give the limits on the mixing ratio.

Some early limits have been omitted from this Listing; see our 1998 edition (EPJ C3 1).

VALUE (units 10^{-3})	CL% EVTS	DOCUMENT ID		TECN	COMMENT
3.22 ± 0.05 OUR A	VERAGE				
3.22 ± 0.05	42k,11M	¹ AAIJ	16F	LHCB	<i>pp</i> at 7, 8 TeV
$3.24\!\pm\!0.08\!\pm\!0.07$	3.3k	² WHITE	13	BELL	$e^+ e^- pprox ~\Upsilon(4S)$
$4.4 \ \begin{array}{c} +1.3 \\ -1.2 \end{array} \pm 0.4$	54	² DYTMAN	01	CLE2	$e^+e^-pprox \Upsilon(4S)$
$2.5 \ \begin{array}{c} +3.6 \\ -3.4 \end{array} \pm 0.3$		³ AITALA	98	E791	π^- nucl., 500 GeV
				-	

• • • We do not use the following data for averages, fits, limits, etc. • • •

$3.20 {\pm} 0.18 {+} 0.18 {-} 0.13$	1.7k	² TIAN	05	BELL	See WHITE 13
<18 90		² AMMAR	91	CLEO	$e^+ e^- pprox \ 10.5$ GeV
<18 90		⁴ ANJOS	88C	E691	Photoproduction

¹AAIJ 16F result comes from time-dependent analysis that uses external input on the mixing parameters x, y. Without this input, the result is $(3.29 \pm 0.08) \times 10^{-3}$.

² AMMAR 91 cannot and DYTMAN 01, TIAN 05 do not distinguish between doublyCabibbo-suppressed decay and $D^0-\overline{D}^0$ mixing.

- ³ This AITALA 98result assumes no $D^{0}-\overline{D}^{0}$ mixing (R_{M} in the note on " $D^{0}-\overline{D}^{0}$ Mixing"). It becomes $-0.0020^{+0.0117}_{-0.0106} \pm 0.0035$ when mixing is allowed and decay-time information is used to distinguish doubly Cabibbo-suppressed decays from mixing.
- ⁴ ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from $D^0 \overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes (y' = 0 in the note on " $D^0 \overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.033.

$\Gamma(K^+\pi^+2\pi^-$ via $\overline{D}{}^0)/\Gamma(K^-2\pi^+\pi^-)$

Γ_{251}/Γ_{68}

This is a $D^0-\overline{D}^0$ mixing limit. The experiments here (1) use the charge of the pion in $D^*(2010)^{\pm} \rightarrow (D^0 \text{ or } \overline{D}^0) \pi^{\pm}$ decay to tell whether a D^0 or a \overline{D}^0 was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_{D_1^0} - m_{D_2^0}|$ and $(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

the best mixing mint, see near the beginning of these D Elstings.

VALUE (units 10 ⁻⁵)	CL%	DOCUMENT	ID	TECN	COMMENT	
9.6±3.6		¹ AAIJ	16F	LHCB	<i>pp</i> at 7, 8 TeV	
• • • We do not use th	e followir	g data for aver	ages, fits,	limits, e	etc. ● ● ●	

<500 90 ² ANJOS 88C E691 Photoproduction

¹AAIJ 16F result comes from an unconstrained decay-time dependent fit to the wrong-sign to right-sign decay rates ratio as $(x^2 + y^2)/2$.

² ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from $D^0 - \overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes (y' = 0 in the note on " $D^0 - \overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.007.

$\Gamma(K^{+}\pi^{-} \text{ or } K^{+}\pi^{+}2\pi^{-} \text{ via } \overline{D}^{0})/\Gamma(K^{-}\pi^{+} \text{ or } K^{-}2\pi^{+}\pi^{-}) \qquad \Gamma_{252}/\Gamma_{0}$

This is a $D^0 - \overline{D}^0$ mixing limit. For the limits on $|m_{D_1^0} - m_{D_2^0}|$ and $(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings. VALUE DOCUMENT ID <u>TECN</u> COMMENT CL% ullet ullet ullet We do not use the following data for averages, fits, limits, etc. ullet¹ AITALA 90 < 0.0085 98 E791 π^- nucleus, 500 GeV ² ANJOS 90 88C E691 < 0.0037 Photoproduction

¹ AITALA 98 uses decay-time information to distinguish doubly Cabibbo-suppressed decays from $D^0-\overline{D}^0$ mixing. The fit allows interference between the two amplitudes, and also allows *CP* violation in this term. The central value obtained is $0.0039 + 0.0036 \pm 0.0016$. When interference is disallowed, the result becomes $0.0021 \pm 0.0009 \pm 0.0002$.

² This combines results of ANJOS 88C on $K^+\pi^-$ and $K^+\pi^-\pi^+\pi^-$ (via \overline{D}^0) reported in the data block above (see footnotes there). It assumes no interference.

$\Gamma(\mu^- ext{ anything via } \overline{D^0}) / \Gamma(\mu^+ ext{ anything})$

Γ_{253}/Γ_{6}

This is a D^0 - $\overline{D}{}^0$ mixing limit. See the somewhat better limits above.							
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT		
<0.0056	90	LOUIS	86	SPEC	π^- W 225 GeV		
• • • We do not use the	following d	ata for averages	, fits,	limits, e	tc. • • •		
<0.012	90	BENVENUTI	85	CNTR	μ C, 200 GeV		
<0.044	90	BODEK	82	SPEC	π^- , pFe $ ightarrow~D^0$		

- Rare or forbidden modes

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$

Γ_{254}/Γ

 $D^0 \rightarrow \gamma \gamma$ is a flavor-changing neutral-current decay, forbidden in the Standard Model at the tree level.

<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
90	NISAR	16	BELL	e^+e^- at $arphi(4S),\ arphi(5S)$	
the followin	g data for avera	ges, f	its, limit	s, etc. ● ● ●	
90	ABLIKIM	15F	BES3	e^+e^- at 3.773 GeV	
90	LEES	12L	BABR	e^+e^-pprox 10.58 GeV	
90	COAN	03	CLE2	$e^+e^-pprox \Upsilon(4S)$	
	<u>CL%</u> 90 the followin 90 90 90	CL%DOCUMENT ID90NISARthe following data for avera90ABLIKIM90LEES90COAN	CL%DOCUMENT ID90NISAR16the following data for averages, f90ABLIKIM15F90LEES12L90COAN03	CL%DOCUMENT IDTECN90NISAR16BELLthe following data for averages, fits, limit90ABLIKIM15FBES390LEES12LBABR90COAN03CLE2	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

 $\Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_{255}/\Gamma \\ \text{A test for the } \Delta C = 1 \text{ weak neutral current. Allowed by first-order weak interaction}$ combined with electromagnetic interaction.

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
$< 7.9 \times 10^{-8}$	90	PETRIC	10	BELL	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the	following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$< 1.7 \times 10^{-7}$	90	LEES	12Q	BABR	$e^+ e^- pprox ~10.58~{ m GeV}$
$< 1.2 \times 10^{-6}$	90	AUBERT,B	04Y	BABR	$e^+e^-pprox \Upsilon(4S)$
$< 8.19 \times 10^{-6}$	90	PRIPSTEIN	00	E789	<i>p</i> nucleus, 800 GeV
$< 6.2 \times 10^{-6}$	90	AITALA	99 G	E791	π^- N 500 GeV
$< 1.3 \times 10^{-5}$	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$
$< 1.3 \times 10^{-4}$	90	ADLER	88	MRK3	e^+e^- 3.77 GeV
$< 1.7 \times 10^{-4}$	90	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$< 2.2 \times 10^{-4}$	90	HAAS	88	CLEO	e^+e^- 10 GeV

 $\Gamma(\mu^+\mu^-)/\Gamma_{\text{total}} \qquad \qquad \Gamma_{256}/\Gamma$ A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<6.2 × 10 ⁻⁹	90	AAIJ	13AI	LHCB	pp at 7 TeV
\bullet \bullet \bullet We do not use the	following d	ata for averages	, fits,	limits, e	tc. ● ● ●
$0.6 - 8.1 imes 10^{-7}$	90 1	LEES	12Q	BABR	$e^+ e^- pprox 10.58 \; { m GeV}$
$< 2.1 \times 10^{-7}$	90	AALTONEN	10X	CDF	$p \overline{p}, \sqrt{s} = 1.96 \text{ TeV}$
$< 1.4 \times 10^{-7}$	90	PETRIC	10	BELL	$e^+e^-pprox~\Upsilon(4S)$
$< 2.0 \times 10^{-6}$	90	ABT	04	HERB	<i>pA</i> , 920 GeV
$< 1.3 \times 10^{-6}$	90	AUBERT,B	04Y	BABR	$e^+e^-pprox \Upsilon(4S)$
$< 2.5 \times 10^{-6}$	90	ACOSTA	03F	CDF	See AALTONEN 10X
$< 1.56 \times 10^{-5}$	90	PRIPSTEIN	00	E789	<i>p</i> nucleus, 800 GeV
$< 5.2 \times 10^{-6}$	90	AITALA	99 G	E791	π^- N 500 GeV
$< 4.1 \times 10^{-6}$	90	ADAMOVICH	97	BEAT	π^- Cu, W 350 GeV
$< 4.2 \times 10^{-6}$	90	ALEXOPOU	96	E771	<i>p</i> Si, 800 GeV
$< 3.4 \times 10^{-5}$	90	FREYBERGER	96	CLE2	$e^+e^-pprox~\Upsilon(4S)$
$< 7.6 \times 10^{-6}$	90	ADAMOVICH	95	BEAT	See ADAMOVICH 97
$< 4.4 \times 10^{-5}$	90	KODAMA	95	E653	π^- emulsion 600 GeV
$< 3.1 \times 10^{-5}$	90 2	MISHRA	94	E789	-4.1 ± 4.8 events
$< 7.0 \times 10^{-5}$	90	ALBRECHT	88 G	ARG	e^+e^- 10 GeV
$< 1.1 \times 10^{-5}$	90	LOUIS	86	SPEC	π^- W 225 GeV
$< 3.4 \times 10^{-4}$	90	AUBERT	85	EMC	Deep inelast. $\mu^- N$

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 1 LEES 12Q gives a 2-sided range. 2 Here MISHRA 94 uses "the statistical approach advocated by the PDG." For an alternate approach, giving a limit of 9 \times 10 $^{-6}$ at 90% confidence level, see the paper.

$\Gamma(\pi^0 e^+ e^-) / \Gamma_{\text{total}}$					Г ₂₅₇ /Г
A test for the ΔC interactions.	= 1 weak	DOCUMENT ID	. Allo	TECN	COMMENT
<4.5 × 10 ⁻⁵	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$\Gamma(\pi^{0}\mu^{+}\mu^{-})/\Gamma_{\text{total}}$ A test for the ΔC =	=1 weak neu	tral current. All	owed	by highe	Γ ₂₅₈ /Γ r-order electroweak inter-
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.8 × 10 ⁻⁴	90	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the	following d	ata for averages	, fits,	limits, e	tc. ● ● ●
${<}5.4 imes 10^{-4}$	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$
$\Gamma(\eta e^+ e^-) / \Gamma_{\text{total}}$ A test for the ΔC interactions	=1 weak	neutral current.	Allo	owed by	Γ ₂₅₉ /Γ higher-order electroweak
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.1 × 10 ⁻⁴	90	FREYBERGER	96	CLE2	$e^+e^-pprox~\Upsilon(4S)$
$\frac{\Gamma(\eta \mu^+ \mu^-)}{\Gamma_{\text{total}}}$ A test for the ΔC interactions.	=1 weak	neutral current.	Allo	owed by	Γ ₂₆₀ /Γ higher-order electroweak
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<5.3 × 10 ⁻⁴	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$
$\Gamma(\pi^+\pi^-e^+e^-)/\Gamma_{tot}$ A test for the ΔC interactions.	al $= 1$ weak	neutral current.	Allo	owed by	Γ ₂₆₁ /Γ higher-order electroweak
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
$<3.73 \times 10^{-4}$	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
$\frac{\Gamma(\rho^0 e^+ e^-)}{\Gamma_{\text{total}}}$ A test for the ΔC interactions.	r=1 weak	neutral current.	Allo	owed by	Γ ₂₆₂ /Γ higher-order electroweak
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.0 × 10 ⁻⁴	90 1	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$
• • We do not use the	tollowing d	ata tor averages	, tits,	limits, e	tc. ● ● ●
$<1.24 \times 10^{-4}$	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
$<4.5 \times 10^{-4}$	90	HAAS	88	CLEO	e ⁺ e ⁻ 10 GeV
1 This FREYBERGER to $< 1.8 imes 10^{-4}$ usir	96 limit is c ng a photon	btained using a pole amplitude	phase mode	e-space r I.	nodel. The limit changes

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$\Gamma(\pi^+\pi^-\mu^+\mu^-)/\Gamma_{tot}$ A test for the ΔC interactions.	tal $i=1$ weak	neutral current	. Allo	owed by	Γ ₂₆₃ /Γ higher-order electroweak			
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT			
<5.5 × 10 ⁻⁷	90	^L AAIJ	1 4B	LHCB	pp at 7 TeV			
• • • We do not use the	following c	lata for averages	, fits,	limits, e	etc. ● ● ●			
${<}3.0 imes10^{-5}$	90	AITALA	01 C	E791	π^- nucleus, 500 GeV			
¹ AAIJ 14B measures t fraction. The above I gaps with a phase-sp	¹ AAIJ 14B measures this branching-fraction limit relative to the $\pi^+\pi^-\phi$, $\phi \rightarrow \mu^+\mu^-$ fraction. The above limit excludes the resonant ϕ , ω , and ρ regions, and then fills those gaps with a phase-space model.							
$ \Gamma(\rho^0 \mu^+ \mu^-) / \Gamma_{\text{total}} $ A test for the ΔC interactions.	=1 weak	neutral current	. Allo	owed by	Γ ₂₆₄ /Γ higher-order electroweak			
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT			
<2.2 × 10 ⁻⁵	90	AITALA	01 C	E791	π^- nucleus, 500 GeV			
• • • We do not use the	following c	lata for averages	, fits,	limits, e	etc. ● ● ●			
$< 4.9 \times 10^{-4}$	90	^I FREYBERGER	96	CLE2	$e^+e^-pprox ~\Upsilon(4S)$			
$< 2.3 \times 10^{-4}$	90	KODAMA	95	E653	π^- emulsion 600 GeV			
$< 8.1 \times 10^{-4}$	90	HAAS	88	CLEO	e^+e^- 10 GeV			
¹ This FREYBERGER to $< 4.5 \times 10^{-4}$ usir	96 limit is o ng a photon	obtained using a pole amplitude	phase mode	e-space r I.	nodel. The limit changes			
$\frac{\Gamma(\omega e^+ e^-)}{\Gamma_{\text{total}}}$ A test for the ΔC interactions	=1 weak	neutral current	. Allo	owed by	Γ ₂₆₅ /Γ higher-order electroweak			
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT			
<1.8 × 10 ⁻⁴	90	^I FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$			
¹ This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.7 \times 10^{-4}$ using a photon pole amplitude model.								
$\Gamma(\omega \mu^+ \mu^-)/\Gamma_{\text{total}}$ A test for the ΔC	=1 weak	neutral current	. Allo	owed by	Γ ₂₆₆ /Γ higher-order electroweak			
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT			
<8.3 × 10 ⁻⁴	90	^I FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$			
1 This FREYBERGER to $< 6.5 imes 10^{-4}$ usir	96 limit is o ng a photon	obtained using a pole amplitude	phase mode	e-space r I.	nodel. The limit changes			
$\Gamma(K^-K^+e^+e^-)/\Gamma_{\rm to}$	tal 1		A 11 -	succed by a	Г ₂₆₇ /Г			

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<3.15 × 10 ⁻⁴	90	AITALA	01 C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^+ e^-) / \Gamma_{total}$					Г ₂₆₈ /Г
A test for the $\Delta 0$	C=1 weak	neutral current	. Alle	owed by	higher-order electroweak
Interactions. VALUE	<u>CL%</u>	DOCUMENT ID		TECN	<u>COMMENT</u>
<5.2 × 10 ⁻⁵	90	I FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the	e following c	lata for averages	s, fits,	limits, e	etc. • • •
${<}5.9 imes10^{-5}$	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
1 This FREYBERGER to $< 7.6 imes 10^{-5}$ usi	96 limit is o ng a photon	obtained using a 1 pole amplitude	phas mode	e-space el.	model. The limit changes
$\Gamma(K^-K^+\mu^+\mu^-)/\Gamma_{\rm f}$ A test for the ΔG	cotal $C = 1$ weak	neutral current	. Alle	owed by	Γ ₂₆₉ /Γ higher-order electroweak
interactions.	<i>CL 0/</i>			TECH	
<u>VALUE</u>	<u> </u>	DOCUMENT ID	010	<u>TECN</u>	<u>COMMENT</u>
< 3.3 X 10	90	ATTALA	010	E/91	π nucleus, 500 GeV
$\frac{\Gamma(\phi \mu^+ \mu^-)}{\Gamma_{\text{total}}}$	$\mathcal{C}=1$ weak	neutral current	. Alle	owed by	Γ₂₇₀/Γ higher-order electroweak
VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.1 × 10 ⁻⁵	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
• • • We do not use the	e following c	lata for averages	s, fits,	limits, e	etc. • • •
$< 4.1 \times 10^{-4}$	90	^I FREYBERGER	96	CLE2	$e^+e^-pprox~\Upsilon(4S)$
1 This FREYBERGER to $< 2.4 imes 10^{-4}$ usi	96 limit is o ng a photon	obtained using a pole amplitude	phas mode	e-space el.	model. The limit changes
$\Gamma(\overline{K}^0 e^+ e^-) / \Gamma_{\text{total}}$	for $\Lambda C = 1$	weak neutral cur	ront l		F271/F
flavor.			i ciite i	Jeeuuse	
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.1 × 10 ⁻⁴	90 fallouing a	FREYBERGER	96 5	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the (1.7×10^{-3})			s, mts,		+ = 2.77 CV
<1.7 × 10 5	90	ADLER	89C	MRK3	e'e 3.77 GeV
$\frac{\Gamma(\overline{K}^{0}\mu^{+}\mu^{-})}{\Gamma_{\text{total}}}$ Not a useful test t	For $\Delta C=1$ v	weak neutral cur	rent l	pecause	F₂₇₂/F both quarks must change
flavor.	CI %			TECN	COMMENT
$< 2.6 \times 10^{-4}$	<u>90</u>	KODAMA	95	F653	π^- emulsion 600 GeV
• • • We do not use the	e following c	lata for averages	s, fits,	limits, e	
$< 6.7 imes 10^{-4}$	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$
$\Gamma(\kappa^{-}\pi^{+}e^{+}e^{-})/\Gamma_{tc}$ A test for the Δc	c=1 weak	neutral current	. Alle	owed by	Γ ₂₇₃ /Γ higher-order electroweak
interactions.	CI %	DOCUMENT ID		TECN	COMMENT
<3.85 x 10 ⁻⁴	90		010	F701	π^{-} nucleus 500 GeV
	50	, , , , , , , , , , , , , , , , , , , ,	010	-171	

$\Gamma(\overline{K}^{*}(892)^{0}e^{+}e^{-}$)/Γ _{total}				Г ₂₇₄ /Г
Not a useful te	st for $\Delta C =$	1 weak neutral cu	rrent k	pecause	both quarks must change
flavor.	CI 0/			TECN	COMMENT
$\sim 4.7 \times 10^{-5}$	00		010	<u>7201</u>	π^{-} muchanic EOO CoV
• • • We do not use	90 the following	AITALA a data for average	s fits	L/91	
	00		5, mt5,		$x^+ x^- x = \gamma(AC)$
<1.4 × 10	90	- FREYBERGER	K 90	CLE2	$e e \approx 1(45)$
to $< 2.0 \times 10^{-4}$	ER 96 limit i using a phot	s obtained using a on pole amplitude	a phase mode	e-space el.	model. The limit changes
$\Gamma(K^{-}\pi^{+}\mu^{+}\mu^{-},6)$	$575 < m_{\mu\mu}$	< 875 MeV)/ſ	total		Г ₂₇₆ /Г
VALUE (units 10 ⁻⁶)	EVTS	DOCUMENT ID		TECN	COMMENT
4.17±0.12±0.40	2.4k	¹ AAIJ	161	LHCB	<i>pp</i> at 8 TeV
¹ AAIJ 161 uses B(<i>l</i> the normalization	$D^0 \rightarrow K^- \tau$ mode.	$(\pi^+\pi^+\pi^-) = (8.2)$	287 ±	0.043 ±	= 0.200) $ imes$ 10 $^{-2}$ value for
$\Gamma(\kappa^{-}\pi^{+}\mu^{+}\mu^{-})/A \text{ test for the interactions}$	${f \Gamma}_{ m total} \ \Delta C = 1$ we	ak neutral current	t. Allo	owed by	Γ₂₇₅/Γ higher-order electroweak
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<3.59 × 10 ⁻⁴	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
Not a useful tes flavor. VALUE	st for $\Delta C =$	1 weak neutral cu <u>DOCUMENT ID</u>	rrent ł	Decause <u>TECN</u>	both quarks must change
<2.4 × 10 ⁻⁵	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
• • • We do not use	the following	g data for average	s, fits,	limits,	etc. ● ● ●
$< 1.18 \times 10^{-3}$	90	¹ FREYBERGEF	R 96	CLE2	$e^+e^-pprox~\Upsilon(4S)$
1 This FREYBERGI to $< 1.0 imes 10^{-3}$	ER 96 limit i using a phot	s obtained using a on pole amplitude	a phase mode	e-space el.	model. The limit changes
$\Gamma(\pi^+\pi^-\pi^0\mu^+\mu^-$)/Γ _{total}	Autral current	امسط	hy high	Г ₂₇₈ /Г
actions.		ieutrai current. Ai	loweu	by high	er-order electroweak inter-
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<8.1 × 10 ⁻⁴	90	KODAMA	95	E653	π^- emulsion 600 GeV
$\Gamma(\mu^{\pm} e^{\mp}) / \Gamma_{\text{total}}$	family num	her conservation			Г ₂₇₉ /Г
VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$< 1.3 \times 10^{-8}$	90	AAIJ	16H	LHCB	<i>pp</i> at 7, 8 GeV
• • • We do not use	the following	g data for average	s, fits,	limits,	etc. • • •
$< 3.3 \times 10^{-7}$	90	LEES	12Q	BABR	$e^+ e^- pprox ~10.58~{ m GeV}$
$<$ 2.6 $\times 10^{-7}$	90	PETRIC	10	BELL	$e^+e^- \approx \Upsilon(4S)$
$< 8.1 \times 10^{-7}$	90	AUBERT,B	04Y	BABR	$e^+e^-pprox \Upsilon(4S)$
$< 1.72 \times 10^{-5}$	90	PRIPSTEIN	00	E789	<i>p</i> nucleus, 800 GeV
$< 8.1 \times 10^{-6}$	90		99 G	E791	$\pi^- N$ 500 GeV
$< 1.9 \times 10^{-5}$	90	¹ FREYBERGEF	R 96	CLE2	$e^+ e^- pprox ~\Upsilon(4S)$

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< 1.0	10×10^{-4}	90	ALBRECHT	88 G	ARG	e ⁺ e ⁻ 10 GeV		
< 2.7	$\times 10^{-4}$	90	HAAS	88	CLEO	e^+e^- 10 GeV		
< 1.2	2×10^{-4}	90	BECKER	87C	MRK3	e^+e^- 3.77 GeV		
< 9	$\times 10^{-4}$	90	PALKA	87	SILI	200 GeV π <i>p</i>		
<21	$\times 10^{-4}$	9 0 2	RILES	87	MRK2	e^+e^- 29 GeV		
1 Th	nis is the corrected	result given	in the erratum	to FR	EYBER	GER 96.		
² RI	LES 87 assumes B($(D \rightarrow K\pi)$	= 3.0% and ha	s pro	duction 1	model dependency.		
Γ(π ⁰	e[±]μ[∓])/Γ_{total} A test of lepton fa charge states.	amily numb	er conservation.	The	value is	Γ₂₈₀/Γ s for the sum of the two		
VALUE		<u>CL%</u>	DOCUMENT ID		TECN	COMMENT		
<8.6	× 10 ^{—5}	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$		
$\Gamma(\eta e^{\pm} \mu^{\mp})/\Gamma_{\text{total}} \qquad \Gamma_{281}/\Gamma$ A test of lepton family number conservation. The value is for the sum of the two charge states.								
VALUE	-	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT		
<1.0	× 10 ⁻⁴	90	FREYBERGER	96	CLE2	$e^+e^-pprox \Upsilon(4S)$		

$\Gamma(\pi^+\pi^-e^\pm\mu^\mp)/\Gamma_{\text{total}}$

A test of lepton family-number conservation. The value is for the sum of the two charge states.

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.5 × 10 ⁻⁵	90	AITALA	01 C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^{\pm} \mu^{\mp}) / \Gamma_{\text{total}}$

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT
<4.9 × 10 ⁻⁵	90	¹ FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the	following	data for averages, fits,	limits, e	tc. ● ● ●

 $< 6.6 \times 10^{-5}$ AITALA 01C E791 90 π^- nucleus, 500 GeV

 1 This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 5.0 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(\omega e^{\pm} \mu^{\mp}) / \Gamma_{\text{total}}$

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.2 × 10 ⁻⁴	90	¹ FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

 1 This FREYBERGER 96 limit is obtained using a phase-space model. The same limit is obtained using a photon pole amplitude model.

$\Gamma(K^- K^+ e^{\pm} \mu^{\mp}) / \Gamma_{\text{total}}$

 Γ_{285}/Γ A test of lepton family-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.8 × 10 ⁻⁴	90	AITALA	01 C	E791	π^- nucleus, 500 GeV

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Γ_{282}/Γ

Γ_{283}/Γ

Γ_{284}/Γ

$\psi \varphi \mu' J/\psi$ tota					Г ₂₈₆ /Г
A test of lepto	on family nu	mber conservation.	. The	value i	s for the sum of the two
Charge states. /ALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.4 \times 10^{-5}$	90	¹ FREYBERGER	₹ 96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • We do not use	e the followin	g data for averages	s, fits,	limits, d	etc. • • •
$< 4.7 \times 10^{-5}$	90	AITALA	01 C	E791	π^- nucleus, 500 GeV
¹ This FREYBERG	GER 96 limit	is obtained using a	phase	-space	model. The limit changes
to $< 3.3 imes 10^{-5}$	using a phot	on pole amplitude	model		-
·(<u>K</u> 0e∓"±)\L					
A test of lepto	cai on family nur	mber conservation	. The	value i	s for the sum of the two
charge states.					
ALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.0 × 10 ⁻⁴	90	FREYBERGER	8 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$\frac{(K^{-}\pi^{+}e^{\pm}\mu^{\mp})}{A \text{ test of lepto}}$	/Γ_{total} on family-nur	nber conservation.	The	value i	Γ₂₈₈/Γ s for the sum of the two
charge states.					
<u>ALUE</u>	<u> </u>	DOCUMENT ID		TECN	<u>COMMENT</u>
(5.53×10^{-4})	90	AITALA	01C	E791	π^- nucleus, 500 GeV
A test of lepto charge states.	on family nu	mber conservation	. The	value i	s for the sum of the two
$< 8.3 \times 10^{-5}$	<u> </u>	ΔΙΤΔΙ Δ	010	F701	π^{-} nucleus 500 GeV
• • We do not use	e the followin	g data for average	s, fits,	limits, e	etc. • • •
	90	¹ FREYBERGEF	₹ 96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$< 1.0 \times 10^{-4}$				~~~~	
$<1.0 imes 10^{-4}$	FR 96 limit	is obtained using a	nhase	-snace	model The same limit is
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a	GER 96 limit photon pole	is obtained using a amplitude model.	i phase	e-space	model. The same limit is
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a (27-2e++cc)	GER 96 limit photon pole	is obtained using a amplitude model.	a phase	e-space	model. The same limit is
< 1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto	GER 96 limit photon pole)/ Г_{total} on-number co	is obtained using a amplitude model. onservation. The v	a phase	e-space s for th	model. The same limit is F₂₉₀/F he sum of the two charge
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states.	GER 96 limit photon pole)/ /_{total} on-number co	is obtained using a amplitude model. onservation. The v	a phase value is	e-space s for th	model. The same limit is Г₂₉₀/Г ne sum of the two charge
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. <u>ALUE</u>	GER 96 limit photon pole)/ Г_{total} on-number co	is obtained using a amplitude model.	value is	e-space s for th <u>TECN</u>	model. The same limit is F₂₉₀/F the sum of the two charge <u>COMMENT</u>
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. ALUE <1.12 × 10 ⁻⁴	GER 96 limit photon pole)/ Г_{total} on-number co <u>CL%</u> 90	is obtained using a amplitude model. onservation. The v <u>DOCUMENT ID</u> AITALA	value is	e-space s for th <u>TECN</u> E791	model. The same limit is Γ_{290}/Γ he sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. ALUE <1.12 × 10 ⁻⁴ $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto	GER 96 limit photon pole)/ Г_{total} on-number co <u>CL%</u> 90)/ Г_{total} on-number co	is obtained using a amplitude model. onservation. The o <u>DOCUMENT ID</u> AITALA	value is 01C	e-space s for th <u>TECN</u> E791 s for th	model. The same limit is Γ_{290}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV Γ_{291}/Γ the sum of the two charge
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. ALUE <1.12 × 10 ⁻⁴ $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto states. ALUE $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto states. ALUE	GER 96 limit photon pole)/ F_{total} on-number co <u>CL%</u> 90)/ F_{total} on-number co	is obtained using a amplitude model. onservation. The o <u>DOCUMENT ID</u> AITALA onservation. The o	value is	e-space s for th <u>TECN</u> E791 s for th TECN	model. The same limit is Γ_{290}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV Γ_{291}/Γ the sum of the two charge COMMENT
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. <u>ALUE</u> <1.12 × 10 ⁻⁴ $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto states. <u>ALUE</u> <2.9 × 10 ⁻⁵	GER 96 limit photon pole)/ Г_{total} on-number co <u>CL%</u> 90)/ Г_{total} on-number co <u>CL%</u> 90	is obtained using a amplitude model. onservation. The o <u>DOCUMENT ID</u> AITALA onservation. The o <u>DOCUMENT ID</u> AITALA	value is value is 01C value is 01C	e-space s for th <u>TECN</u> E791 s for th <u>TECN</u> E791	model. The same limit is Γ_{290}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV Γ_{291}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. <u>ALUE</u> $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto states. <u>ALUE</u> (2.9×10^{-5})	GER 96 limit photon pole)/ F total on-number co <u>CL%</u> 90)/ F total on-number co <u>CL%</u> 90	is obtained using a amplitude model. onservation. The o <u>DOCUMENT ID</u> AITALA onservation. The o <u>DOCUMENT ID</u> AITALA	value is 01C value is 01C	s for th <u>TECN</u> E791 s for th <u>TECN</u> E791	model. The same limit is Γ_{290}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV Γ_{291}/Γ the sum of the two charge $\frac{COMMENT}{\pi^{-}}$ nucleus, 500 GeV
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a $(2\pi^{-}2e^{+} + c.c.)$ A test of lepto states. <i>ALUE</i> <1.12 × 10 ⁻⁴ $(2\pi^{-}2\mu^{+} + c.c.)$ A test of lepto states. <i>ALUE</i> <2.9 × 10 ⁻⁵ $(K^{-}\pi^{-}2e^{+} + c.c.)$ A test of lepto	GER 96 limit photon pole)/ F total on-number co <u>CL%</u> 90)/ F total on-number co <u>CL%</u> 90 .c.)/ F total on-number co	is obtained using a amplitude model. onservation. The o <u>DOCUMENT ID</u> AITALA onservation. The o <u>DOCUMENT ID</u> AITALA	value is value is 01C value is 01C value is	e-space s for th <u>TECN</u> E791 s for th <u>TECN</u> E791 s for th	model. The same limit is Γ_{290}/Γ the sum of the two charge $\underline{COMMENT}$ π^{-} nucleus, 500 GeV Γ_{291}/Γ the sum of the two charge $\underline{COMMENT}$ π^{-} nucleus, 500 GeV Γ_{292}/Γ the sum of the two charge
<1.0 × 10 ⁻⁴ ¹ This FREYBERG obtained using a ⁻ ($2\pi^{-}2e^{+} + c.c.$) A test of lepto states. <i>(ALUE</i> <2.9 × 10 ⁻⁵ ⁻ ($K^{-}\pi^{-}2e^{+} + c.c.$) A test of lepto states. <i>(ALUE</i> <2.9 × 10 ⁻⁵ ⁻ ($K^{-}\pi^{-}2e^{+} + c.c.$) A test of lepto states. <i>(ALUE</i>)	GER 96 limit photon pole)/ F total on-number co <u>CL%</u> 90)/ F total on-number co <u>CL%</u> 90 .c.)/ F total on-number co	is obtained using a amplitude model. onservation. The <u>DOCUMENT ID</u> AITALA onservation. The <u>DOCUMENT ID</u> AITALA onservation. The <u>DOCUMENT ID</u>	value is value is 01C value is value is	s for th <u>TECN</u> E791 s for th <u>TECN</u> s for th <u>TECN</u>	model. The same limit is $\frac{\Gamma_{290}/\Gamma}{\Gamma_{290}}$ The sum of the two charge $\frac{COMMENT}{\pi^{-}}$ The sum of the two charge $\frac{COMMENT}{\pi^{-}}$ The nucleus, 500 GeV $\frac{\Gamma_{292}/\Gamma}{\Gamma_{292}}$ The sum of the two charge $\frac{COMMENT}{\Gamma_{292}}$

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$\Gamma(K^{-}\pi^{-}2\mu^{+}+c.$	c.)/Г _{total}				Г ₂₉₃ /Г
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states. VALUE	CI %	DOCUMENT ID		TECN	COMMENT
<3.9 × 10 ⁻⁴	90	AITALA	0 1C	E791	π^- nucleus, 500 GeV
$\Gamma(2K^-2e^++c.c.)$	/Γ _{total}				Г ₂₉₄ /Г
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states.	CI %			TECN	COMMENT
<1.52 × 10 ⁻⁴	<u>90</u>	AITALA	0 1C	E791	π^- nucleus, 500 GeV
$\Gamma(2K^{-}2u^{+}+cc)$	/Г				
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states.					
VALUE	<u> CL%</u>	DOCUMENT ID		<u>TECN</u>	<u>COMMENT</u>
<9.4 × 10 ⁻⁵	90	AITALA	01C	E791	π^- nucleus, 500 GeV
$\Gamma(\pi^-\pi^-e^+\mu^++e^-)$	c.c.)/Ftota	1			Г296/Г
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states.	CL 0/			TECN	COMMENT
$\sim 7.0 \times 10^{-5}$	00		010	<u>TECN</u>	π^{-} puclous 500 CoV
<7.9 × 10	90	ATTALA	UIC	L791	mucleus, 500 Gev
$\Gamma(K^-\pi^-e^+\mu^++$	c.c.)/Г _{tota}	d.			Г ₂₉₇ /Г
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states.	CI %	DOCUMENT ID		TECN	COMMENT
<2.18 × 10 ⁻⁴	90		010	F791	π^{-} nucleus 500 GeV
	50	, (11) (2) (010	2131	
$\Gamma(2K^-e^+\mu^++c.e^{-1}\mu^++c.e$	c.)/Γ _{total}				Г ₂₉₈ /Г
A test of leptor	n-number co	onservation. The	value	is for th	ne sum of the two charge
states. VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.7 × 10 ⁻⁵	90	AITALA	0 1C	E791	π^- nucleus, 500 GeV
Γ(pe ⁻)/Γ _{total}					Г ₂₉₉ /Г
A test of baryor	n- and leptor	n-number conserva	ation.		,
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-5}$	90		09	CLEO	e^+e^- at $\psi(3770)$
¹ This RUBIN 09 lin	nit is for eit	her $D^0 \rightarrow pe^-$ of	or \overline{D}^0	$\rightarrow pe^{-}$	[–] decay.
Г(л е ⁺)/Г					Г200/Г
A test of barvor	n- and lepto	n-number conserva	ation.		' 300/ '
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.1 × 10 ⁻⁵	90	¹ RUBIN	09	CLEO	e^+e^- at ψ (3770)
¹ This RUBIN 09 lir	nit is for eit	her $D^0 \rightarrow \overline{D}e^+$ of	or \overline{D}^0	$\rightarrow \overline{D}e^{-}$	⁺ decav.

D⁰ CP-VIOLATING DECAY-RATE ASYMMETRIES

This is the difference between D^0 and \overline{D}^0 partial widths for the decay to state f, divided by the sum of the widths:

$A_{CP}(f) = [\Gamma(D^{0} \to f) - \Gamma(\overline{D}^{0} \to \overline{f})] / [\Gamma(D^{0} \to f) + \Gamma(\overline{D}^{0} \to \overline{f})].$

$A_{CP}(K^+K^-)$ in D^0 , $\overline{D}{}^0 \rightarrow K^+K^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
-0.07 ± 0.11 OUR AV	/ERAGE				
$0.04\!\pm\!0.12\!\pm\!0.10$	4.56M	AAIJ	17M	LHCB	<i>рр</i> 7,8 ТеV
$-0.24\!\pm\!0.22\!\pm\!0.09$	476k	¹ AALTONEN	12B	CDF	<i>р</i> <u>р</u> , \sqrt{s} =1.96 TeV
$0.00\!\pm\!0.34\!\pm\!0.13$	129k	² AUBERT	08M	BABR	e^+e^-pprox 10.6 GeV
$-0.43\!\pm\!0.30\!\pm\!0.11$	120k	³ STARIC	08	BELL	$e^+e^-pprox\ \Upsilon(4S)$
$+2.0\ \pm 1.2\ \pm 0.6$		⁴ ACOSTA	0 5C	CDF	<i>р</i> <u>р</u> , \sqrt{s} =1.96 TeV
$0.0\ \pm 2.2\ \pm 0.8$	3023	⁴ CSORNA	02	CLE2	$e^+e^-pprox~\Upsilon(4S)$
$-0.1\ \pm 2.2\ \pm 1.5$	3330	⁴ LINK	00 B	FOCS	
$-1.0\ \pm 4.9\ \pm 1.2$	609	⁴ AITALA	98C	E791	$-0.093 < A_{CP} <$
					+0.073 (90% CL)

 \bullet \bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet

- -0.06±0.15±0.10 1.8M ¹ AAIJ 14AK LHCB See AAIJ 17M
 - ¹ See also " D^0 CP-violating asymmetry differences" at the end of the CP-violating asymmetries. ² AUBERT 08M uses corrected numbers of events directly, not ratios with $K^{\mp}\pi^{\pm}$ events.
 - ² AUBERT 08M uses corrected numbers of events directly, not ratios with $K^+ \pi^-$ events. ³ STARIC 08 uses $D^0 \rightarrow K^- \pi^+$ and $\overline{D}^0 \rightarrow K^+ \pi^-$ decays to correct for detectorinduced asymmetries.
 - ⁴AITALA 98C, LINK 00B, CSORNA 02, and ACOSTA 05C measure $N(D^0 \rightarrow K^+ K^-)/N(D^0 \rightarrow K^- \pi^+)$, the ratio of numbers of events observed, and similarly for the \overline{D}^0 .

$A_{CP}(K^0_S K^0_S)$ in $D^0, \overline{D}^0 \rightarrow K^0_S K^0_S$

VALUE (%)	EVTS	DOCUMENT ID	TEO	CN	COMMENT
$-$ 5 \pm 5 OUR AVER	RAGE				
$- 2.9 \pm 5.2 \pm 2.2$	630	AAIJ	15AT LH	ICB	<i>p at 7, 8 TeV</i>
-23 ± 19	65	BONVICINI	01 CL	.E2 (e^+e^-pprox 10.6 GeV

$A_{CP}(\pi^+\pi^-)$ in D^0 , $\overline{D}{}^0 \rightarrow \pi^+\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.13 ± 0.14 OUR AV	ERAGE				
$0.07\!\pm\!0.14\!\pm\!0.11$		¹ AAIJ	17M	LHCB	<i>рр</i> 7, 8 ТеV
$0.22\!\pm\!0.24\!\pm\!0.11$	215k	² AALTONEN	12B	CDF	$p \overline{p}, \sqrt{s} = 1.96 \text{ TeV}$
$-0.24\!\pm\!0.52\!\pm\!0.22$	63.7k	³ AUBERT	08M	BABR	e^+e^-pprox 10.6 GeV
$0.43\!\pm\!0.52\!\pm\!0.12$	51k	⁴ STARIC	08	BELL	$e^+ e^- pprox ~\Upsilon(4S)$
$1.0 \ \pm 1.3 \ \pm 0.6$		⁵ ACOSTA	05 C	CDF	$p \overline{p}, \sqrt{s} = 1.96 \text{ TeV}$
$1.9\ \pm 3.2\ \pm 0.8$	1136	⁵ CSORNA	02	CLE2	$e^+e^-pprox ~\Upsilon(4S)$
$4.8 \hspace{0.1in} \pm 3.9 \hspace{0.1in} \pm 2.5$	1177	⁵ LINK	00 B	FOCS	
$-4.9 \pm 7.8 \pm 3.0$	343	⁵ AITALA	98 C	E791	$-0.186 < A_{CP} < +0.088 (90\% \text{ CL})$
• • • We do not use t	he followi	ng data for averages	s, fits,	limits, e	etc. • • •
$-0.20 \pm 0.19 \pm 0.10$	774k	2,6 AAIJ	14AK	LHCB	See AAIJ 17M

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- ¹ AAIJ 17M value combines $\Delta A_{CP}(\pi \pi, KK)$ from AAIJ 16D, $A_{CP}(KK)$ from AAIJ 17M, and $A_{CP}(\pi\pi)$ from AAIJ 14 \breve{AK} .
- ² See also " D^0 CP-violating asymmetry differences" at the end of the CP-violating asymmetries. ³ AUBERT 08M uses corrected numbers of events directly, not ratios with $K^{\mp}\pi^{\pm}$ events. ⁴ STARIC 08 uses $D^0 \rightarrow K^-\pi^+$ and $\overline{D}^0 \rightarrow K^+\pi^-$ decays to correct for detector-

induced asymmetries.

 5 AITALA 98c, LINK 00B, CSORNA 02, and ACOSTA 05C measure $\it N(D^0 \rightarrow$ $\pi^+\pi^-)/N(D^0 \rightarrow \kappa^-\pi^+)$, the ratio of numbers of events observed, and similarly for the \overline{D}^0 .

⁶AAIJ 14AK uses $\Delta A_{CP}(\pi \pi, KK)$ and $A_{CP}(KK)$ reported in the same paper.

$A_{CP}(\pi^0 \pi^0)$ in D^0 ,	$\overline{D}^0 \rightarrow$	$\pi^0\pi^0$			
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.0 \pm 0.6 OUR AV	ERAGE				
$-0.03\!\pm\!0.64\!\pm\!0.10$	34k	NISAR	14	BELL	e^+e^- at/near $argara$'s
0.1 ± 4.8	810	BONVICINI	01	CLE2	e^+e^-pprox 10.6 GeV
$A_{CP}(ho\gamma)$ in D^0 , \overline{D}	$\rho \rightarrow \rho \gamma$	Y			
VALUE (units 10^{-2})		DOCUMENT ID	TE	<u>CN CO</u>	MMENT
$5.6 \pm 15.2 \pm 0.6$		NANUT 17	BE	LL e ⁺	e^- at $\Upsilon({\sf nS})$, n=2,3,4,5
$A_{CP}(\phi\gamma)$ in D^0 , \overline{D}	$\overline{0}^0 \rightarrow \phi^2$	γ			
VALUE (units 10^{-2})		DOCUMENT ID	TE	<u>CN CO</u>	MMENT
$-9.4{\pm}6.6{\pm}0.1$		NANUT 17	BE	LL e ⁺	e^- at $\Upsilon({ m nS})$, n=2,3,4,5
$A_{CP}(\overline{K}^*(892)^0\gamma)$ i	in D^0 , \overline{D}	$\overline{K}^{0} \rightarrow \overline{K}^{*}(892)^{0}$	γ		
VALUE (units 10^{-2})		DOCUMENT ID	TE	CN CO	MMENT
$-0.3{\pm}2.0{\pm}0.0$		NANUT 17	BE	LL e ⁺	e^- at $\Upsilon(nS)$, n=2,3,4,5
$A_{CP}(\pi^{+}\pi^{-}\pi^{-})$ in VALUE(%) 0.3 ±0.4 OUR AVER 0.43±1.30 0.31±0.41±0.17 1. +9	EV EV RAGE 123k±49 80 ±		<u>ID</u> N (<u> </u>	$\frac{CN}{DR} = \frac{COMMENT}{e^+ e^-} \approx \Upsilon(4S)$ BR $e^+ e^- \approx 10.6 \text{ GeV}$
$1 -7 \pm 5$		CRONIN-F	1EN(15 CL	EO $e + e \approx 10 \text{ GeV}$
¹ AUBERT 08AO rep	oort their r	result using a different	ent sig	n conve	ntion.
$A_{CP}(\rho(770)^+\pi^-$ -	$\rightarrow \pi^+\pi^-$	$^{-}\pi^{0}$) in $D^{0} \rightarrow$	$\rho^+\pi^-$	-, <u>D</u> 0 ·	$\rightarrow \rho^{-}\pi^{+}$
VALUE (%)		DOCUMENT ID	TEG	<u>CN</u> <u>CO</u>	MMENT
$+1.2\pm0.8\pm0.3$		AUBERT 08	AO BA	BR Ta	ble 1, $-Col.5/2 \times Col.2$
$A_{CP}(ho(770)^0\pi^0 -$	$\rightarrow \pi^+\pi^-$	π^0) in D^0 , $\overline{D}{}^0$ -	$\rightarrow \rho^{0}$	0π0	
VALUE (%)		DOCUMENT ID	<u></u>	<u>CN CO</u>	MMENT
$-3.1\pm2.7\pm1.2$		AUBERT 08	AO BA	BR Ta	ble 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(770)^{-}\pi^{+} - VALUE(\%))$	$\rightarrow \pi^+\pi^-$	(π^0) in $D^0 \rightarrow$	ρ[—]π⁻ ΤΕ(+, <mark>Т</mark>0 . см со	$\rightarrow \rho^+ \pi^-$
$-1.0\pm1.6\pm0.7$		AUBERT 08	AO BA	BR Ta	ble 1, $-Col.5/2 \times Col.2$

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$A_{CP}(\rho(1450)^+\pi^- \rightarrow \pi^+\pi)$	$\pi^-\pi^0$) in D^0	$\rightarrow \rho(1450)$	$^+\pi^-$, $\overline{D}{}^0$ $ ightarrow$ c.c.
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$0\pm50\pm50$	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(1450)^0 \pi^0 \to \pi^+ \pi^-)$	$^{-}\pi^{0}$) in D^{0} , \overline{D}	$\overline{D}^0 \rightarrow \rho(14)$	50) ⁰ π ⁰
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$-17 \pm 33 \pm 17$	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(1450)^-\pi^+ \rightarrow \pi^+\pi)$	$\pi^-\pi^0$) in D^0	$\rightarrow \rho$ (1450)	$^{-}\pi^{+}$, $\overline{D}^{0} \rightarrow$ c.c.
VALUE (%)	DOCUMENT ID	TECN	COMMENT
+6±8±3	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(1700)^+\pi^- \rightarrow \pi^+\pi)$	$\pi^-\pi^0$) in D^0	$\rightarrow \rho(1700)$	$+\pi^{-}, \overline{D}^{0} \rightarrow \text{c.c.}$
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$-5 \pm 13 \pm 5$	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(1700)^0 \pi^0 \to \pi^+ \pi^-)$	$^{-}\pi^{0}$) in D^{0} , T	$\overline{D}^0 \rightarrow \rho(17)$	$(00)^0 \pi^0$
VALUE (%)	DOCUMENT ID	TECN	
$+13\pm8\pm3$	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(\rho(1700)^{-}\pi^{+} \rightarrow \pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}$	$\pi^-\pi^0$) in D^0	$\rightarrow \rho(1700)$	$^{-}\pi^{+}$, $\overline{D}^{0} \rightarrow \text{c.c.}$
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$+8\pm10\pm5$	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(f_0(980)\pi^0 \to \pi^+\pi^-)$	π^0) in D^0 , \overline{D}	$^{0} \rightarrow f_{0}(980)$	$)\pi^{0}$
VALUE (%)	DOCUMENT ID	TECN	
0±25±25	AUBERT	08AO BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(f_0(1370)\pi^0 \to \pi^+\pi^-)$	π^{0}) in D^{0} , \overline{L}	$\overline{D}^0 \rightarrow f_0(13)$	$(70)\pi^0$
VALUE (%)	DOCUMENT ID	<u> </u>	
$+25\pm13\pm13$	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(f_0(1500)\pi^0 \to \pi^+\pi^-)$	π^0) in D^0 , \overline{D}	$\overline{D}^0 \rightarrow f_0(15)$	$(00)\pi^{0}$
VALUE (%)	DUCUMENT ID		
0±13±13	AUBERT		Table I, $-Col.5/2 \times Col.2$
$A_{CP}(f_0(1710)\pi^0 \to \pi^+\pi^-)$	π^0) in D^0 , \overline{D}	$\overline{D}^0 \rightarrow f_0(17)$	$(10)\pi^0$
VALUE (%)			
	AUBERT		Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(f_2(1270)\pi^0 \rightarrow \pi^+\pi^-)$	π^{\cup}) in D^{\cup} , L	$D^{0} \rightarrow f_{2}(12)$	$(70)\pi^0$
			$\frac{COMMENT}{Col E / 2 \times Col 2}$
=+1+1+			Table 1, -Col.5/2×Col.2
$A_{CP}(\sigma(400)\pi^{U} \rightarrow \pi^{+}\pi^{-}\pi^{-}\pi^{-}\pi^{-}\pi^{-}\pi^{-}\pi^{-}\pi^{-$	π^{v}) in D^{v} , \overline{D}^{v}	$\gamma \rightarrow \sigma(400)$	
+0±0±0	AUBERI	υδάο βάβκ	Table 1, $-\text{Col.5}/2\times\text{Col.2}$

A_{CP} (nonresonant $\pi^+\pi^-$	π^0) in D^0 , \overline{D}^0	\rightarrow nonreson	ant $\pi^+\pi^-\pi^0$
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$-13\pm19\pm13$	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CP}(2\pi^+2\pi^-)$ in D^0 , \overline{D}_{VAUVF}	$ \overline{p} \rightarrow 2\pi^+ 2\pi^- $	- TID TE	CN
no evidence	¹ AAIJ	13br LH	CB
1 AAIJ 13BR searched for C	P violation in bin	ned phase space	e. No evidence was found.
	<u>50</u> v+v_	. 0	
$A_{CP}(K^+K^-\pi^\circ)$ in D° ,	$D^{\circ} \rightarrow K^{+}K^{-}$	π°	TECH COMMENT
$\frac{VALUE(\%)}{100+167+0.25} = 11 \pm 1$	<u> </u>		$\frac{1}{2} \frac{1}{2} \frac{1}$
$=1.00\pm1.07\pm0.23$ 11 \pm	U.IIK AUDE	IKI UOAC	DADR $e'e \approx 10.0 \text{ GeV}$
$A_{CP}(K^*(892)^+ K^- \rightarrow K^* \rightarrow K^* \rightarrow K^*$	Κ⁺ Κ⁻ π⁰) in I	$D^0 \rightarrow K^*(8)$	92) ⁺ K^- , $\overline{D}^0 \rightarrow \text{c.c.}$
-0.9±1.2±0.4	¹ AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
1 AUBERT 08AO report the	eir result using a c	lifferent sign co	onvention.
A (1/*/1410)+ 1/=	<i>ν</i> + <i>ν</i> = 0	· */*	1410)+1/= 50
$A_{CP}(K^{*}(1410) \mid K \rightarrow)$	$K'K \pi^{\circ}$) in	$D^{\bullet} \rightarrow K^{+}($	$1410)'K, D^* \to C.C.$
<u></u>	AUBERT		Table 1 $-Col 5/2 \times Col 2$
	AUDERT	UUAO DADIN	
$A_{CP}((K^+\pi^0)_{S-wave}K^-)$	$ \rightarrow K^+ K^- \pi$	D^{0}) in $D^{0} \rightarrow$	$(K^+\pi^0)_S K^-, \overline{D}{}^0 \rightarrow$
C.C.	DOCUMENT ID	TECN	COMMENT
VALUE (%)	ALIBEDT		$\frac{COMMENT}{Table 1} Cal 5/2×Cal 2$
T11111	AUBERT	UUAU BABIN	Table 1, -C01.5/2×C01.2
$A_{CP}(\phi(1020)\pi^0 \rightarrow K^+)$	$K^-\pi^0$) in D^0 ,	$\overline{D}^0 \rightarrow \phi(10)$	020) π^0
VALUE (%)	DOCUMENT ID	TECN	COMMENT
$+1.1\pm2.1\pm0.5$	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
$A_{CD}(f_0(980)\pi^0 \rightarrow K^+)$	$K^{-}\pi^{0}$) in D^{0}	$\overline{D}^0 \rightarrow f_0(98)$	$30)\pi^{0}$
VALUE (%)	DOCUMENT ID	TECN	COMMENT
-3±19±1	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
			eee)() ()
$A_{CP}(a_0(980)^{\circ}\pi^{\circ} \rightarrow K^{\neg}$	$ [K^-\pi^\circ)$ in D°	$D^{\circ} \rightarrow a_0($	$980)^{\circ}\pi^{\circ}$
VALUE (%)	1 AUDEDT		
	AUBERT		Table 1, $-Col.5/2 \times Col.2$
⁺ This AUBERT 08AO value	e is obtained when	i the <i>a</i> ₀ (980) ^o	replaces the $t_0(980)$ in the fit.
$A_{CP}(f'_{2}(1525)\pi^{0} \rightarrow K^{-1}$	$^{+}K^{-}\pi^{0}$) in D^{0}	$D, \overline{D}^0 \rightarrow f'_2($	$(1525)\pi^{0}$
VALUE (%)	DOCUMENT ID	TECN	COMMENT
0±50±150	AUBERT	08A0 BABR	Table 1, $-Col.5/2 \times Col.2$
	<u>,,⊥,,_</u> ,	5 0	oo)_ ((⊥ ¯)
$A_{CP}(K^*(892)^-K^+ \rightarrow K^+)$	$K^+K^-\pi^{\circ}$) in I	$D^{\vee} \rightarrow K^{*}(8)$	$92)^{=}K^{+}, D^{\vee} \rightarrow c.c.$
VALUE (%)	DOCUMENT ID		COMMENT
-5±4±1	AUBERI	U8AO BABR	Table 1, $-Col.5/2 \times Col.2$

Citation: C. Patrignani et al. (Particle Data Group), Chin. Phys. C, $\mathbf{40}$, 100001 (2016) and 2017 update

A _{CP} (K*(1410) ⁻ K	$K^+ \rightarrow K^+$	$+ K^{-} \pi^{0}$) in D^{0}	→ /	(*(141	$0)^{-}K^{+}, \overline{D}^{0} \rightarrow \text{c.c.}$
VALUE(%) =17+28+7		AUBERT 08/	<u> </u>	<u>.N (0)</u> BR Tal	$\frac{MMENI}{1} = Col 5/2 \times Col 2$
			-0 -0		
$A_{CP}((K^{-}\pi^{0})_{S-w})$ c.c.	$_{ave}K^+$ –	→ <i>K</i> + <i>K</i> ⁻ π⁰) in	n <i>D</i> ⁰	→ (<i>K</i>	$(\pi^0)_S K^+, D^0 \rightarrow$
VALUE (%)		DOCUMENT ID	TEC	<u>CN</u> <u>CO</u>	MMENT
-7±40±8		AUBERT 08/	AO BA	BR Tal	ble 1, $-Col.5/2 \times Col.2$
$A_{CP}(K^0_S\pi^0)$ in D^0	, $\overline{D}{}^{0} \rightarrow$	$K_S^0 \pi^0$			
VALUE (%)		DOCUMENT ID		TECN	COMMENT
-0.20 ± 0.17 OUR AV	467k	1 _{NISAR}	14	RELI	e^+e^- at/near γ 's
0.1 ± 1.3	9099	BONVICINI	01	CLE2	$e^+e^- \approx 10.6 \text{ GeV}$
• • • We do not use t	the followin	ng data for averages	s, fits,	limits, e	etc. • • •
$-0.28\!\pm\!0.19\!\pm\!0.10$	326k	KO	11	BELL	See NISAR 14
-1.8 ± 3.0		BARTELT	95	CLE2	See BONVICINI 01
¹ After subtracting (0.07)%.	CPV in K^0	$-\overline{K}^0$ mixing, NIS	5AR 14	4 gets A	$CP = (+0.12 \pm 0.16 \pm$
$A_{CP}(K^0_{\mathfrak{S}}\eta)$ in D^0 ,	$\overline{D}^0 \rightarrow P$	$K_{c}^{0}\eta$			
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$+0.54\pm0.51\pm0.16$	46k	ко	11	BELL	$e^+e^- \approx \Upsilon(4S)$
$A_{CP}(K^0_S\eta')$ in D^0_{γ}	$\overline{D}^0 \rightarrow D^0$	$K^0_S \eta'$			
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$+0.98\pm0.67\pm0.14$	27k	KO	11	BELL	$e^+e^-pprox \Upsilon(4S)$
$A_{CP}(K^0_S\phi)$ in D^0 ,	$\overline{D}^0 \rightarrow k$	$\zeta_{S}^{0}\phi$			
VALUE (%)	DOCUMEN	IT ID TECN	СОМ	MENT	
-2.8±9.4	BARTEL	T 95 CLE2	-18	^{8.2} < A _C	P <+12.6% (90%CL)
$A_{CD}(K^{\mp}\pi^{\pm})$ in D^{0}	$^{0} \rightarrow K^{-}$	$\pi^+, \overline{D}^0 \to K^+$	π^{-}		
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.3±0.3±0.6		BONVICINI	14	CLEO	All CLEO-c runs
• • • We do not use t	the followin	ng data for averages	s, fits,	limits, e	etc. • • •
$+0.5\!\pm\!0.4\!\pm\!0.9$	150k	MENDEZ	10	CLEO	See BONVICINI 14
$-0.4 \pm 0.5 \pm 0.9$		DOBBS	07	CLEO	See BONVICINI 14
$A_{CP}(K^{\pm}\pi^{\mp})$ in D^{0}	$^{0} \rightarrow K^{+}$	$\pi^-, \overline{D}^0 \to K^-$	π^+		
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.0± 1.6 OUR AV	ERAGE				
$-$ 0.7 \pm 1.9		¹ AAIJ	13CE	LHCB	<i>pp</i> at 7, 8 TeV
$-2.1\pm5.2\pm1.5$	4.0k	AUBERT	07W	BABR	$e^+e^- \approx 10.6 \text{ GeV}$
$+ 2.3 \pm 4.7$	4.0k	- ZHANG	06	BELL	e ⁻ – –
$+18 \pm 14 \pm 4$ $\pm 05 \pm 61 \pm 92$		ς link 4 aliredτ	05H 037	FUCS	γ nucleus
$+ 9.5 \pm 0.1 \pm 0.5$	A 🖛		0.52		-+
$+2$ -20 ± 1	45	GODANG	00	CLE2	e ' e
• • We do not use t	the followin	ig data for averages	s, fits,	limits, e	etc. • • •
$-$ 8.0 \pm 7.7	0.8k	٥LI	05A	BELL	See ZHANG 06
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- ¹Based on 3 fb⁻¹ of data collected at \sqrt{s} = 7, 8 TeV. Allowing for *CP* violation, the direct *CP*-violation in mixing is reported for the $D^0 \rightarrow K^+ \pi^-$ and $\overline{D}^0 \rightarrow K^+ \pi^-$.
- ² This ZHANG 06 result allows mixing.
- ³ This LINK 05H result assumes no mixing. If mixing is allowed, it becomes $0.13 + 0.33 \pm 0.025 \pm 0.000$ 0.10.
- ⁴This AUBERT 03Z limit assumes no mixing. If mixing is allowed, the 95% confidencelevel interval is $(-2.8 < A_D < 4.9) \times 10^{-3}$.
- ⁵ This GODANG 00 result assumes no $D^0 \overline{D}^0$ mixing and becomes $-0.43 < A_{CP} < +0.34$ at 95% CL. If mixing is allowd $A_{CP} = -0.01 \substack{+0.16 \\ -0.17} \pm 0.01$.

⁶ This LI 05A result allows mixing

$A_{CP}(K^-\pi^+)$ in $D_{CP(\pm 1)} \rightarrow K^{\mp}\pi^{\pm}$

$A_{CP}(K^-\pi^+) =$	$[B(D_{CP(-)} \rightarrow K^{-})]$	π^{+} +	- c.c.)	$- B(D_{CP(+)} \rightarrow K^- \pi^+ +$
c.c.)] / Sum				
VALUE (%)	DOCUMENT ID		TECN	COMMENT
12.7±1.3±0.7	¹ ABLIKIM	14C	BES3	$e^+e^- \rightarrow D^0 \overline{D}^0$, 3.77 GeV

¹ABLIKIM 14C uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$ to measure the asymmetry of the branching fraction of $D^0 \rightarrow K^- \pi^+$ in *CP*-odd and *CP*-even eigenstates. It then extracts the strong-phase difference $\delta_{K\pi}$.

$A_{CP}(K^{\mp}\pi^{\pm}\pi^{0})$ in $D^{0} \rightarrow K^{-}\pi^{+}\pi^{0}$, $\overline{D}^{0} \rightarrow K^{+}\pi^{-}\pi^{0}$					
VALUE (%)	DOCUMENT ID		TECN	COMMENT	
0.1±0.5 OUR AVERAGE					
$0.1\!\pm\!0.3\!\pm\!0.4$	BONVICINI	14	CLEO	All CLEO-c runs	
$-3.1 {\pm} 8.6$	¹ KOPP	01	CLE2	e^+e^-pprox 10.6 GeV	
ullet $ullet$ $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$					
$0.2 {\pm} 0.4 {\pm} 0.8$	DOBBS	07	CLEO	See BONVICINI 14	

¹KOPP 01 fits separately the D^0 and \overline{D}^0 Dalitz plots and then calculates the integrated difference of normalized densities divided by the integrated sum.

$A_{CP}(K^{\pm}\pi^{\mp}\pi^{0})$ in $D^{0} \rightarrow K^{+}\pi^{-}\pi^{0}$, $\overline{D}^{0} \rightarrow K^{-}\pi^{+}\pi^{0}$							
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT		
0 ± 5 OUR AV	'ERAGE						
$-0.6\pm$ 5.3	1978 ± 104	TIAN	05	BELL	$e^+e^-pprox~\Upsilon(4S)$		
$+9 \begin{array}{c} +25 \\ -22 \end{array}$	38	BRANDENB	01	CLE2	$e^+e^-pprox \Upsilon(4S)$		

$A_{CP}(K^{0}_{S}\pi^{+}\pi^{-}) \text{ in } D^{0}, \overline{D}^{0} \rightarrow K^{0}_{S}\pi^{+}\pi^{-}$ $\stackrel{Value(\%)}{=} VTS \xrightarrow{DOCUMENT ID}$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
-0.1 ± 0.8 OUR AVER	RAGE				
$-0.05\!\pm\!0.57\!\pm\!0.54$	350k	¹ AALTONEN	12ad	CDF	
$-0.9 \ \pm 2.1 \ \begin{array}{c} +1.6 \\ -5.7 \end{array}$	4854	² ASNER	04A	CLEO	e^+e^-pprox 10 GeV

TECN

 1 This is the overall result of AALTONEN 12AD. Following are the 15 CP fit-fraction asymmetries from the amplitude analysis of the D^0 and $\overline{D}^0 \to K^0_{\varsigma} \pi^+ \pi^-$ Dalitz plots. ² This is the overall result of ASNER 04A; *CP*-violating limits are also given below for each of the 10 resonant submodes found in an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow$ $K^0_{\ S} \pi^+ \pi^-$ Dalitz plots.

 $A_{CP}(K^*(892)^{\mp}\pi^{\pm} \rightarrow K^0_{S}\pi^+\pi^-)$ in $D^0 \rightarrow K^{*-}\pi^+$, $\overline{D}^0 \rightarrow K^{*+}\pi^-$ DOCUMENT ID TECN COMMENT VALUE (%) $+0.36\pm0.33\pm0.40$ AALTONEN 12AD CDF Dalitz fit, \sim 350k evts • • • We do not use the following data for averages, fits, limits, etc. • • • $+2.5 \pm 1.9 +3.3 \\ -0.8$ ASNER 04A CLEO Dalitz fit, 4854 evts $A_{CP}(K^*(892)^{\pm}\pi^{\mp} \rightarrow K^0_S \pi^+\pi^-) \text{ in } D^0 \rightarrow K^{*+}\pi^-, \overline{D}^0 \rightarrow K^{*-}\pi^+$ This is a doubly Cabibbo-suppressed mode. VALUE (%) DOCUMENT ID TECN COMMENT $+ 1.0 \pm 5.7 \pm 2.1$ 12AD CDF $\,$ Dalitz fit, \sim 350k evts AALTONEN We do not use the following data for averages, fits, limits, etc. $-21 \pm 42 \pm 28$ ASNER 04A CLEO Dalitz fit, 4854 evts $A_{CP}(K^0_S \rho^0 \to K^0_S \pi^+ \pi^-) \text{ in } D^0 \to \overline{K}^0 \rho^0, \overline{D}^0 \to K^0 \rho^0$ DOCUMENT ID COMMENT VALUE (%) $-0.05\pm0.50\pm0.08$ AALTONEN 12AD CDF Dalitz fit, \sim 350k evts \bullet \bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet $+3.1 \pm 3.8 \begin{array}{c} +2.7 \\ -2.2 \end{array}$ ASNER 04A CLEO Dalitz fit, 4854 evts $\begin{array}{ccc} A_{CP}(K^{0}_{S}\omega \rightarrow K^{0}_{S}\pi^{+}\pi^{-}) \text{ in } D^{0} \rightarrow \overline{K}^{0}\omega, \ \overline{D}^{0} \rightarrow K^{0}\omega \\ \xrightarrow{VALUE (\%)} & \underline{DOCUMENT \ ID} & \underline{TECN} & \underline{COMMENT} \end{array}$ $-12.6\pm$ 6.0 \pm 2.6 AALTONEN 12AD CDF Dalitz fit, \sim 350k evts • • We do not use the following data for averages, fits, limits, etc. • • • $-26 \pm 24 + \frac{+22}{-4}$ ASNER 04A CLEO Dalitz fit, 4854 evts $A_{CP}(K^0_{\varsigma}f_0(980) \rightarrow K^0_{\varsigma}\pi^+\pi^-)$ in $D^0 \rightarrow \overline{K}^0f_0(980), \overline{D}^0 \rightarrow K^0f_0(980)$ DOCUMENT ID TECN COMMENT VALUE (%) $-0.4\pm$ 2.2 \pm 1.6 12AD CDF AALTONEN Dalitz fit, \sim 350k evts • • We do not use the following data for averages, fits, limits, etc. • • • -4.7 ± 11.0 +24.9 88ASNER 04A CLEO Dalitz fit, 4854 evts $A_{CP}(K^0_{S}f_2(1270) \rightarrow K^0_{S}\pi^+\pi^-)$ in $D^0 \rightarrow \overline{K}^0f_2(1270), \overline{D}^0 \rightarrow K^0f_2(1270)$ VALUE (%) DOCUMENT ID TECN COMMENT $-4.0\pm3.4\pm3.0$ AALTONEN 12AD CDF Dalitz fit, \sim 350k evts • • We do not use the following data for averages, fits, limits, etc. • • • $+34 \pm 51 + 33 - 70$ ASNER 04A CLEO Dalitz fit, 4854 evts $A_{CP}(K^0_S f_0(1370) \rightarrow K^0_S \pi^+ \pi^-) \text{ in } D^0 \rightarrow \overline{K}^0 f_0(1370), \overline{D}^0 \rightarrow K^0 f_0(1370)$ DOCUMENT ID TECN COMMENT VALUE (%) $-0.5\pm4.6\pm7.7$ AALTONEN 12AD CDF Dalitz fit, \sim 350k evts • • • We do not use the following data for averages, fits, limits, etc. • • • $+18 \pm 10 + 13 - 22$ ASNER 04A CLEO Dalitz fit, 4854 evts

Citation: C. Patrignani et al. (Particle Data Group), Chin. Phys. C, 40, 100001 (2016) and 2017 update

$A_{CP}(K_5^0 \rho^0(1450))$ in D^0	$\rightarrow \overline{K}^0 \rho^0(1450), \overline{D}^0 \rightarrow \overline{K}^0 \rho^0(1450)$
VALUE (%)	DOCUMENT ID TECN COMMENT
$-4.1\pm5.2\pm8.1$	AALTONEN 12AD CDF Dalitz fit, \sim 350k evts
$A_{CP}(K_{S}^{0}f_{0}(600))$ in D^{0} -	$\rightarrow \overline{K}^{0} f_{0}(600), \overline{D}^{0} \rightarrow K^{0} f_{0}(600)$
$-2.7\pm2.7\pm3.6$	AALTONEN 12AD CDF Dalitz fit, ~ 350k evts
$A_{CP}(K^*(1410)^{\mp}\pi^{\pm})$ in $K_{VALUE(\%)}$	$D^0 \rightarrow K^*(1410)^- \pi^+, \overline{D}{}^0 \rightarrow K^*(1410)^+ \pi^-$
$-2.3\pm5.7\pm6.4$	AALTONEN 12AD CDF Dalitz fit, \sim 350k evts
$A_{CP}(K_0^*(1430)^{\mp}\pi^{\pm} \to h)$	$\mathcal{K}^0_S \pi^+ \pi^-$) in $D^0 \to \mathcal{K}^*_0(1430)^- \pi^+$, $\overline{D}^0 \to \text{c.c.}$
<u>VALUE (%)</u>	DOCUMENT ID TECN COMMENT
4.0± 2.4±3.8 • • • We do not use the follo	AALIONEN 12AD CDF Dalitz fit, \sim 350k evts wing data for averages fits limits etc. • • •
$-0.2\pm11.3^{+8.8}_{-5.0}$	ASNER 04A CLEO Dalitz fit, 4854 evts
$A_{CP}(K_0^*(1430)^\pm \pi^\mp)$ in K_0^\pm This is a doubly Cabibb	$D^{0} \rightarrow K_{0}^{*}(1430)^{+}\pi^{-}, \overline{D}^{0} \rightarrow K_{0}^{*}(1430)^{-}\pi^{+}$ o-suppressed mode. <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
$+12\pm11\pm10$	AALTONEN $$ 12AD CDF $$ Dalitz fit, \sim 350k evts
$A_{CP}(K_2^*(1430)^{\mp}\pi^{\pm} \rightarrow I_{VALUE(\%)})$	$\mathcal{K}^{0}_{S}\pi^{+}\pi^{-}$) in $D^{0} \rightarrow \mathcal{K}^{*}_{2}(1430)^{-}\pi^{+}$, $\overline{D}^{0} \rightarrow \text{c.c.}$ <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
+2.9± 4.0± 4.1 • • • We do not use the follo	AALTONEN 12AD CDF Dalitz fit, \sim 350k evts wing data for averages, fits, limits, etc. • • •
-7 ± 25 $^{+13}_{-26}$	ASNER 04A CLEO Dalitz fit, 4854 evts
$A_{CP}(K_2^*(1430)^\pm \pi^\mp)$ in K_2 This is a doubly Cabibb	$D^0 \rightarrow K_2^*(1430)^+ \pi^-, \overline{D}^0 \rightarrow K_2^*(1430)^- \pi^+$ o-suppressed mode.
VALUE (%)	DOCUMENT IDTECN
$-10\pm14\pm29$	AALTONEN 12AD CDF Dalitz fit, \sim 350k evts
$A_{CP}(K^*(1680)^{\mp}\pi^{\pm} \rightarrow h$	$\mathcal{K}^{0}_{S}\pi^{+}\pi^{-}$ in $D^{0} \rightarrow \mathcal{K}^{*}(1680)^{-}\pi^{+}$, $\overline{D}^{0} \rightarrow \text{c.c.}$
• • • We do not use the follo	wing data for averages, fits, limits, etc. $\bullet \bullet \bullet$
• • • We do not use the follo $-36\pm19^{+10}_{-35}$ ASI	wing data for averages, fits, limits, etc. • • • NER 04A CLEO Dalitz fit, 4854 evts
• • • We do not use the follo $-36\pm19^{+10}_{-35}$ ASI $A_{CP}(K^-\pi^+\pi^+\pi^-)$ in D^{0}	wing data for averages, fits, limits, etc. • • • NER 04A CLEO Dalitz fit, 4854 evts $^{0} \rightarrow K^{-}\pi^{+}\pi^{+}\pi^{-}, \overline{D}^{0} \rightarrow K^{+}\pi^{-}\pi^{-}\pi^{+}$
• • • We do not use the follo $-36\pm19^{+10}_{-35}$ ASI ACP($K^-\pi^+\pi^+\pi^-$) in $D^{\prime}_{VALUE(\%)}$ 02+03+04	wing data for averages, fits, limits, etc. • • • NER 04A CLEO Dalitz fit, 4854 evts $0 \rightarrow K^{-}\pi^{+}\pi^{+}\pi^{-}, \overline{D}^{0} \rightarrow K^{+}\pi^{-}\pi^{-}\pi^{+}$ <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u> <u>BONVICINI</u> 14 CLEO All CLEO a runs
• • • We do not use the follo $-36\pm19^{+10}_{-35}$ ASI $A_{CP}(K^-\pi^+\pi^+\pi^-)$ in $D^{10}_{VALUE(\%)}$ 0.2±0.3±0.4 • • • We do not use the follo	wing data for averages, fits, limits, etc. • • • NER 04A CLEO Dalitz fit, 4854 evts ${}^{0} \rightarrow K^{-}\pi^{+}\pi^{+}\pi^{-}, \overline{D}{}^{0} \rightarrow K^{+}\pi^{-}\pi^{-}\pi^{+}$ <u>DOCUMENT ID</u> BONVICINI 14 CLEO All CLEO-c runs wing data for averages, fits, limits, etc. • • •

$A_{CP}(K^{\pm}\pi^{\mp}\pi$	$^+\pi^-)$ in D^0 $-$	$ K^+\pi^-\pi^+\pi$	τ-, Ζ	⁵⁰ →	$K^{-}\pi^{+}\pi^{+}\pi^{-}$	
VALUE (%)	EVTS	DOCUMEN	IT ID	TE	CN <u>COMMENT</u>	
-1.8 ± 4.4	1721 ± 75	TIAN		05 BE	LL $e^+e^- \approx \gamma$	`(4 <i>S</i>)
ACP(K+K-7 See also A phase space	$\pi^+\pi^-$) in D^0 , AIJ 13BR for a set ce. No evidence of	$\overline{D}^0 \rightarrow K^+ K$ arch for <i>CP</i> violation w	- π + ation i as fou	$π^-$ n $D^0 →$ nd.	$K^+ K^- \pi^+ \pi^-$	in binned
-82+56+47	828 + 46				$\frac{1}{2} \frac{1}{2} \frac{1}$	180 CaV
-0.215.014.7	020 ± 40			USE IV	$JC3 \gamma A, L_{\gamma} \approx 1$	LOU Gev
A _{CP} (K [*] ₁ (1270	$0)^+ K^- \to K^{*0}$	$^{0}\pi^{+}K^{-})$ in L) ⁰ →	K*1(1	270) ⁺ K ⁻ , D ⁰	→ c.c.
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
-0.7 ± 10.4		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
A _{CP} (K [*] ₁ (1270	$(0)^{-}K^{+} \rightarrow \overline{K}^{*}$	$^{0}\pi^{-}K^{+}$) in L) ⁰ →	K*(1	270) ⁻ K^+ , \overline{D}^0	→ c.c.
VALUE (%)	,	DOCUMENT ID		TECN	COMMENT	
-10.0 ± 31.5		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
A (K*(1070	(1) + K - (1) = 0	x+ x-) := D	D,	K *(10	70)+ <i>K</i> - <u>7</u> 0	
	$j \in K \rightarrow p$		-		$(0)^{\circ} K , D =$	→ נ.נ.
<u>VALUE (%)</u> 6 E ⊥ 16 0		ADTUSO	10		<u>COMMENT</u>	
-0.3±10.9		ARTUSU	12	CLEU	Amplitude fit, 29	959 evts.
$A_{CP}(K_1^*(1270))$	$0)^{-}K^{+} \rightarrow \rho^{0}K^{+}$	K ⁻ K ⁺) in <i>D</i> ⁽) →	K ₁ *(12	70) [—] K ⁺ , $\overline{D}{}^0$ –	→ c.c.
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
+9.6±12.9		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
Acp(K*(1410	$()^+ K^- \rightarrow K^{*}$	$^{0}\pi^{+}K^{-}$) in L) ⁰ →	K *(1	410) + K^{-} . \overline{D}^{0}	→ c.c.
VALUE (%)	<i>y n n n</i>	DOCUMENT ID		TECN	COMMENT	
-20.0 ± 16.8		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
A _{CP} (K*(1410	$(0)^{-}K^{+} \to \overline{K}^{*}$	$^{0}\pi^{-}K^{+}$) in L) ⁰ →	K*(1	410) ⁻ K ⁺ , <u>D</u> ⁰	→ c.c.
VALUE (%)	·	DOCUMENT ID		TECN	COMMENT	
-1.1 ± 13.7		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
$A_{CP}(K^{*0}\overline{K}^{*0})$	<i>S</i> -wave) in <i>D</i> ⁰	$\overline{D}^0 \rightarrow K^{*0}$	<i>K</i> ∗0	S-wave	ł	
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
+9.5±13.5		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
$A_{CP}(\phi \rho^0 S_{W})$	(ave) in D^0 . \overline{D}^0	$\rightarrow \phi \rho^0 S - w$	ave			
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
-2.7±5.3		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
	(a, a) in D^0					
$ACP(\varphi \rho^{\circ} D - \psi)$	vave) in D^{2} , D^{3}	$\phi \phi \rho^{\circ} D \phi$	vave	TECN	COMMENT	
-37.1 ± 19.0			12		Amplitude fit 20)59 evts
				CLEO	, implitude int, 25	<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
$A_{CP}(\phi(\pi^+\pi^-$	_) _{S-wave}) in <i>L</i>	$D^{\vee}, D^{\vee} \rightarrow \phi$	$(\pi^{+}\pi)^{-1}$	r ⁻)s-ı	vave	
VALUE (%)		DOCUMENT ID		TECN	COMMENT	
-8.6 ± 10.4		ARTUSO	12	CLEO	Amplitude fit, 29	959 evts.
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$\begin{array}{l} A_{CP}((K^{-}\pi^{+})_{P-wave} \ (K^{+}\pi^{-})_{S-wave} \ , \ \overline{D}^{0} \rightarrow \text{c.c.} \end{array}$	⁻) _{S-wave}) in	D ⁰	→ (<i>K</i> =	$(\pi^+)_{P-wave}$
VALUE (%)	DOCUMENT ID		TECN	COMMENT
+2.7±10.6	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

D⁰ CP-EVEN FRACTIONS

The CP-even fraction F_+ , defined for self-conjugate final states, like the coherence factor is useful for measuring the unitary triangle angle γ in $B \to DK$ decays. A purely CP-even state has $\mathsf{F}_+ = \mathsf{1}$, a CP-odd one has $\mathsf{F}_+ = \mathsf{0}$. For details, see NAYAK 15.

CP-even fraction in $D^0 \rightarrow \pi^+$	$\pi^-\pi^0$ decays					
VALUE (%)	DOCUMENT ID		COMMENT			
97.3±1.7	MALDE 15		Uses CLEO data			
\bullet \bullet \bullet We do not use the following c	lata for averages	, fits,	limits, etc. • • •			
$96.8\!\pm\!1.7\!\pm\!0.6$	NAYAK	15	see MALDE 15			
<i>CP</i> -even fraction in $D^0 \rightarrow K^{+}$	$FK^{-}\pi^{0}$ decay	s				
VALUE (%)	DOCUMENT ID		COMMENT			
73.2±5.5	MALDE	15	Uses CLEO data			
\bullet \bullet \bullet We do not use the following c	lata for averages	, fits,	limits, etc. • • •			
$73.1 {\pm} 5.8 {\pm} 2.1$	NAYAK	15	see MALDE 15			
<i>CP</i> -even fraction in $D^0 \rightarrow \pi^+ \pi^- \pi^+ \pi^-$ decays						
VALUE (%)	DOCUMENT ID		COMMENT			
73.7±2.8	MALDE	15	Uses CLEO data			

D⁰ CP-VIOLATING ASYMMETRY DIFFERENCES

$\Delta A_{CP} = A_{CP}(K^+K^-) - A_{CP}(\pi^+\pi^-)$

CP violation in these modes can come from the decay amplitudes (direct) and/or from mixing or interference of mixing and decay (indirect). The difference ΔA_{CP} is primarily sensitive to the direct component, and only retains a second-order dependence on the indirect component for measurements where the mean decay time of the K^+K^- and $\pi^+\pi^-$ samples are not identical. The results below are averaged assuming the indirect component can be neglected.

V/1202 (/0)	LVIS	DOCUMENTID	TLCN	COMMENT
-0.12 ± 0.13 OUR AVE	RAGE Error in	cludes scale fac	tor of 1.8. Se	e the ideogram below.
$-0.10\pm0.08\pm0.03$ 6	5.5M,2.2M	AAIJ	16D LHCB	Time-integrated
$0.14 \pm 0.16 \pm 0.08$ 2	2.2M,0.8M	AAIJ	14AK LHCB	Time-integrated
$-0.62\!\pm\!0.21\!\pm\!0.10$	_	AALTONEN	120 CDF	Time-integrated
$0.24\!\pm\!0.62\!\pm\!0.26$	1	AUBERT	08M BABR	Time-integrated
$-0.86\!\pm\!0.60\!\pm\!0.07$	120k	STARIC	08 BELL	Time-integrated
• • • We do not use the	ne following data	for averages, f	its, limits, etc	. • • •
$0.49 \pm 0.30 \pm 0.14$ 0.5	56M,0.22M	AAIJ	13AD LHCB	See AAIJ 14AK
$-0.82 \pm 0.21 \pm 0.11$ 1	4M,0.4M	AAIJ	12G LHCB	See AAIJ 16D
$-0.46\!\pm\!0.31\!\pm\!0.12$		AALTONEN	12B CDF	See AALTONEN 120

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¹Calculated from the AUBERT 08M values of $A_{CP}(K^+K^-)$ and $A_{CP}(\pi^+\pi^-)$. The systematic error here combines the systematic errors in quadrature, and therefore somewhat over-estimates it.



$D^0 \chi^2$ TESTS OF CP-VIOLATION (CPV)

We list model-independent searches for local *CP* violation in phase-space distributions of multi-body decays.

Most of these searches divide phase space (Dalitz plot for 3-body decays, five-dimensional equivalent for 4-body decays) into bins, and perform a χ^2 test comparing normalised yields N_i , \overline{N}_i in *CP*-conjugate bin pairs *i*: $\chi^2 = \Sigma_i (N_i - \alpha \overline{N}_i) / \sigma (N_i - \alpha \overline{N}_i)$. The factor $\alpha = (\Sigma_i N_i) / (\Sigma_i \overline{N}_i)$ removes the dependence on phase-space-integrated rate asymmetries. The result is used to obtain the probability (p-value) to obtain the measured χ^2 or larger under the assumption of CP conservation [AUBERT 08AO, BEDIAGA 09]. Alternative methods obtain p-values from other test variables based on unbinned analyses [WILLIAMS 11, AAIJ 14C]. Results can be combined using Fisher's method [MOSTELLER 48].

Local CPV in D^0 ,	$\overline{D}^0 \rightarrow \pi^0$	$+\pi^{-}\pi^{0}$			
p-value (%)	EVTS	DOCUMENT ID	Т	ECN	COMMENT
4.9 OUR EVALUAT	ION				
2.6	566k	¹ AAIJ	15A L	HCB.	unbinned method
32.8	82k	AUBERT	08A0 B	BABR	χ^2

 1 Unusually, AAIJ 15A assigns an uncertainty on the p value of $\pm 0.5\%$. This results from limited test statistics.

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Local CPV in D^0 ,	$\overline{D}^0 \rightarrow \pi^+$	$\pi^-\pi^+\pi^-$		
p-value (%)	EVTS	DOCUMENT ID	TECN	COMMENT
41	330k	AAIJ	13BR LHCB	χ^2
Local CPV in D^0 ,	$\overline{D}^0 \rightarrow K^0_S$	$\pi^+\pi^-$		
p-value (%)	EVTS	DOCUMENT ID	TECN	COMMENT
96	350k	AALTONEN	12AD CDF	χ ²
Local CPV in D^0 ,	$\overline{D}^0 \rightarrow K^+$	$K^{-}\pi^{0}$		
p-value (%)	EVTS	DOCUMENT ID	TECN	COMMENT
16.6	11k	AUBERT	08A0 BABR	χ^2
Local CPV in D^0 ,	$\overline{D}^0 \rightarrow K^+$	$K^{-}\pi^{+}\pi^{-}$		
p-value (%)	EVTS	DOCUMENT ID	TECN	COMMENT
9.1	57k	AAIJ	13BR LHCB	χ^2

CP VIOLATING ASYMMETRIES OF P-ODD (T-ODD) MOMENTS

The CP-sensitive P-odd (T-odd) correlation in D^0 , $\overline{D}^0 \to K^+ K^- \pi^+ \pi^-$ decays. D^0 and \overline{D}^0 are distinguished by the charge of the parent $D^*: D^{*+} \to D^0 \pi^+$ and $D^{*-} \to \overline{D}^0 \pi^-$.

$A_{Tviol}(K^+K^-\pi^+\pi^-)$ in D^0 , $\overline{D}{}^0 \rightarrow K^+K^-\pi^+\pi^-$

 $C_T~\equiv~ec{p}_{{\cal K}^+}\cdot~(ec{p}_{\pi^+} imesec{p}_{\pi^-})$ is a parity-odd correlation of the ${\cal K}^+$, π^+ , and $\pi^$ momenta (evaluated in the D^0 rest frame) for the D^0 . $\overline{C}_T \equiv \vec{p}_{K^-} \cdot (\vec{p}_{\pi^-} \times \vec{p}_{\pi^+})$ is the corresponding quantity for the \overline{D}^0 . Then $\begin{array}{lll} \underline{A}_T &\equiv & [\Gamma(\underline{C}_T > 0) - \ \Gamma(\underline{C}_T < 0)] \ / \ [\Gamma(\underline{C}_T > 0) + \ \Gamma(\underline{C}_T < 0)], \text{ and} \\ \overline{A}_T &\equiv & [\Gamma(-\overline{C}_T > 0) - \ \Gamma(-\overline{C}_T < 0)] \ / \ [\Gamma(-\overline{C}_T > 0) + \ \Gamma(-\overline{C}_T < 0)], \text{ and} \end{array}$ $A_{Tviol} \equiv \frac{1}{2}(A_T - \overline{A}_T)$. C_T and \overline{C}_T are commonly referred to as *T*-odd moments, because they are odd under *T* reversal. However, the *T*-conjugate process $K^+ K^- \pi^+ \pi^- \rightarrow D^0$ is not accessible, while the *P*-conjugate process is. *VALUE* (units 10^{-3}) EVTS DOCUMENT ID TECN COMMENT 1.7± 2.7 OUR AVERAGE 14BC LHCB $B \rightarrow D^0 \mu^- X$ $1.8\pm~2.9\pm~0.4$ 171k AAIJ DEL-AMO-SA...10 BABR $e^+e^- \approx 10.6$ GeV $1.0\pm~5.1\pm~4.4$ 47k • • We do not use the following data for averages, fits, limits, etc. • • • 05E FOCS γ A, $\overline{E}_{\gamma} \approx 180~{
m GeV}$ $10 \pm 57 \pm 37$ 0.8k LINK

D⁰ CPT-VIOLATING DECAY-RATE ASYMMETRIES

$A_{CPT}(K^{\mp}\pi^{\pm})$ in $D^{0} \rightarrow K^{-}\pi^{+}$, $\overline{D}^{0} \rightarrow K^{+}\pi^{-}$

 $A_{CPT}(t)$ is defined in terms of the time-dependent decay probabilities $P(D^0 \rightarrow K^- \pi^+)$ and $\overline{P}(\overline{D}^0 \rightarrow K^+ \pi^-)$ by $A_{CPT}(t) = (\overline{P} - P)/(\overline{P} + P)$. For small mixing parameters $x \equiv \Delta m/\Gamma$ and $y \equiv \Delta \Gamma/2\Gamma$ (as is the case), and times t, $A_{CPT}(t)$ reduces to [y Re $\xi - x \text{ Im } \xi$] Γt , where ξ is the CPT-violating parameter.

The following is actually y $Re \xi - x Im \xi$.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0083±0.0065±0.0041	LINK	03 B	FOCS	γ nucleus, $\overline{E}_{\gamma} pprox$ 180 GeV

 $D^0 \rightarrow K^*(892)^- \ell^+ \nu_\ell$ Form factors

$r_V \equiv V(0)/A_1(0) \text{ in } D^0 \rightarrow$	K*(892) [−] ℓ ⁺ 1	l		
VALUE	DOCUMENT ID		TECN	COMMENT
$1.71 {\pm} 0.68 {\pm} 0.34$	LINK	05 B	FOCS	$K^{*}(892)^{-}\mu^{+}\nu_{\mu}$
$r = A(0)/A(0) = D^{0}$	K *(000)- <i>0</i> +			
$r_2 = A_2(0)/A_1(0) \ln D^\circ \rightarrow$	∧ (092) <i>€</i>	ν_{ℓ}		
$\mathbf{r}_2 = \mathbf{A}_2(0)/\mathbf{A}_1(0) \text{ in } \mathbf{D}^* \rightarrow \mathbf{V}_{ALUE}$	DOCUMENT ID	ν_{ℓ}	TECN	COMMENT

$D^0 \rightarrow K^-/\pi^- \ell^+ \nu_\ell$ FORM FACTORS

$f_+(0)$ in $D^0 \to K^-\ell$	$+\nu_{\ell}$				
VALUE	<u>EVTS</u>	DOCUMENT ID		TECN	COMMENT
0.736 ± 0.004 OUR AV	ERAGE			5500	
$0.7368 \pm 0.0026 \pm 0.0036$	71k	ABLIKIM	15X	BES3	$\ell = e$, 2-parameter fit
$0.727 \pm 0.007 \pm 0.009$		AUBERT	07 BG	BABR	$\ell = e$, 2-parameter fit
$f_+(0) V_{cs} $ in $D^0 \rightarrow$	$K^-\ell^+$	$ u_{\ell}$			
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.719 ± 0.004 OUR AV	ERAGE	-			
$0.7172 \pm 0.0025 \pm 0.0035$	71k	¹ ABLIKIM	15X	BES3	$\ell {=} e$, 2-parameter fit
$0.726 \pm 0.008 \pm 0.004$		BESSON	09	CLEO	$\ell = e$, 3-parameter fit
1 The 3-parameter fit y	ields 0.7	$195 \pm 0.0035 \pm 0.00$	941.		
$r_1 \equiv a_1/a_0$ in $D^0 \rightarrow$	$K^-\ell^+$	ν_{ℓ}			
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
-2.40 ± 0.16 OUR AVER	AGE	1			
$-2.33 \pm 0.16 \pm 0.08$	71k	¹ ABLIKIM	15X	BES3	$\ell = e$, 3-parameter fit
$-2.65 \pm 0.34 \pm 0.08$		BESSON	09	CLEO	$\ell = e$, 3-parameter fit
1 The 2-parameter fit y	rields – 2	$2.23 \pm 0.09 \pm 0.06.$			
$r_2 \equiv a_2/a_0$ in $D^0 \rightarrow$	K [−] ℓ ⁺	ν			
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
5 \pm 4 OUR AVERAG	E				
$3.4 \pm 3.9 \pm 2.4$	71k	ABLIKIM	15X	BES3	$\ell = e$, 3-parameter fit
$13 \pm 9 \pm 1$		BESSON	09	CLEO	$\ell = e$, 3-parameter fit
$f_{\rm L}(0)$ in $D^0 \rightarrow \pi^- \ell^-$	$+ \nu_{\rho}$				
VALUE	εντs	DOCUMENT ID		TECN	COMMENT
$0.6372 \pm 0.0080 \pm 0.0044$	6 3k	ABLIKIM	15x	BES3	$\ell = e^{-2}$ -parameter fit
	0.51		10/(DESS	v—e, z parameter ni
$f_+(0) V_{cd} $ in $D^0 \rightarrow$	$\pi^{-}\ell^{+}$	Ve			
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.1436±0.0026 OUR AV below.	ERAGE	Error includes scale	facto	or of 1.5.	See the ideogram
$0.1435 \pm 0.0018 \pm 0.0009$	6.3k	¹ ABLIKIM	15X	BES3	$\ell = e$, 2-parameter fit
$0.1374 \pm 0.0038 \pm 0.0024$	5.3k	² LEES	15F	BABR	$\ell = e$, 3-parameter fit
$0.152 \pm 0.005 \pm 0.001$		BESSON	09	CLEO	$\ell = e$, 3-parameter fit
					· •

 1 The 3-parameter fit yields 0.1420 \pm 0.0024 \pm 0.0010.

²LEES 15F reports a value $0.1374 \pm 0.0038 \pm 0.0022 \pm 0.0009$, where the last uncertainty is due to the uncertainties of the $D^0 \rightarrow K^- \pi^+$ branching fraction.



BESSON

09

¹ The 2-parameter fit yields $-2.04 \pm 0.08 \pm 0.03$.

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 $-2.80\!\pm\!0.49\!\pm\!0.04$

CLEO $\ell = e$, 3-parameter fit



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LINK 056 PL B610 225 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) UNK 05 PL B613 105 G. Onengut <i>et al.</i> (ERN CHORUS Collab.) ABL 04 PL B597 39 M. Ablikim <i>et al.</i> (BEPC BES Collab.) ABL 04 PL B596 173 1. Abt <i>et al.</i> (HERA B. Collab.) ASNER 04A PR D70 091101 D. Asner <i>et al.</i> (ELRO Collab.) AUBERT, B 04Q PR D590 D1101 D. Asner <i>et al.</i> (ERABAR Collab.) AUBERT, B 04Q PR D560 D111 D. Aubert <i>et al.</i> (FNAL FOCUS Collab.) LINK 04B PR L536 D1 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) AUBERT 03Z PR D66 091101 D. Acosta <i>et al.</i> (CEC Collab.) AUBERT 03Z PR L555 D7 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) AUBERT 03Z PRL 57 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.)	LINK	05F	PL B622 239	IM link <i>et al</i>	(ENAL_EOCUS_Collab_)
LINK OFH PL B618 23 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) ONENCUT ONENCUT FPL 95 21301 X.C. Tian <i>et al.</i> (CERN CHORUS Collab.) ABLIKIM OG PL B596 173 I. Abt <i>et al.</i> (HERA B Collab.) ASINER O4 PR D59 091010 B. Aubert <i>et al.</i> (BABAR Collab.) AUBERT, B O4 PR D59 091010 B. Aubert <i>et al.</i> (BABAR Collab.) AUBERT, B O4 PR D596 1.1 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) LINK O4D PR L596 1.1 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) LINK O4D PR L59 101801 O. Tajima <i>et al.</i> (CEC Collab.) AUBERT O3P PR D59 101801 T.E. Caan <i>et al.</i> (FNAL FOCUS Collab.) AUBERT O3P PRL 90 101801 T.E. Caan <i>et al.</i> (FNAL FOCUS Collab.) LINK O3P PRL 555 J.M. Link <i>et al.</i> (FNAL FOCUS Collab.) <td< td=""><td>LINK</td><td>05G</td><td>PL B610 225</td><td>IM Link et al</td><td>(FNAL FOCUS Collab.)</td></td<>	LINK	05G	PL B610 225	IM Link et al	(FNAL FOCUS Collab.)
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ADAMOVICH95PLB353563M.I.Adamovich et al.(CERN BEATRICE Collab.)BARTELT95PRD524860J.E.Bartelt et al.(CLEO Collab.)BUTLER95PRD522656F.Butler et al.(CLEO Collab.)FRABETTI95CPLB354486P.L.Frabetti et al.(FNAL E687 Collab.)FRABETTI95GPLB364127P.L.Frabetti et al.(FNAL E687 Collab.)KODAMA95PLB34585K.Kodama et al.(FNAL E653 Collab.)ALBRECHT94PLB324249H.Albrecht et al.(ARGUS Collab.)	KUBOTA	96R	PR D54 2004	Y Kubota et al	(CLEO Collab.)
BARTELT 95 PR D52 4800 J.E. Bartelt et al. (CLEO Collab.) BUTLER 95 PR D52 2656 F. Butler et al. (CLEO Collab.) FRABETTI 95C PL B354 486 P.L. Frabetti et al. (FNAL E687 Collab.) FRABETTI 95G PL B364 127 P.L. Frabetti et al. (FNAL E687 Collab.) KODAMA 95 PL B345 85 K. Kodama et al. (FNAL E653 Collab.) ALBRECHT 94 PL B324 249 H. Albrecht et al. (ARGUS Collab.)		95	PI R353 563	M Adamovich et al	(CERN BEATRICE Collab.)
BUTLER 95 PR D52 2656 F. Butler et al. (CLEO Collab.) FRABETTI 95C PL B354 486 P.L. Frabetti et al. (FNAL E687 Collab.) FRABETTI 95G PL B364 127 P.L. Frabetti et al. (FNAL E687 Collab.) KODAMA 95 PL B345 85 K. Kodama et al. (FNAL E653 Collab.) ALBRECHT 94 PL B324 249 H. Albrecht et al. (ARGUS Collab.)	BARTELT	95	PR D52 4860	IF Bartelt et al	(CLEO Collab.)
FRABETTI 95C PL B354 486 P.L. Frabetti et al. (FNAL E687 Collab.) FRABETTI 95G PL B364 127 P.L. Frabetti et al. (FNAL E687 Collab.) KODAMA 95 PL B345 85 K. Kodama et al. (FNAL E683 Collab.) ALBRECHT 94 PL B324 249 H. Albrecht et al. (ARGUS Collab.)	BUTIER	95	PR D52 2656	F Butler et al	(CLEO Collab.)
FRABETTI95GPLB364127P.L.Frabettiet al.(FNALE687Collab.)KODAMA95PLB34585K.Kodamaet al.(FNALE653Collab.)ALBRECHT94PLB324249H.Albrecht et al.(ARGUSCollab.)	FRARETTI	95C	PI B354 486	PI Frabetti et al	(FNAL F687 Collab.)
KODAMA95PL B34585K. Kodama et al.(FNAL E653 Collab.)ALBRECHT94PL B324249H. Albrecht et al.(ARGUS Collab.)	FRARETTI	956	PL B364 127	PL Frabetti et al	(FNAL EGGT Collab.)
ALBRECHT 94 PL B324 249 H. Albrecht <i>et al.</i> (ARGUS Collab.)	KODAMA	95	PL B345 85	K. Kodama <i>et al</i>	(FNAL E653 Collab.)
	ALBRECHT	94	PL B324 249	H. Albrecht <i>et al.</i>	(ARGUS Collab.)

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ALBRECHT	94F	PL B340 125	H. Albrecht <i>et al.</i>	(ARGUS	Collab.)
AL BRECHT	0/1	7PHV C64 375	H Albrecht et al	(ARCUS	Collabí
	210			(ARG05	
FRABELTI	94C	PL B321 295	P.L. Frabetti <i>et al.</i>	(FNAL E687	Collab.)
FRABETTI	94D	PL B323 459	P.L. Frabetti <i>et al.</i>	(FNAL E687	Collab.)
EDADETTI	040	DI D221 017	PL Erabetti et al	(ENIAL E697	Collab
FRADETTI	94G	FL D331 217		(FNAL LOOT	Collab.)
FRABELTI	94 J	PL B340 254	P.L. Frabetti <i>et al.</i>	(FNAL E687	Collab.)
KODAMA	94	PL B336 605	K Kodama et al	(FNAL E653	Collah)
	54				
MISHRA	94	PR D50 R9	C.S. Mishra <i>et al.</i>	(FNAL E789	Collab.)
AKERIB	93	PRL 71 3070	D.S. Akerib <i>et al.</i>	(CLEO	Collab.)
	02D	DI D200 425	U Albracht at al		Callah
ALDRECHT	930	FL D306 433	TI. Albrecht et al.	(ANGUS	Collab.)
ANJOS	93	PR D48 56	J.C. Anjos <i>et al.</i>	(FNAL E691	Collab.)
REAN	93C	PL B317 647	A Bean et al	(CLEO	Collah)
	001			(ENAL ECOZ	
FRABELII	931	PL B315 203	P.L. Frabetti <i>et al.</i>	(FNAL E087	Collab.)
KODAMA	93B	PL B313 260	K. Kodama <i>et al.</i>	(FNAL E653	Collab.)
	02D	DD D49 4007	M Brocaria at al		Collab
FROCARIO	930	FK D40 4007	IVI. FIOCATIO EL AL	(CLLO	Collab.)
SELEN	93	PRL 71 1973	M.A. Selen <i>et al.</i>	(CLEO	Collab.)
	92	PL B280 163	MI Adamovich et al	(CERN WA82	Collah
	22 00D				
ALBRECHI	92P	ZPHY C56 7	H. Albrecht <i>et al.</i>	(ARGUS	Collab.)
ANJOS	92B	PR D46 R1	J.C. Anios <i>et al.</i>	(FNAL E691	Collab.)
	000	PP D46 1041	IC Anios at al		Collab
ANJOJ	92C	T K D40 1941	J.C. Alijos et al.	(INAL LO91	Collab.)
BARLAG	92C	ZPHY C55 383	S. Barlag <i>et al.</i>	(ACCMOR	Collab.)
Also		7PHY C48 29	S Barlag et al	(ACCMOR	Collab)
	000		DM Coffeense at al		Callab
COFFINIAIN	92B	PR D45 2190	D.IVI. Corrman <i>et al.</i>	(IVIark III	Collab.)
Also		PRL 64 2615	J. Adler <i>et al.</i>	(Mark III	Collab.)
FRARETTI	02	PL B281 167	PI Frahetti et al	(ENÀL E687	Collabí
	92	TE 0201 107		(TNAL ECOT	
FRABETTI	92B	PL B286 195	P.L. Frabetti <i>et al.</i>	(FNAL E687	Collab.)
AI VARE7	91B	7PHY C50 11	M.P. Alvarez et al	(CERN NA14/2	Collab)
	01	DD D44 2202			Callab
AIVIIVIAR	91	PR D44 3383	R. Ammar <i>et al.</i>	(CLEO	Collab.)
ANJOS	91	PR D43 R635	J.C. Anjos <i>et al.</i>	(FNAL-TPS	Collab.)
	01D	PR D// R3371	IC Anios et al	ÌΕΝΔΙ_TPS	Collabí
	01				
BAI	91	PRL 00 1011	Z. Bai <i>et al.</i>	(Mark III	Collab.)
COFFMAN	91	PL B263 135	D.M. Coffman <i>et al.</i>	(Mark III	Collab.)
	01 D	DD D44 2204	C Crowford at al		Callah
CRAWFORD	910	FK D44 5594	G. Clawford et al.	(CLLO	Collab.)
DECAMP	91J	PL B266 218	D. Decamp <i>et al.</i>	(ALEPH	Collab.)
FRABETTI	91	PL B263 584	PI Frabetti <i>et al</i>	(FNAL E687	Collab)
	01	DD D42 2026			Callab
KINUSHITA	91	PR D43 2830	K. KINOSNITA <i>et al.</i>	(CLEO	Collab.)
KODAMA	91	PRL 66 1819	K. Kodama <i>et al.</i>	(FNAL E653	Collab.)
AL BRECHT	90C	7PHY C46 9	H Albrecht et al) (ARGUS	Collah Ì
	000				
ALEXANDER	90	PRL 65 1184	J. Alexander <i>et al.</i>	(CLEO	Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez <i>et al.</i>	(CERN NA14/2	Collab.)
	000	DD D42 2414	IC Anios at al		Collab.)
ANJUS	900	FK D42 2414	J.C. Alijos et al.	(FIVAL LU91	Collab.)
BARLAG	90C	ZPHY C46 563	S. Barlag <i>et al.</i>	(ACCMOR	Collab.)
ADI FR	89	PRI 62 1821	Adler et al	(Mark III	Collab)
	000			(Mark III	Callab.)
ADLER	89C	PR D40 900	J. Adler <i>et al.</i>	(IVIark III	Collab.)
ALBRECHT	89D	ZPHY C43 181	H. Albrecht <i>et al.</i>	(ARGUS	Collab.)
ANIOS	80F	PRI 62 1587	IC Anios et al	(ENÀL E601	Collah Ì
	0.51	DI D005 411			
ABACHI	88	PL B205 411	S. Abachi <i>et al.</i>	(HRS	Collab.)
ADLER	88	PR D37 2023	J. Adler <i>et al.</i>	(Mark III	Collab.)
	880	PRI 60 80	Adler et al	(Mark III	Collabí
AULER	000				
ALBRECHI	88G	PL B209 380	H. Albrecht <i>et al.</i>	(ARGUS	Collab.)
ALBRECHT	881	PL B210 267	H. Albrecht <i>et al</i> .	(ARGUS	Collab.)
	000	DDI 60 1020	IC Anios at al		Collab.)
ANJOS	00C	FRE 00 1239	J.C. Alijos et al.	(FINAL LU91	Collab.)
BORTOLETTO	88	PR D37 1719	D. Bortoletto <i>et al.</i>	(CLEO	Collab.)
Also		PR D39 1471 (erratum)	D Bortoletto <i>et al</i>	(CLEO	Collab)
	00	DDI 60 1614	D Hass at al		Callab.)
пааз	00	PRL 00 1014	P. Haas et al.	(CLEO	Collab.)
RAAB	88	PR D37 2391	J.R. Raab <i>et al.</i>	(FNAL E691	Collab.)
ADI ER	87	PL B196 107	Adler et al) (Mark III	Collah Ì
	075		M Amile Desites et al		
AGUILAR	8/E	ZPHY C30 551	IVI. Aguilar-Benitez et al.	(LEBC-EHS	Collab.)
Also		ZPHY C40 321	M. Aguilar-Benitez et al.	(LEBC-EHS	Collab.)
	87F	7PHV (36 550	M Aguilar-Benitez et al		Collabí
	0/1	ZITTI C30 539	M A I D I I	(LEDC-EIIS	
Also		ZPHY C38 520 (erratum)	M. Aguilar-Benitez <i>et al.</i>	(LEBC-EHS	Collab.)
BARLAG	87B	ZPHY C37 17	S. Barlag <i>et al.</i>	(ACCMOR	Collab.)
RECKER	870	PI B103 1/7	LL Becker et al	(Mark III	Collab
	010	1 L D193 14/	J.J. DECKEI EL dI.		
Also		PL B198 590 (erratum)	J.J. Becker <i>et al.</i>	(Mark III	Collab.)
PALKA	87	PL B189 238	H. Palka <i>et al.</i>	(ACCMOR	Collah Ì
	07	DD D25 2014	K Pilos et al	(Mark II	Collab
NILES	01	FN D35 2914	r. r. les et al.	(IVIark II	conad.)
BAILEY	86	ZPHY C30 51	R. Bailey <i>et al.</i>	(ACCMOR	Collab.)
BEBEK	86	PRI 56 1893	C Bebek et al) (CLEO	Collah Ì
	00				
LUUIS	80	PKL 50 1027	vv.C. Louis et al.	(PRIN, CH	ic, ISU)
ALBRECHT	85B	PL 158B 525	H. Albrecht <i>et al.</i>	(ARGUS	Collab.)
	85F	PL 150B 235	H Albrecht et al	(ARCHS	Collah
			II. / NDICCHL CL al.	1711003	Conau.

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AUBERT BALTRUSAIT BENVENUTI SUMMERS BAILEY BODEK SCHINDLER AVERY ABRAMS VUILLEMIN PERUZZI PICCOLO MOSTELLER	85 85E 84 83B 82 81 80 79D 78 77 77 48	PL 155B 461 PRL 55 150 PL 158B 531 PRL 52 410 PL 132B 237 PL 113B 82 PR D24 78 PRL 44 1309 PRL 43 481 PRL 41 1149 PRL 39 1301 PL 70B 260 Am.Stat. 3 No.5 30	J.J. Aubert <i>et al.</i> R.M. Baltrusaitis <i>et al.</i> A.C. Benvenuti <i>et al.</i> D.J. Summers <i>et al.</i> R. Bailey <i>et al.</i> A. Bodek <i>et al.</i> R.H. Schindler <i>et al.</i> P. Avery <i>et al.</i> G.S. Abrams <i>et al.</i> V. Vuillemin <i>et al.</i> I. Peruzzi <i>et al.</i> M. Piccolo <i>et al.</i> R.A. Fisher, F. Mosteller RELATED PAPERS	(EMC Collab.) (Mark III Collab.) (BCDMS Collab.) (UCSB, CARL, COLO+) (ACCMOR Collab.) (ROCH, CIT, CHIC, FNAL+) (Mark II Collab.) (ILL, FNAL, COLU) (Mark II Collab.) (LGW Collab.) (LGW Collab.) (Mark I Collab.)
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RICHMAN ROSNER	95 95	RMP 67 893 CNPP 21 369	J.D. Richman, P.R. Burcha J. Rosner	t (UCSB, STAN) (CHIC)