D^0

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

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.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1864.83 ± 0.14 OUR FIT					
1864.91 ± 0.17 OUR AVERAGE					
1865.30 ± 0.33 ±0.23	98 ± 13	ANASHIN	10A	KEDR	e^+e^-at $\psi(3770)$
1864.847± 0.150±0.095	319 ± 18	CAWLFIELD	07	CLEO	$D^0 \to K_S^0 \phi$
1864.6 ± 0.3 ±1.0	641	BARLAG	90C	ACCM	π^- Cu 230 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1852 ± 7	16	ADAMOVICH	87	EMUL	Photoproduction
1856 ±36	22	ADAMOVICH	84B	EMUL	Photoproduction
1861 ± 4		DERRICK	84	HRS	e^+e^- 29 GeV
1847 ± 7	1	FIORINO	81	EMUL	$\gamma N \to \overline{D}^0 +$
1863.8 ± 0.5		[1] SCHINDLER	81	MRK2	e^+e^- 3.77 GeV
1864.7 ± 0.6		[1] TRILLING	81	RVUE	e^+e^- 3.77 GeV
1863.0 ± 2.5	238	ASTON	80E	OMEG	$\gamma p \to \overline{D}^0$
1860 ± 2	143	[2] AVERY	80	SPEC	$\gamma N \to D^{*+}$
1869 ± 4	35	[2] AVERY	80	SPEC	$\gamma N \to D^{*+}$
1854 ± 6	94	[2] ATIYA	79	SPEC	$\gamma N \to D^0 \overline{D}^0$
1850 ±15	64	BALTAY	78C	HBC	$\nu N \to K^0 \pi\pi$
1863 ± 3		GOLDHABER	77	MRK1	D^0, D^+ recoil spectra
1863.3 ± 0.9		[1] PERUZZI	77	LGW	e^+e^- 3.77 GeV
1868 ±11		PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV
1865 ±15	234	GOLDHABER	76	MRK1	$K\pi$ and $K3\pi$

[1] PERUZZI 77 and SCHINDLER 81 errors do not include the 0.13% uncertainty in the absolute SPEAR energy calibration. TRILLING 81 uses the high precision $J/\psi(1S)$ and $\psi(2S)$ measurements of ZHOLENTZ 80 to determine this uncertainty and combines the PERUZZI 77 and SCHINDLER 81 results to obtain the value quoted. TRILLING 81 enters the fit in the $D^{\pm}$ mass, and PERUZZI 77 and SCHINDLER 81 enter in the $m_{D^{\pm}} - m_{D^0}$, below.

[2] Error does not include possible systematic mass scale shift, estimated to be less than 5 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
4.77±0.10 OUR FIT Error includes scale factor of 1.1.				
4.74±0.28 OUR AVERAGE				
4.7 ±0.3	[3] SCHINDLER	81	MRK2	e^+e^- 3.77 GeV
5.0 ±0.8	[3] PERUZZI	77	LGW	e^+e^- 3.77 GeV

[3] See the footnote on TRILLING 81 in the D^0 and $D^{\pm}$ sections on the mass.

D^0 MEAN LIFE

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

VALUE (10^{-15} s)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
410.1± 1.5 OUR AVERAGE					
409.6± 1.1± 1.5	210k	LINK	02F	FOCS	γ nucleus, ≈ 180 GeV
407.9± 6.0± 4.3	10k	KUSHNIR...	01	SELX	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
413 ± 3 ± 4	35k	AITALA	99E	E791	$K^-\pi^+$
408.5± 4.1 $^{+3.5}_{-3.4}$	25k	BONVICINI	99	CLE2	$e^+e^- \approx \Upsilon(4S)$
413 ± 4 ± 3	16k	FRABETTI	94D	E687	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
424 ±11 ± 7	5118	FRABETTI	91	E687	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
417 ±18 ±15	890	ALVAREZ	90	NA14	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
388 $^{+23}_{-21}$	641	[4] BARLAG	90C	ACCM	π^- Cu 230 GeV
480 ±40 ±30	776	ALBRECHT	88I	ARG	e^+e^- 10 GeV
422 ± 8 ±10	4212	RAAB	88	E691	Photoproduction
420 ±50	90	BARLAG	87B	ACCM	K^- and π^- 200 GeV

[4] BARLAG 90C estimate systematic error to be negligible.

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$|m_{D_1^0} - m_{D_2^0}| = x\,\Gamma$

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 $\Delta m = x\,\Gamma = x\,\hbar/\tau$.

VALUE (10^{10} $\hbar$ s^{-1})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.39 $^{+0.59}_{-0.63}$ OUR EVALUATION		HFAG fit; see the note on "D^0-$\overline{D}^0$ Mixing."			
1.98±0.73 $^{+0.32}_{-0.41}$		[5] ZHANG	07B	BELL	Δm < 3.9, 95% CL
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.4 $^{+1.4}_{-1.7}$ ±1.0		[6] AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
− 2 $^{+7}_{-6}$		[7] LOWREY	09	CLEO	e^+e^- at $\psi(3770)$
< 7	95	[8] ZHANG	06	BELL	e^+e^-
−11 to +22		[5] ASNER	05	CLEO	$e^+e^- \approx$ 10 GeV
< 11	90	BITENC	05	BELL	
< 30	90	CAWLFIELD	05	CLEO	
< 7	95	[8] LI	05A	BELL	See ZHANG 06

< 22	95	[9] LINK	05H	FOCS	γ nucleus
< 23	95	AUBERT	04Q	BABR	
< 11	95	[8] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
< 7	95	[10] GODANG	00	CLE2	e^+e^-
< 32	90	[11,12] AITALA	98	E791	π^- nucleus, 500 GeV
< 24	90	[13] AITALA	96C	E791	π^- nucleus, 500 GeV
< 21	90	[12,14] ANJOS	88C	E691	Photoproduction

[5] The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \to K^0_S \pi^+ \pi^-$. 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 $D^0 \to K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This value allows CP violation and is sensitive to the sign of Δm.

[6] 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 $D^0 \to K^+\pi^-\pi^0$ and $\overline{D}^0 \to K^+\pi^-\pi^0$ 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.

[7] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \to K^-\pi^+\pi^0$ and $D^0 \to K^-\pi^-2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $\Delta m = (2.34 \pm 0.61) \times 10^{10}\ \hbar\,\mathrm{s}^{-1}$.

[8] The AUBERT 03Z, LI 05A, and ZHANG 06 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 limit allows interference between the DCS and mixing ratios, and also allows CP violation. AUBERT 03Z assumes the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ 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.

[9] This 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 $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by 25%.

[10] This GODANG 00 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 $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by a factor of two.

[11] 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.

[12] 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 Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing.

[13] 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.

[14] 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 $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$, we exclude from the average those measurements of y' that are inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ 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, G **33** 1 (2006)).

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
1.66 ± 0.32 OUR EVALUATION		HFAG fit; see the note on "D^0-$\overline{D}^0$ Mixing."		
1.6 ± 0.5 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.		
$2.32 \pm 0.44 \pm 0.36$		[15] AUBERT 09AI	BABR	$e^+e^- \approx \Upsilon(4S)$
$0.22 \pm 1.22 \pm 1.04$		[16] ZUPANC 09	BELL	$e^+e^- \approx \Upsilon(4S)$
$2.62 \pm 0.64 \pm 0.50$	160k	[17] STARIC 07	BELL	$e^+e^- \approx \Upsilon(4S)$
$0.74 \pm 0.50^{+0.20}_{-0.31}$	534k	[18] ZHANG 07B	BELL	$e^+e^- \approx \Upsilon(4S)$
$-1.0 \pm 2.0\ ^{+1.4}_{-1.6}$	18k	[19] ABE 02I	BELL	$e^+e^- \approx \Upsilon(4S)$
$-2.4 \pm 5.0 \pm 2.8$	3393	[20] CSORNA 02	CLE2	$e^+e^- \approx \Upsilon(4S)$
$6.84 \pm 2.78 \pm 1.48$	10k	[19] LINK 00	FOCS	γ nucleus
$+1.6 \pm 5.8 \pm 2.1$		[19] AITALA 99E	E791	$K^-\pi^+$, K^+K^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.12^{+1.10}_{-1.28} \pm 0.68$		[21] AUBERT 09AN	BABR	e^+e^- at 10.58 GeV
$1.4^{+4.8}_{-5.4}$		[22] LOWREY 09	CLEO	e^+e^- at $\psi(3770)$
1.70 ± 1.52	12.7 ± 0.3k	[23] AALTONEN 08E	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
$2.06 \pm 0.66 \pm 0.38$		[24] AUBERT 08U	BABR	See AUBERT 09AI
$1.94 \pm 0.88 \pm 0.62$	4030 ± 90	[23] AUBERT 07W	BABR	$e^+e^- \approx 10.6$ GeV
-0.7 ± 4.9	$4k \pm 88$	[23,25] ZHANG 06	BELL	e^+e^-
$-3.0^{+5.0}_{-4.8}\ ^{+1.6}_{-0.8}$		[18] ASNER 05	CLEO	$e^+e^- \approx 10$ GeV
-0.3 ± 5.7		[23,25] LI 05A	BELL	See ZHANG 06
$-5.2^{+18.4}_{-16.8}$		[23,25] LINK 05H	FOCS	γ nucleus
$1.6 \pm 0.8\ ^{+1.0}_{-0.8}$	450k	[26] AUBERT 03P	BABR	See AUBERT 08U
$1.6^{+6.2}_{-12.8}$		[23,25] AUBERT 03Z	BABR	e^+e^-, 10.6 GeV
$-5.0^{+2.8}_{-3.2} \pm 0.6$		[23] GODANG 00	CLE2	e^+e^-

[15] 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.

[16] ZUPANC 09 uses a method based on measuring the mean decay time of $D^0 \to K_S^0 K^+K^-$ events for different K^+K^- mass intervals.

[17] STARIC 07 compares the lifetimes of D^0 decay to the CP eigenstates K^+K^- and $\pi^+\pi^-$ with D^0 decay to $K^-\pi^+$.

[18] The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \to K^0_S\pi^+\pi^-$. 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 $D^0 \to K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This limit allows CP violation.

[19] LINK 00, AITALA 99E, and ABE 02I measure the lifetime difference between $D^0 \to K^-K^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or y_{CP}= $[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}$=$\Delta\Gamma/\Gamma$.

[20] CSORNA 02 measures the lifetime difference between $D^0 \to K^-K^+$ and $\pi^-\pi^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or y_{CP}= $[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}$=$\Delta\Gamma/\Gamma$.

[21] The AUBERT 09AN values are inferred from the branching ratio $\Gamma(D^0 \to K^+\pi^-\pi^0 \text{via } \overline{D}^0)/\Gamma(D^0 \to K^-\pi^+\pi^0)$ 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 $D^0 \to K^+\pi^-\pi^0$ and $\overline{D}^0 \to K^+\pi^-\pi^0$ 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.

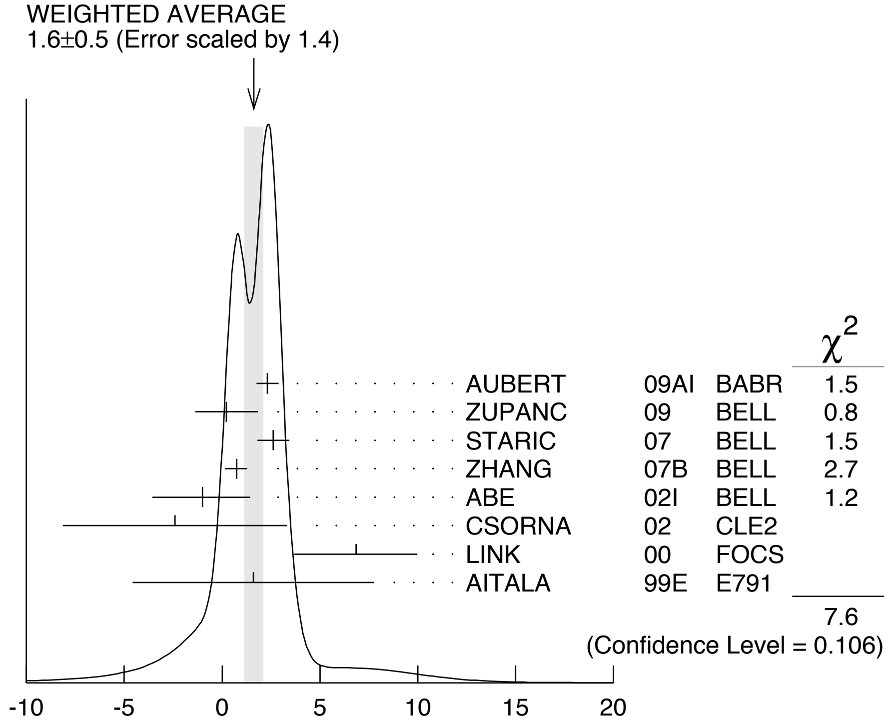
[22] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \to K^-\pi^+\pi^0$ and $D^0 \to K^-\pi^-2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $2y = (1.62 \pm 0.32) \times 10^{-2}$.

[23] 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 $\Gamma(K^+\pi^- \text{ (via } \overline{D}^0))/\Gamma(K^-\pi^+)$ 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 $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ 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."

[24] This value combines the results of AUBERT 08U and AUBERT 03P.

[25] The ranges of AUBERT 03Z, LINK 05H, LI 05A, and ZHANG 06 measurements are for 95% confidence level.

[26] AUBERT 03P measures $\mathrm{Y} \equiv 2\,\tau^0\,/\,(\tau^+ + \tau^-) - 1$, where τ^0 is the $D^0 \to K^-\pi^+$ (and $\overline{D}^0 \to K^+\pi^-$) 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, $\mathrm{Y} = \mathrm{y} \equiv \Delta\Gamma\,/\,2\,\Gamma$ (we list $2\mathrm{y} = \Delta\Gamma/\Gamma$). AUBERT 03P also uses $\tau^+ - \tau^-$ to get $\Delta\mathrm{Y} = -0.008 \pm 0.006 \pm 0.002$.



$(\Gamma_1 - \Gamma_2)/\Gamma = 2y$

|q/p|

The mass eigenstates D^0_1 and D^0_2 are related to the $C = \pm1$ states by $|D_{1,2}> = $ p $|D^0>$ + q $|\overline{D}^0>$. See the note on "D^0–$\overline{D}^0$ Mixing" above.

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{0.86^{+0.18}_{-0.15}}$ **OUR EVALUATION**	HFAG fit; see the note on "D^0-$\overline{D}^0$ Mixing."			
$\mathbf{0.86^{+0.30}_{-0.29}{}^{+0.10}_{-0.08}}$	[27] ZHANG	07B	BELL	$e^+e^- \approx \Upsilon(4S)$

[27] The phase of p/q is $(-14^{+16}_{-18} \pm 5)^\circ$. The ZHANG 07B value is from the time-dependent Dalitz-plot analysis of $D^0 \to K^0_S \pi^+\pi^-$. 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 $D^0 \to K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This value allows *CP* violation.

A_Γ

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})	*DOCUMENT ID*		*TECN*	*COMMENT*
1.4±2.7 OUR AVERAGE				
$+2.6\pm3.6\pm0.8$	AUBERT	08U	BABR	$e^+e^- \approx \Upsilon(4S)$
$+0.1\pm3.0\pm2.5$	STARIC	07	BELL	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+8\ \pm6\ \pm2$	AUBERT	03P	BABR	$e^+e^- \approx \Upsilon(4S)$

cos δ

δ is the $D^0 \to K^+\pi^-$ relative strong phase.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.03^{+0.31}_{-0.17}\pm0.06}$	[28] ASNER	08	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV

[28] ASNER 08 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where decay rates of CP-tagged $K\pi$ final states depend on cos δ because of interfering amplitudes. The above measurement implies $|\delta| < 75°$ 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).

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

See the note on 'D^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
$\mathbf{0.78^{+0.11}_{-0.25}}$	[29] LOWREY	09	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$

[29] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ 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 $R_{K\pi\pi^0} = 0.84 \pm 0.07$.

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

VALUE (°)	DOCUMENT ID		TECN	COMMENT
$\mathbf{239^{+32}_{-28}}$	[30] LOWREY	09	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$

[30] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ 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 $\delta^{K\pi\pi^0} = (227^{+14}_{-17})°$.

$D^0 \to K^-\pi^-2\pi^+$ 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
$\mathbf{0.36^{+0.24}_{-0.30}}$	[31] LOWREY	09	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$

[31] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ 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 $R_{K3\pi} = 0.33^{+0.26}_{-0.23}$.

$D^0 \to K^-\pi^-2\pi^+$ AVERAGE RELATIVE STRONG PHASE $\delta^{K3\pi}$

VALUE (°)	DOCUMENT ID		TECN	COMMENT
$\mathbf{118^{+62}_{-53}}$	[32] LOWREY	09	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$

[32] LOWREY 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 DECAY MODES

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

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Topological modes			
Γ_1	0-prongs	[a]	(17 ± 6) %	
Γ_2	2-prongs		(69 ± 6) %	
Γ_3	4-prongs	[b]	(14.3 ± 0.5) %	
Γ_4	6-prongs	[c]	$(6.4 \pm 1.3) \times 10^{-4}$	
	Inclusive modes			
Γ_5	e^+ anything	[d]	(6.49 ± 0.11) %	
Γ_6	μ^+ anything		(6.7 ± 0.6) %	
Γ_7	K^- anything		(54.7 ± 2.8) %	S=1.3
Γ_8	$\overline{K}^0$ anything + K^0 anything		(47 ± 4) %	
Γ_9	K^+ anything		(3.4 ± 0.4) %	
Γ_{10}	$K^*(892)^-$ anything		(15 ± 9) %	
Γ_{11}	$\overline{K}^*(892)^0$ anything		(9 ± 4) %	
Γ_{12}	$K^*(892)^+$ anything		< 3.6 %	CL=90%
Γ_{13}	$K^*(892)^0$ anything		(2.8 ± 1.3) %	
Γ_{14}	η anything		(9.5 ± 0.9) %	
Γ_{15}	η' anything		(2.48 ± 0.27) %	
Γ_{16}	ϕ anything		(1.05 ± 0.11) %	
	Semileptonic modes			
Γ_{17}	$K^- \ell^+ \nu_\ell$			
Γ_{18}	$K^- e^+ \nu_e$		(3.55 ± 0.05) %	S=1.2
Γ_{19}	$K^- \mu^+ \nu_\mu$		(3.31 ± 0.13) %	
Γ_{20}	$K^*(892)^- e^+ \nu_e$		(2.17 ± 0.16) %	
Γ_{21}	$K^*(892)^- \mu^+ \nu_\mu$		(1.98 ± 0.24) %	
Γ_{22}	$K^- \pi^0 e^+ \nu_e$		$(1.6 \, ^{+1.3}_{-0.5})$ %	
Γ_{23}	$\overline{K}^0 \pi^- e^+ \nu_e$		$(2.7 \, ^{+0.9}_{-0.7})$ %	

Γ_{24}	$K^- \pi^+ \pi^- e^+ \nu_e$		$(2.8 \ {}^{+1.4}_{-1.1}) \times 10^{-4}$	
Γ_{25}	$K_1(1270)^- e^+ \nu_e$		$(7.6 \ {}^{+4.0}_{-3.1}) \times 10^{-4}$	
Γ_{26}	$K^- \pi^+ \pi^- \mu^+ \nu_\mu$		$< 1.2 \times 10^{-3}$	CL=90%
Γ_{27}	$(\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu$		$< 1.4 \times 10^{-3}$	CL=90%
Γ_{28}	$\pi^- e^+ \nu_e$		$(2.89 \pm 0.08) \times 10^{-3}$	S=1.1
Γ_{29}	$\pi^- \mu^+ \nu_\mu$		$(2.37 \pm 0.24) \times 10^{-3}$	
Γ_{30}	$\rho^- e^+ \nu_e$		$(1.9 \pm 0.4) \times 10^{-3}$	

Hadronic modes with one $\overline{K}$

Γ_{31}	$K^- \pi^+$		$(3.89 \pm 0.05) \%$	S=1.2
Γ_{32}	$K^0_S \pi^0$		$(1.22 \pm 0.05) \%$	
Γ_{33}	$K^0_L \pi^0$		$(10.0 \pm 0.7) \times 10^{-3}$	
Γ_{34}	$K^0_S \pi^+ \pi^-$	[e]	$(2.94 \pm 0.16) \%$	S=1.1
Γ_{35}	$K^0_S \rho^0$		$(6.6 \ {}^{+0.6}_{-0.8}) \times 10^{-3}$	
Γ_{36}	$K^0_S \omega, \ \omega \to \pi^+ \pi^-$		$(2.1 \pm 0.6) \times 10^{-4}$	
Γ_{37}	$K^0_S (\pi^+ \pi^-)_{S-\text{wave}}$		$(3.5 \pm 0.8) \times 10^{-3}$	
Γ_{38}	$K^0_S f_0(980), \ f_0(980) \to \pi^+ \pi^-$		$(1.27 \ {}^{+0.40}_{-0.24}) \times 10^{-3}$	
Γ_{39}	$K^0_S f_0(1370), \ f_0(1370) \to \pi^+ \pi^-$		$(2.9 \ {}^{+0.9}_{-1.3}) \times 10^{-3}$	
Γ_{40}	$K^0_S f_2(1270), \ f_2(1270) \to \pi^+ \pi^-$		$(9 \ {}^{+10}_{-6}) \times 10^{-5}$	
Γ_{41}	$K^*(892)^- \pi^+, \ K^*(892)^- \to K^0_S \pi^-$		$(1.73 \ {}^{+0.14}_{-0.17}) \%$	
Γ_{42}	$K^*_0(1430)^- \pi^+, \ K^*_0(1430)^- \to K^0_S \pi^-$		$(2.81 \ {}^{+0.40}_{-0.33}) \times 10^{-3}$	
Γ_{43}	$K^*_2(1430)^- \pi^+, \ K^*_2(1430)^- \to K^0_S \pi^-$		$(3.5 \ {}^{+2.0}_{-1.1}) \times 10^{-4}$	
Γ_{44}	$K^*(1680)^- \pi^+, \ K^*(1680)^- \to K^0_S \pi^-$		$(5 \pm 4) \times 10^{-4}$	
Γ_{45}	$K^*(892)^+ \pi^-, \ K^*(892)^+ \to K^0_S \pi^+$	[f]	$(1.18 \ {}^{+0.60}_{-0.35}) \times 10^{-4}$	
Γ_{46}	$K^*_0(1430)^+ \pi^-, \ K^*_0(1430)^+ \to K^0_S \pi^+$	[f]	$< 1.5 \times 10^{-5}$	CL=95%
Γ_{47}	$K^*_2(1430)^+ \pi^-, \ K^*_2(1430)^+ \to K^0_S \pi^+$	[f]	$< 3.5 \times 10^{-5}$	CL=95%
Γ_{48}	$K^0_S \pi^+ \pi^-$ nonresonant		$(2.7 \ {}^{+6.0}_{-1.7}) \times 10^{-4}$	
Γ_{49}	$K^- \pi^+ \pi^0$	[e]	$(13.9 \pm 0.5) \%$	S=1.7

Γ_{50}	$K^- \rho^+$		(10.8 ± 0.7) %	
Γ_{51}	$K^- \rho(1700)^+$, $\rho(1700)^+ \to \pi^+ \pi^0$		$(7.9 \pm 1.7) \times 10^{-3}$	
Γ_{52}	$K^*(892)^- \pi^+$, $K^*(892)^- \to K^- \pi^0$		$(2.22 {}^{+0.40}_{-0.19})$ %	
Γ_{53}	$\overline{K}^*(892)^0 \pi^0$, $\overline{K}^*(892)^0 \to K^- \pi^+$		(1.88 ± 0.23) %	
Γ_{54}	$K_0^*(1430)^- \pi^+$, $K_0^*(1430)^- \to K^- \pi^0$		$(4.6 \pm 2.1) \times 10^{-3}$	
Γ_{55}	$\overline{K}_0^*(1430)^0 \pi^0$, $\overline{K}_0^*(1430)^0 \to K^- \pi^+$		$(5.7 {}^{+5.0}_{-1.5}) \times 10^{-3}$	
Γ_{56}	$K^*(1680)^- \pi^+$, $K^*(1680)^- \to K^- \pi^0$		$(1.8 \pm 0.7) \times 10^{-3}$	
Γ_{57}	$K^- \pi^+ \pi^0$ nonresonant		$(1.11 {}^{+0.50}_{-0.19})$ %	
Γ_{58}	$K_S^0 2\pi^0$		$(8.3 \pm 0.6) \times 10^{-3}$	
Γ_{59}	$\overline{K}^*(892)^0 \pi^0$, $\overline{K}^*(892)^0 \to K_S^0 \pi^0$		$(6.7 {}^{+1.8}_{-1.5}) \times 10^{-3}$	
Γ_{60}	$K_S^0 2\pi^0$ nonresonant		$(4.5 \pm 1.1) \times 10^{-3}$	
Γ_{61}	$K^- 2\pi^+ \pi^-$	[*e*]	$(8.09 {}^{+0.21}_{-0.18})$ %	S=1.3
Γ_{62}	$K^- \pi^+ \rho^0$ total		(6.76 ± 0.33) %	
Γ_{63}	$K^- \pi^+ \rho^0$ 3-body		$(5.1 \pm 2.3) \times 10^{-3}$	
Γ_{64}	$\overline{K}^*(892)^0 \rho^0$, $\overline{K}^*(892)^0 \to K^- \pi^+$		(1.06 ± 0.23) %	
Γ_{65}	$K^- a_1(1260)^+$, $a_1(1260)^+ \to 2\pi^+ \pi^-$		(3.6 ± 0.6) %	
Γ_{66}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ total, $\overline{K}^*(892)^0 \to K^- \pi^+$		(1.6 ± 0.4) %	
Γ_{67}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body, $\overline{K}^*(892)^0 \to K^- \pi^+$		$(9.9 \pm 2.3) \times 10^{-3}$	
Γ_{68}	$K_1(1270)^- \pi^+$, $K_1(1270)^- \to K^- \pi^+ \pi^-$	[*g*]	$(2.9 \pm 0.3) \times 10^{-3}$	
Γ_{69}	$K^- 2\pi^+ \pi^-$ nonresonant		(1.88 ± 0.26) %	
Γ_{70}	$K_S^0 \pi^+ \pi^- \pi^0$	[*h*]	(5.4 ± 0.6) %	
Γ_{71}	$K_S^0 \eta$, $\eta \to \pi^+ \pi^- \pi^0$		$(9.8 \pm 0.6) \times 10^{-4}$	
Γ_{72}	$K_S^0 \omega$, $\omega \to \pi^+ \pi^- \pi^0$		$(9.9 \pm 0.5) \times 10^{-3}$	
Γ_{73}	$K^- \pi^+ 2\pi^0$			
Γ_{74}	$K^- 2\pi^+ \pi^- \pi^0$		(4.2 ± 0.4) %	
Γ_{75}	$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$, $\overline{K}^*(892)^0 \to K^- \pi^+$		(1.3 ± 0.6) %	
Γ_{76}	$K^- \pi^+ \omega$, $\omega \to \pi^+ \pi^- \pi^0$		(2.7 ± 0.5) %	

Γ_{77}	$\overline{K}^*(892)^0\omega$, $\overline{K}^*(892)^0 \to K^-\pi^+$, $\omega \to \pi^+\pi^-\pi^0$		$(6.5 \pm 3.0) \times 10^{-3}$	
Γ_{78}	$K^0_S\eta\pi^0$		$(5.6 \pm 1.2) \times 10^{-3}$	
Γ_{79}	$K^0_S a_0(980)$, $a_0(980) \to \eta\pi^0$		$(6.7 \pm 2.1) \times 10^{-3}$	
Γ_{80}	$\overline{K}^*(892)^0\eta$, $\overline{K}^*(892)^0 \to K^0_S\pi^0$		$(1.6 \pm 0.5) \times 10^{-3}$	
Γ_{81}	$K^0_S 2\pi^+ 2\pi^-$		$(2.80 \pm 0.30) \times 10^{-3}$	
Γ_{82}	$K^0_S \rho^0\pi^+\pi^-$, no $K^*(892)^-$		$(1.1 \pm 0.7) \times 10^{-3}$	
Γ_{83}	$K^*(892)^- 2\pi^+\pi^-$, $K^*(892)^- \to K^0_S\pi^-$, no ρ^0		$(5 \pm 8) \times 10^{-4}$	
Γ_{84}	$K^*(892)^-\rho^0\pi^+$, $K^*(892)^- \to K^0_S\pi^-$		$(1.7 \pm 0.7) \times 10^{-3}$	
Γ_{85}	$K^0_S 2\pi^+ 2\pi^-$ nonresonant		$< 1.3 \times 10^{-3}$	CL=90%
Γ_{86}	$\overline{K}^0\pi^+\pi^- 2\pi^0 (\pi^0)$			
Γ_{87}	$K^- 3\pi^+ 2\pi^-$		$(2.2 \pm 0.6) \times 10^{-4}$	

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes for which there are only upper limits and $\overline{K}^*(892)\rho$ submodes only appear below.)

Γ_{88}	$K^0_S\eta$		$(4.29 \pm 0.27) \times 10^{-3}$	
Γ_{89}	$K^0_S\omega$		(1.11 ± 0.06) %	
Γ_{90}	$K^0_S\eta'(958)$		$(9.3 \pm 1.4) \times 10^{-3}$	
Γ_{91}	$K^- a_1(1260)^+$		(7.8 ± 1.1) %	
Γ_{92}	$K^- a_2(1320)^+$		$< 2 \times 10^{-3}$	CL=90%
Γ_{93}	$\overline{K}^*(892)^0\pi^+\pi^-$ total		(2.4 ± 0.5) %	
Γ_{94}	$\overline{K}^*(892)^0\pi^+\pi^-$ 3-body		(1.48 ± 0.34) %	
Γ_{95}	$\overline{K}^*(892)^0\rho^0$		(1.58 ± 0.35) %	
Γ_{96}	$\overline{K}^*(892)^0\rho^0$ transverse		(1.7 ± 0.6) %	
Γ_{97}	$\overline{K}^*(892)^0\rho^0$ *S*-wave		(3.0 ± 0.6) %	
Γ_{98}	$\overline{K}^*(892)^0\rho^0$ *S*-wave long.		$< 3 \times 10^{-3}$	CL=90%
Γ_{99}	$\overline{K}^*(892)^0\rho^0$ *P*-wave		$< 3 \times 10^{-3}$	CL=90%
Γ_{100}	$\overline{K}^*(892)^0\rho^0$ *D*-wave		(2.1 ± 0.6) %	
Γ_{101}	$K^-\pi^+ f_0(980)$			
Γ_{102}	$\overline{K}^*(892)^0 f_0(980)$			
Γ_{103}	$K_1(1270)^-\pi^+$	[g]	(1.6 ± 0.8) %	
Γ_{104}	$K_1(1400)^-\pi^+$		< 1.2 %	CL=90%
Γ_{105}	$K^*(1410)^-\pi^+$			
Γ_{106}	$\overline{K}^*(892)^0\pi^+\pi^-\pi^0$		(1.9 ± 0.9) %	
Γ_{107}	$\overline{K}^*(892)^0\eta$			

Γ_{108}	$K^- \pi^+ \omega$	(3.0 ± 0.6) %	
Γ_{109}	$\overline{K}^*(892)^0 \omega$	(1.1 ± 0.5) %	
Γ_{110}	$K^- \pi^+ \eta'(958)$	$(7.5 \pm 1.9) \times 10^{-3}$	
Γ_{111}	$\overline{K}^*(892)^0 \eta'(958)$	$< 1.1 \times 10^{-3}$	CL=90%

Hadronic modes with three K's

Γ_{112}	$K^0_S K^+ K^-$	$(4.65 \pm 0.30) \times 10^{-3}$	
Γ_{113}	$K^0_S a_0(980)^0$, $a^0_0 \to K^+ K^-$	$(3.1 \pm 0.4) \times 10^{-3}$	
Γ_{114}	$K^- a_0(980)^+$, $a^+_0 \to K^+ K^0_S$	$(6.2 \pm 1.8) \times 10^{-4}$	
Γ_{115}	$K^+ a_0(980)^-$, $a^-_0 \to K^- K^0_S$	$< 1.2 \times 10^{-4}$	CL=95%
Γ_{116}	$K^0_S f_0(980)$, $f_0 \to K^+ K^-$	$< 1.0 \times 10^{-4}$	CL=95%
Γ_{117}	$K^0_S \phi$, $\phi \to K^+ K^-$	$(2.14 \pm 0.15) \times 10^{-3}$	
Γ_{118}	$K^0_S f_0(1370)$, $f_0 \to K^+ K^-$	$(1.8 \pm 1.1) \times 10^{-4}$	
Γ_{119}	$3K^0_S$	$(9.5 \pm 1.3) \times 10^{-4}$	
Γ_{120}	$K^+ 2K^- \pi^+$	$(2.21 \pm 0.32) \times 10^{-4}$	
Γ_{121}	$K^+ K^- \overline{K}^*(892)^0$, $\overline{K}^*(892)^0 \to K^- \pi^+$	$(4.4 \pm 1.7) \times 10^{-5}$	
Γ_{122}	$K^- \pi^+ \phi$, $\phi \to K^+ K^-$	$(4.0 \pm 1.7) \times 10^{-5}$	
Γ_{123}	$\phi \overline{K}^*(892)^0$, $\phi \to K^+ K^-$, $\overline{K}^*(892)^0 \to K^- \pi^+$	$(1.06 \pm 0.20) \times 10^{-4}$	
Γ_{124}	$K^+ 2K^- \pi^+$ nonresonant	$(3.3 \pm 1.5) \times 10^{-5}$	
Γ_{125}	$2K^0_S K^\pm \pi^\mp$	$(6.2 \pm 1.3) \times 10^{-4}$	

Pionic modes

Γ_{126}	$\pi^+ \pi^-$	$(1.397 \pm 0.026) \times 10^{-3}$	
Γ_{127}	$2\pi^0$	$(8.0 \pm 0.8) \times 10^{-4}$	
Γ_{128}	$\pi^+ \pi^- \pi^0$	(1.44 ± 0.06) %	S=1.8
Γ_{129}	$\rho^+ \pi^-$	$(9.8 \pm 0.4) \times 10^{-3}$	
Γ_{130}	$\rho^0 \pi^0$	$(3.73 \pm 0.22) \times 10^{-3}$	
Γ_{131}	$\rho^- \pi^+$	$(4.97 \pm 0.23) \times 10^{-3}$	
Γ_{132}	$\rho(1450)^+ \pi^-$, $\rho(1450)^+ \to \pi^+ \pi^0$	$(1.6 \pm 2.0) \times 10^{-5}$	
Γ_{133}	$\rho(1450)^0 \pi^0$, $\rho(1450)^0 \to \pi^+ \pi^-$	$(4.3 \pm 1.9) \times 10^{-5}$	
Γ_{134}	$\rho(1450)^- \pi^+$, $\rho(1450)^- \to \pi^- \pi^0$	$(2.6 \pm 0.4) \times 10^{-4}$	
Γ_{135}	$\rho(1700)^+ \pi^-$, $\rho(1700)^+ \to \pi^+ \pi^0$	$(5.9 \pm 1.4) \times 10^{-4}$	
Γ_{136}	$\rho(1700)^0 \pi^0$, $\rho(1700)^0 \to \pi^+ \pi^-$	$(7.2 \pm 1.7) \times 10^{-4}$	
Γ_{137}	$\rho(1700)^- \pi^+$, $\rho(1700)^- \to \pi^- \pi^0$	$(4.6 \pm 1.1) \times 10^{-4}$	
Γ_{138}	$f_0(980) \pi^0$, $f_0(980) \to \pi^+ \pi^-$	$(3.6 \pm 0.8) \times 10^{-5}$	
Γ_{139}	$f_0(600) \pi^0$, $f_0(600) \to \pi^+ \pi^-$	$(1.18 \pm 0.21) \times 10^{-4}$	
Γ_{140}	$(\pi^+ \pi^-)_{S-\text{wave}} \pi^0$		

Γ_{141}	$f_0(1370)\pi^0$, $f_0(1370) \to \pi^+\pi^-$		$(5.3 \pm 2.1) \times 10^{-5}$	
Γ_{142}	$f_0(1500)\pi^0$, $f_0(1500) \to \pi^+\pi^-$		$(5.6 \pm 1.5) \times 10^{-5}$	
Γ_{143}	$f_0(1710)\pi^0$, $f_0(1710) \to \pi^+\pi^-$		$(4.5 \pm 1.5) \times 10^{-5}$	
Γ_{144}	$f_2(1270)\pi^0$, $f_2(1270) \to \pi^+\pi^-$		$(1.90 \pm 0.20) \times 10^{-4}$	
Γ_{145}	$\pi^+\pi^-\pi^0$ nonresonant		$(1.21 \pm 0.35) \times 10^{-4}$	
Γ_{146}	$3\pi^0$		$< 3.5 \times 10^{-4}$	CL=90%
Γ_{147}	$2\pi^+2\pi^-$		$(7.44 \pm 0.21) \times 10^{-3}$	S=1.1
Γ_{148}	$a_1(1260)^+\pi^-$, $a_1^+ \to 2\pi^+\pi^-$ total		$(4.46 \pm 0.31) \times 10^{-3}$	
Γ_{149}	$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ S-wave		$(3.22 \pm 0.25) \times 10^{-3}$	
Γ_{150}	$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ D-wave		$(1.9 \pm 0.5) \times 10^{-4}$	
Γ_{151}	$a_1(1260)^+\pi^-$, $a_1^+ \to \sigma\pi^+$		$(6.2 \pm 0.7) \times 10^{-4}$	
Γ_{152}	$2\rho^0$ total		$(1.82 \pm 0.13) \times 10^{-3}$	
Γ_{153}	$2\rho^0$, parallel helicities		$(8.2 \pm 3.2) \times 10^{-5}$	
Γ_{154}	$2\rho^0$, perpendicular helicities		$(4.8 \pm 0.6) \times 10^{-4}$	
Γ_{155}	$2\rho^0$, longitudinal helicities		$(1.25 \pm 0.10) \times 10^{-3}$	
Γ_{156}	Resonant $(\pi^+\pi^-)\pi^+\pi^-$ 3-body total		$(1.49 \pm 0.12) \times 10^{-3}$	
Γ_{157}	$\sigma\pi^+\pi^-$		$(6.1 \pm 0.9) \times 10^{-4}$	
Γ_{158}	$f_0(980)\pi^+\pi^-$, $f_0 \to \pi^+\pi^-$		$(1.8 \pm 0.5) \times 10^{-4}$	
Γ_{159}	$f_2(1270)\pi^+\pi^-$, $f_2 \to \pi^+\pi^-$		$(3.6 \pm 0.6) \times 10^{-4}$	
Γ_{160}	$\pi^+\pi^-2\pi^0$		(1.00 ± 0.09) %	
Γ_{161}	$\eta\pi^0$	[i]	$(6.4 \pm 1.1) \times 10^{-4}$	
Γ_{162}	$\omega\pi^0$	[i]	$< 2.6 \times 10^{-4}$	CL=90%
Γ_{163}	$2\pi^+2\pi^-\pi^0$		$(4.2 \pm 0.5) \times 10^{-3}$	
Γ_{164}	$\eta\pi^+\pi^-$	[i]	$(1.09 \pm 0.16) \times 10^{-3}$	
Γ_{165}	$\omega\pi^+\pi^-$	[i]	$(1.6 \pm 0.5) \times 10^{-3}$	
Γ_{166}	$3\pi^+3\pi^-$		$(4.2 \pm 1.2) \times 10^{-4}$	
Γ_{167}	$\eta'(958)\pi^0$		$(8.1 \pm 1.6) \times 10^{-4}$	
Γ_{168}	$\eta'(958)\pi^+\pi^-$		$(4.5 \pm 1.7) \times 10^{-4}$	
Γ_{169}	2η		$(1.67 \pm 0.19) \times 10^{-3}$	
Γ_{170}	$\eta\eta'(958)$		$(1.26 \pm 0.27) \times 10^{-3}$	

Hadronic modes with a $K\overline{K}$ pair

Γ_{171}	K^+K^-		$(3.94 \pm 0.07) \times 10^{-3}$	S=1.3
Γ_{172}	$2K^0_S$		$(1.9 \pm 0.7) \times 10^{-4}$	S=2.5
Γ_{173}	$K^0_S K^- \pi^+$		$(3.5 \pm 0.5) \times 10^{-3}$	S=1.1
Γ_{174}	$\overline{K}^*(892)^0 K^0_S$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$< 6 \times 10^{-4}$	CL=90%
Γ_{175}	$K^0_S K^+ \pi^-$		$(2.6 \pm 0.5) \times 10^{-3}$	
Γ_{176}	$K^*(892)^0 K^0_S$, $K^*(892)^0 \to K^+\pi^-$		$< 2.9 \times 10^{-4}$	CL=90%
Γ_{177}	$K^+K^-\pi^0$		$(3.29 \pm 0.13) \times 10^{-3}$	
Γ_{178}	$K^*(892)^+ K^-$, $K^*(892)^+ \to K^+\pi^0$		$(1.46 \pm 0.07) \times 10^{-3}$	
Γ_{179}	$K^*(892)^- K^+$, $K^*(892)^- \to K^-\pi^0$		$(5.2 \pm 0.4) \times 10^{-4}$	
Γ_{180}	$(K^+\pi^0)_{S-wave} K^-$		$(2.34 \pm 0.17) \times 10^{-3}$	
Γ_{181}	$(K^-\pi^0)_{S-wave} K^+$		$(1.3 \pm 0.4) \times 10^{-4}$	
Γ_{182}	$f_0(980)\pi^0$, $f_0 \to K^+K^-$		$(3.5 \pm 0.6) \times 10^{-4}$	
Γ_{183}	$\phi\pi^0$, $\phi \to K^+K^-$		$(6.4 \pm 0.4) \times 10^{-4}$	
Γ_{184}	$K^+K^-\pi^0$ nonresonant			
Γ_{185}	$2K^0_S\pi^0$		$< 5.9 \times 10^{-4}$	
Γ_{186}	$K^+K^-\pi^+\pi^-$	[j]	$(2.43 \pm 0.12) \times 10^{-3}$	
Γ_{187}	$\phi\pi^+\pi^-$ 3-body, $\phi \to K^+K^-$		$(2.4 \pm 2.4) \times 10^{-5}$	
Γ_{188}	$\phi\rho^0$, $\phi \to K^+K^-$		$(7.1 \pm 0.6) \times 10^{-4}$	
Γ_{189}	$K^+K^-\rho^0$ 3-body		$(5 \pm 7) \times 10^{-5}$	
Γ_{190}	$f_0(980)\pi^+\pi^-$, $f_0 \to K^+K^-$		$(3.6 \pm 0.9) \times 10^{-4}$	
Γ_{191}	$K^*(892)^0 K^\mp\pi^\pm$ 3-body, $K^{*0} \to K^\pm\pi^\mp$	[k]	$(2.7 \pm 0.6) \times 10^{-4}$	
Γ_{192}	$K^*(892)^0\overline{K}^*(892)^0$, $K^{*0} \to K^\pm\pi^\mp$		$(7 \pm 5) \times 10^{-5}$	
Γ_{193}	$K_1(1270)^\pm K^\mp$, $K_1(1270)^\pm \to K^\pm\pi^+\pi^-$		$(8.0 \pm 1.8) \times 10^{-4}$	
Γ_{194}	$K_1(1400)^\pm K^\mp$, $K_1(1400)^\pm \to K^\pm\pi^+\pi^-$		$(5.3 \pm 1.2) \times 10^{-4}$	
Γ_{195}	$2K^0_S\pi^+\pi^-$		$(1.28 \pm 0.24) \times 10^{-3}$	
Γ_{196}	$K^0_S K^- 2\pi^+\pi^-$		$< 1.5 \times 10^{-4}$	CL=90%
Γ_{197}	$K^+K^-\pi^+\pi^-\pi^0$		$(3.1 \pm 2.0) \times 10^{-3}$	

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

Γ_{198}	$\phi\pi^0$			
Γ_{199}	$\phi\eta$		$(1.4 \pm 0.5) \times 10^{-4}$	
Γ_{200}	$\phi\omega$		$< 2.1 \times 10^{-3}$	CL=90%

Radiative modes

Γ_{201}	$\rho^0\gamma$		$<$ 2.4	$\times 10^{-4}$	CL=90%
Γ_{202}	$\omega\gamma$		$<$ 2.4	$\times 10^{-4}$	CL=90%
Γ_{203}	$\phi\gamma$		(2.70 $\pm$ 0.35)	$\times 10^{-5}$	
Γ_{204}	$\overline{K}^*(892)^0\gamma$		(3.28 $\pm$ 0.34)	$\times 10^{-4}$	

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

Γ_{205}	$K^+\ell^-\overline{\nu}_\ell$ via $\overline{D}^0$		$<$ 2.2	$\times 10^{-5}$	CL=90%
Γ_{206}	K^+ or $K^*(892)^+e^-\overline{\nu}_e$ via $\overline{D}^0$		$<$ 6	$\times 10^{-5}$	CL=90%
Γ_{207}	$K^+\pi^-$	*DC*	(1.48 $\pm$ 0.07)	$\times 10^{-4}$	
Γ_{208}	$K^+\pi^-$ via DCS		(1.31 $\pm$ 0.08)	$\times 10^{-4}$	
Γ_{209}	$K^+\pi^-$ via $\overline{D}^0$		$<$ 1.6	$\times 10^{-5}$	CL=95%
Γ_{210}	$K^0_S\pi^+\pi^-$ in $D^0 \to \overline{D}^0$		$<$ 1.9	$\times 10^{-4}$	CL=95%
Γ_{211}	$K^*(892)^+\pi^-$, $K^*(892)^+ \to K^0_S\pi^+$	*DC*	(1.18 $^{+0.60}_{-0.35}$)	$\times 10^{-4}$	
Γ_{212}	$K^*_0(1430)^+\pi^-$, $K^*_0(1430)^+ \to K^0_S\pi^+$	*DC*	$<$ 1.5	$\times 10^{-5}$	
Γ_{213}	$K^*_2(1430)^+\pi^-$, $K^*_2(1430)^+ \to K^0_S\pi^+$	*DC*	$<$ 3.5	$\times 10^{-5}$	
Γ_{214}	$K^+\pi^-\pi^0$	*DC*	(3.05 $\pm$ 0.17)	$\times 10^{-4}$	
Γ_{215}	$K^+\pi^-\pi^0$ via $\overline{D}^0$		(7.3 $\pm$ 0.5)	$\times 10^{-4}$	
Γ_{216}	$K^+\pi^+2\pi^-$	*DC*	(2.62 $^{+0.21}_{-0.19}$)	$\times 10^{-4}$	
Γ_{217}	$K^+\pi^+2\pi^-$ via $\overline{D}^0$		$<$ 4	$\times 10^{-4}$	CL=90%
Γ_{218}	$K^+\pi^-$ or $K^+\pi^+2\pi^-$ via $\overline{D}^0$				
Γ_{219}	μ^- anything via $\overline{D}^0$		$<$ 4	$\times 10^{-4}$	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_{220}	$\gamma\gamma$	*C1*	$<$ 2.7	$\times 10^{-5}$	CL=90%
Γ_{221}	e^+e^-	*C1*	$<$ 1.2	$\times 10^{-6}$	CL=90%
Γ_{222}	$\mu^+\mu^-$	*C1*	$<$ 1.3	$\times 10^{-6}$	CL=90%
Γ_{223}	$\pi^0e^+e^-$	*C1*	$<$ 4.5	$\times 10^{-5}$	CL=90%
Γ_{224}	$\pi^0\mu^+\mu^-$	*C1*	$<$ 1.8	$\times 10^{-4}$	CL=90%
Γ_{225}	ηe^+e^-	*C1*	$<$ 1.1	$\times 10^{-4}$	CL=90%
Γ_{226}	$\eta\mu^+\mu^-$	*C1*	$<$ 5.3	$\times 10^{-4}$	CL=90%
Γ_{227}	$\pi^+\pi^-e^+e^-$	*C1*	$<$ 3.73	$\times 10^{-4}$	CL=90%
Γ_{228}	$\rho^0e^+e^-$	*C1*	$<$ 1.0	$\times 10^{-4}$	CL=90%
Γ_{229}	$\pi^+\pi^-\mu^+\mu^-$	*C1*	$<$ 3.0	$\times 10^{-5}$	CL=90%
Γ_{230}	$\rho^0\mu^+\mu^-$	*C1*	$<$ 2.2	$\times 10^{-5}$	CL=90%
Γ_{231}	ωe^+e^-	*C1*	$<$ 1.8	$\times 10^{-4}$	CL=90%

Γ_{232}	$\omega\mu^+\mu^-$	C1		<	8.3	$\times 10^{-4}$	CL=90%
Γ_{233}	$K^-K^+e^+e^-$	C1		<	3.15	$\times 10^{-4}$	CL=90%
Γ_{234}	ϕe^+e^-	C1		<	5.2	$\times 10^{-5}$	CL=90%
Γ_{235}	$K^-K^+\mu^+\mu^-$	C1		<	3.3	$\times 10^{-5}$	CL=90%
Γ_{236}	$\phi\mu^+\mu^-$	C1		<	3.1	$\times 10^{-5}$	CL=90%
Γ_{237}	$\overline{K}^0e^+e^-$		[l]	<	1.1	$\times 10^{-4}$	CL=90%
Γ_{238}	$\overline{K}^0\mu^+\mu^-$		[l]	<	2.6	$\times 10^{-4}$	CL=90%
Γ_{239}	$K^-\pi^+e^+e^-$	C1		<	3.85	$\times 10^{-4}$	CL=90%
Γ_{240}	$\overline{K}^*(892)^0e^+e^-$		[l]	<	4.7	$\times 10^{-5}$	CL=90%
Γ_{241}	$K^-\pi^+\mu^+\mu^-$	C1		<	3.59	$\times 10^{-4}$	CL=90%
Γ_{242}	$\overline{K}^*(892)^0\mu^+\mu^-$		[l]	<	2.4	$\times 10^{-5}$	CL=90%
Γ_{243}	$\pi^+\pi^-\pi^0\mu^+\mu^-$	C1		<	8.1	$\times 10^{-4}$	CL=90%
Γ_{244}	$\mu^\pm e^\mp$	LF	[m]	<	8.1	$\times 10^{-7}$	CL=90%
Γ_{245}	$\pi^0e^\pm\mu^\mp$	LF	[m]	<	8.6	$\times 10^{-5}$	CL=90%
Γ_{246}	$\eta e^\pm\mu^\mp$	LF	[m]	<	1.0	$\times 10^{-4}$	CL=90%
Γ_{247}	$\pi^+\pi^-e^\pm\mu^\mp$	LF	[m]	<	1.5	$\times 10^{-5}$	CL=90%
Γ_{248}	$\rho^0e^\pm\mu^\mp$	LF	[m]	<	4.9	$\times 10^{-5}$	CL=90%
Γ_{249}	$\omega e^\pm\mu^\mp$	LF	[m]	<	1.2	$\times 10^{-4}$	CL=90%
Γ_{250}	$K^-K^+e^\pm\mu^\mp$	LF	[m]	<	1.8	$\times 10^{-4}$	CL=90%
Γ_{251}	$\phi e^\pm\mu^\mp$	LF	[m]	<	3.4	$\times 10^{-5}$	CL=90%
Γ_{252}	$\overline{K}^0e^\pm\mu^\mp$	LF	[m]	<	1.0	$\times 10^{-4}$	CL=90%
Γ_{253}	$K^-\pi^+e^\pm\mu^\mp$	LF	[m]	<	5.53	$\times 10^{-4}$	CL=90%
Γ_{254}	$\overline{K}^*(892)^0e^\pm\mu^\mp$	LF	[m]	<	8.3	$\times 10^{-5}$	CL=90%
Γ_{255}	$2\pi^-2e^+$ + c.c.	L		<	1.12	$\times 10^{-4}$	CL=90%
Γ_{256}	$2\pi^-2\mu^+$ + c.c.	L		<	2.9	$\times 10^{-5}$	CL=90%
Γ_{257}	$K^-\pi^-2e^+$ + c.c.	L		<	2.06	$\times 10^{-4}$	CL=90%
Γ_{258}	$K^-\pi^-2\mu^+$ + c.c.	L		<	3.9	$\times 10^{-4}$	CL=90%
Γ_{259}	$2K^-2e^+$ + c.c.	L		<	1.52	$\times 10^{-4}$	CL=90%
Γ_{260}	$2K^-2\mu^+$ + c.c.	L		<	9.4	$\times 10^{-5}$	CL=90%
Γ_{261}	$\pi^-\pi^-e^+\mu^+$ + c.c.	L		<	7.9	$\times 10^{-5}$	CL=90%
Γ_{262}	$K^-\pi^-e^+\mu^+$ + c.c.	L		<	2.18	$\times 10^{-4}$	CL=90%
Γ_{263}	$2K^-e^+\mu^+$ + c.c.	L		<	5.7	$\times 10^{-5}$	CL=90%
Γ_{264}	pe^-	L,B	[n]	<	1.0	$\times 10^{-5}$	CL=90%
Γ_{265}	$\overline{p}e^+$	L,B	[o]	<	1.1	$\times 10^{-5}$	CL=90%

Γ_{266}	A dummy mode used by the fit.	(39.4 ± 1.3) %	S=1.1

[a] This value is obtained by subtracting the branching fractions for 2-, 4- and 6-prongs from unity.

[b] This is the sum of our $K^-2\pi^+\pi^-$, $K^-2\pi^+\pi^-\pi^0$, $\overline{K}^02\pi^+2\pi^-$, $K^+2K^-\pi^+$, $2\pi^+2\pi^-$, $2\pi^+2\pi^-\pi^0$, $K^+K^-\pi^+\pi^-$, 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 6.20 ± 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 $D^0 \rightarrow K^0_S \pi^+ \pi^- \pi^0$ 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*] The experiments on the division of this charge mode amongst its submodes disagree, and the submode branching fractions here add up to considerably more than the charged-mode fraction.

[*k*] However, these upper limits are in serious disagreement with values obtained in another experiment.

[*l*] This mode is not a useful test for a ΔC=1 weak neutral current because both quarks must change flavor in this decay.

[*m*] The value is for the sum of the charge states or particle/antiparticle states indicated.

[*n*] This limit is for either D^0 or $\overline{D}^0$ to $p e^-$.

[*o*] This limit is for either D^0 or $\overline{D}^0$ to $\overline{p} e^+$.

CONSTRAINED FIT INFORMATION

An overall fit to 46 branching ratios uses 95 measurements and one constraint to determine 23 parameters. The overall fit has a $\chi^2 = 84.0$ for 73 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, 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.

	x_6	x_{18}	x_{19}	x_{20}	x_{28}	x_{29}	x_{31}	x_{32}	x_{34}	x_{49}
x_{18}	2									
x_{19}	20	8								
x_{20}	0	0	0							
x_{28}	0	0	0	0						
x_{29}	3	1	17	0	0					
x_{31}	4	45	18	1	0	3				
x_{32}	0	1	0	3	0	0	1			
x_{34}	0	2	1	12	0	0	5	27		
x_{49}	0	−1	−1	0	0	0	−3	0	0	
x_{61}	1	10	4	0	0	1	21	0	1	52
x_{70}	0	1	0	4	0	0	2	9	33	0
x_{74}	0	4	1	0	0	0	8	0	0	7
x_{88}	0	0	0	1	0	0	1	15	12	0
x_{89}	0	0	0	0	0	0	0	1	4	0
x_{128}	0	0	0	0	0	0	−1	0	0	81
x_{147}	1	12	5	0	0	1	26	0	1	27
x_{171}	2	25	10	0	0	2	56	1	3	−2
x_{172}	0	0	0	1	0	0	0	2	6	0
x_{173}	0	1	0	4	0	0	3	8	30	0
x_{175}	0	1	0	2	0	0	3	6	21	0
x_{203}	0	4	2	0	0	0	8	0	0	0
x_{266}	−49	−10	−22	−16	−1	−6	−15	−13	−34	−51

	x_{61}	x_{70}	x_{74}	x_{88}	x_{89}	x_{128}	x_{147}	x_{171}	x_{172}	x_{173}
x_{70}	0									
x_{74}	15	0								
x_{88}	0	4	0							
x_{89}	0	11	0	0						
x_{128}	43	0	6	0	0					
x_{147}	57	0	9	0	0	23				
x_{171}	12	1	5	0	0	−1	15			
x_{172}	0	2	0	1	0	0	0	0		
x_{173}	1	10	0	4	1	0	1	2	2	
x_{175}	1	7	0	3	1	0	1	1	1	6
x_{203}	2	0	1	0	0	0	2	7	0	0
x_{266}	−44	−53	−38	−7	−11	−44	−27	−9	−2	−14

	x_{175}	x_{203}
x_{203}	0	
x_{266}	−11	−1

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 $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$. The fit constrains the x_i whose labels appear in this array to sum to one.

	x_1	x_2	x_3
x_2	−100		
x_3	−47	40	
x_4	0	0	0

D^0 BRANCHING RATIOS

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

—— Topological modes ——

Γ(0-prongs)/$\Gamma_{\rm total}$ **Γ_1/Γ**

This value is obtained by subtracting the branching fractions for 2-, 4-, and 6-prongs from unity.

VALUE	*DOCUMENT ID*
0.17±0.06 OUR FIT	

$\Gamma(\text{4-prongs})/\Gamma_{\text{total}}$ Γ_3/Γ

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.

VALUE	DOCUMENT ID	
0.143±0.005 OUR FIT		
0.143±0.005	PDG	10

$\Gamma(\text{4-prongs})/\Gamma(\text{2-prongs})$ Γ_3/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.207±0.016 OUR FIT					
0.207±0.016±0.004	226	ONENGUT	05	CHRS	ν_μ emulsion, $\overline{E}_\nu \approx 27$ GeV

$\Gamma(\text{6-prongs})/\Gamma_{\text{total}}$ Γ_4/Γ

This is the sum of our $K^- 3\pi^+ 2\pi^-$ and $3\pi^+ 3\pi^-$ branching fractions.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.4± 1.3 OUR FIT					
6.4± 1.3		PDG	10		
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$12\ ^{+13}_{-\ 9}\ \pm2$	3	ONENGUT	05	CHRS	ν_μ emulsion, $\overline{E}_\nu \approx 27$ GeV

Inclusive modes

$\Gamma(e^+\text{anything})/\Gamma_{\text{total}}$ Γ_5/Γ

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 6.20 ± 0.17 %.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
6.49±0.11 OUR AVERAGE					
6.46±0.09±0.11	6584 ± 96	[33] ASNER	10	CLEO	e^+e^- at 3774 MeV
6.3 ±0.7 ±0.4	290 ± 32	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
6.46±0.17±0.13	2246 ± 57	ADAM	06A	CLEO	See ASNER 10
6.9 ±0.3 ±0.5	1670	ALBRECHT	96C	ARG	$e^+e^- \approx$ 10 GeV
6.64±0.18±0.29	4609	KUBOTA	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$

[33] Using the D^+ and D^0 lifetimes, ASNER 10 finds that the ratio of the D^+ and D^0 semileptonic widths is 0.985 ± 0.015 ± 0.024.

$\Gamma(\mu^+\text{anything})/\Gamma_{\text{total}}$ Γ_6/Γ

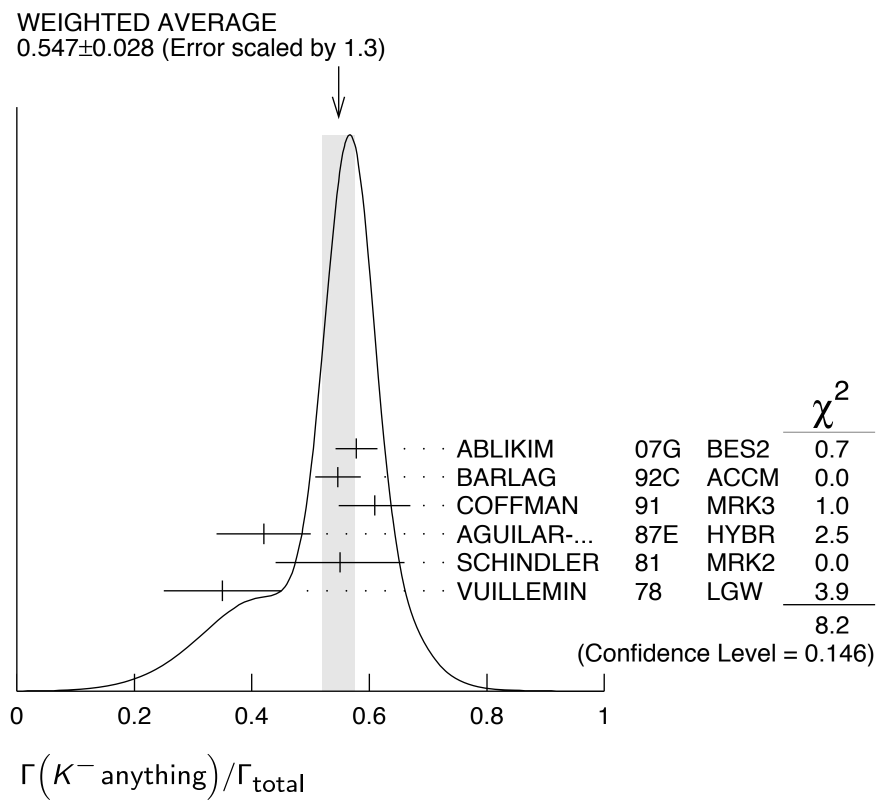
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
6.7±0.6 OUR FIT					
6.4±0.8 OUR AVERAGE					
6.8±1.5±0.8	79 ± 10	[34] ABLIKIM	08L	BES2	$e^+e^- \approx \psi(3772)$
6.5±1.2±0.3	36	KAYIS-TOPAK..	05	CHRS	ν_μ emulsion
6.0±0.7±1.2	310	ALBRECHT	96C	ARG	$e^+e^- \approx$ 10 GeV

[34] ABLIKIM 08L finds the ratio of $D^+ \to \mu^+ X$ and $D^0 \to \mu^+ X$ branching fractions to be 2.59 ± 0.70 ± 0.25, in accord with the ratio of D^+ and D^0 lifetimes, 2.54 ± 0.02.

$\Gamma(K^- \text{anything})/\Gamma_{total}$ — Γ_7/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.547±0.028 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
0.578±0.016±0.032	2098 ± 59	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
$0.546^{+0.039}_{-0.038}$		[35] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.609±0.032±0.052		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
0.42 ±0.08		AGUILAR-...	87E	HYBR	πp, pp 360, 400 GeV
0.55 ±0.11	121	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.35 ±0.10	19	VUILLEMIN	78	LGW	e^+e^- 3.772 GeV

[35] BARLAG 92C computes the branching fraction using topological normalization.



$[\Gamma(\overline{K}^0 \text{anything}) + \Gamma(K^0 \text{anything})]/\Gamma_{total}$ — Γ_8/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.47 ±0.04 OUR AVERAGE					
0.476±0.048±0.030	250 ± 25	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV
0.455±0.050±0.032		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^+ \text{anything})/\Gamma_{total}$ — Γ_9/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.034±0.004 OUR AVERAGE					
0.035±0.007±0.003	119 ± 23	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
$0.034^{+0.007}_{-0.005}$		[36] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.028±0.009±0.004		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$0.03\ ^{+0.05}_{-0.02}$		AGUILAR-...	87E	HYBR	πp, $p p$ 360, 400 GeV
$0.08\ \pm 0.03$	25	SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV

[36] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^*(892)^-\text{ anything})/\Gamma_{\text{total}}$ — Γ_{10}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.153±0.083±0.019	28 ± 15	ABLIKIM	06U	BES2	$e^+ e^-$ at 3773 MeV

$\Gamma(\overline{K}^*(892)^0\text{ anything})/\Gamma_{\text{total}}$ — Γ_{11}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.087±0.040±0.012	96 ± 44	ABLIKIM	05P	BES	$e^+ e^- \approx$ 3773 MeV

$\Gamma(K^*(892)^+\text{ anything})/\Gamma_{\text{total}}$ — Γ_{12}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.036	90	ABLIKIM	06U	BES2	$e^+ e^-$ at 3773 MeV

$\Gamma(K^*(892)^0\text{ anything})/\Gamma_{\text{total}}$ — Γ_{13}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.028±0.012±0.004	31 ± 12	ABLIKIM	05P	BES	$e^+ e^- \approx$ 3773 MeV

$\Gamma(\eta\text{ anything})/\Gamma_{\text{total}}$ — Γ_{14}/Γ

This ratio includes η particles from η' decays.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.5±0.4±0.8	4463 ± 197	HUANG	06B	CLEO	$e^+ e^-$ at $\psi(3770)$

$\Gamma(\eta'\text{ anything})/\Gamma_{\text{total}}$ — Γ_{15}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.48±0.17±0.21	299 ± 21	HUANG	06B	CLEO	$e^+ e^-$ at $\psi(3770)$

$\Gamma(\phi\text{ anything})/\Gamma_{\text{total}}$ — Γ_{16}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.05±0.08±0.07	368 ± 24	HUANG	06B	CLEO	$e^+ e^-$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.71\ ^{+0.76}_{-0.71}\ \pm 0.17$	9	BAI	00C	BES	$e^+ e^- \to D\overline{D}^*$, $D^*\overline{D}^*$

——— Semileptonic modes ———

$\Gamma(K^- e^+ \nu_e)/\Gamma_{\text{total}}$ — Γ_{18}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.55±0.05 OUR FIT Error includes scale factor of 1.2.					
3.50±0.05 OUR AVERAGE					
3.50±0.03±0.04	14.1k	[37] BESSON	09	CLEO	$e^+ e^-$ at $\psi(3770)$
3.45±0.10±0.19	1318 ± 38	[38] WIDHALM	06	BELL	$e^+ e^- \approx \Upsilon(4S)$
3.82±0.40±0.27	104 ± 11	ABLIKIM	04C	BES	$e^+ e^-$, 3.773 GeV
3.4 ±0.5 ±0.4	55	ADLER	89	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.56±0.03±0.09		[39] DOBBS	08	CLEO	See BESSON 09
3.44±0.10±0.10	1311 ± 37	COAN	05	CLEO	See DOBBS 08

[37] See the form-factor parameters near the end of this D^0 Listing.

[38] The $\pi^- e^+ \nu_e$ and $K^- e^+ \nu_e$ results of WIDHALM 06 give $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}|^2 = 0.042 \pm 0.003 \pm 0.003$.

[39] DOBBS 08 establishes $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K} e^+ \nu_e$ and $\pi e^+ \nu_e$.

$\Gamma(K^- e^+ \nu_e)/\Gamma(K^- \pi^+)$ — Γ_{18}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.914±0.012 OUR FIT Error includes scale factor of 1.2.					
0.930±0.013 OUR AVERAGE					
0.927±0.007±0.012	76k±323	[40] AUBERT	07BG	BABR	$e^+ e^- \approx \Upsilon(4S)$
0.978±0.027±0.044	2510	[41] BEAN	93C	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.90 ±0.06 ±0.06	584	[42] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.91 ±0.07 ±0.11	250	[43] ANJOS	89F	E691	Photoproduction

[40] The event samples in this AUBERT 07BG result include radiative photons. The $D^0 \to K^- e^+ \nu_e$ form factor at $q^2 = 0$ is $f_+(0) = 0.727 \pm 0.007 \pm 0.005 \pm 0.007$.

[41] BEAN 93C uses $K^- \mu^+ \nu_\mu$ as well as $K^- e^+ \nu_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events. A pole mass of $2.00 \pm 0.12 \pm 0.18$ GeV/c^2 is obtained from the q^2 dependence of the decay rate.

[42] CRAWFORD 91B uses $K^- e^+ \nu_e$ and $K^- \mu^+ \nu_\mu$ candidates to measure a pole mass of $2.1^{+0.4}_{-0.2}{}^{+0.3}_{-0.2}$ GeV/c^2 from the q^2 dependence of the decay rate.

[43] ANJOS 89F measures a pole mass of $2.1^{+0.4}_{-0.2} \pm 0.2$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma_{total}$ — Γ_{19}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.31±0.13 OUR FIT					
3.45±0.10±0.21	1249 ± 43	WIDHALM	06	BELL	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(K^- \pi^+)$ — Γ_{19}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.852±0.033 OUR FIT					
0.84 ±0.04 OUR AVERAGE					
0.852±0.034±0.028	1897	[44] FRABETTI	95G	E687	γ Be $\overline{E}_\gamma$= 220 GeV
0.82 ±0.13 ±0.13	338	[45] FRABETTI	93I	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.79 ±0.08 ±0.09	231	[46] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV

[44] FRABETTI 95G extracts the ratio of form factors $f_-(0)/f_+(0) = -1.3^{+3.6}_{-3.4} \pm 0.6$, and measures a pole mass of $1.87^{+0.11}_{-0.08}{}^{+0.07}_{-0.06}$ GeV/c^2 from the q^2 dependence of the decay rate.

[45] FRABETTI 93I measures a pole mass of $2.1^{+0.7}_{-0.3}{}^{+0.7}_{-0.3}$ GeV/c^2 from the q^2 dependence of the decay rate.

[46] 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.

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(\mu^+ \text{anything})$ — Γ_{19}/Γ_6

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.50 ±0.05 OUR FIT					
0.472±0.051±0.040	232	KODAMA	94	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32 ±0.05 ±0.05	124	KODAMA	91	EMUL	pA 800 GeV

$\Gamma(K^- \pi^0 e^+ \nu_e)/\Gamma_{\text{total}}$ — Γ_{22}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.016^{+0.013}_{-0.005}$±0.002	4	[47] BAI	91	MRK3	$e^+ e^- \approx$ 3.77 GeV

[47] BAI 91 finds that a fraction $0.79^{+0.15}_{-0.17}{}^{+0.09}_{-0.03}$ 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_{23}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$2.7^{+0.9}_{-0.7}$ OUR AVERAGE					
2.61±1.04±0.28	9 ± 3	ABLIKIM	06O	BES2	$e^+ e^-$ at 3773 MeV
$2.8^{+1.7}_{-0.8}$ ±0.3	6	[48] BAI	91	MRK3	$e^+ e^- \approx$ 3.77 GeV

[48] BAI 91 finds that a fraction $0.79^{+0.15}_{-0.17}{}^{+0.09}_{-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+ \nu_e$ (24 events) are $\overline{K}^*(892) e^+ \nu_e$.

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma_{\text{total}}$ — Γ_{20}/Γ

Both decay modes of the $K^*(892)^-$ are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.17±0.16 OUR FIT					
2.16±0.15±0.08	219 ± 16	[49] COAN	05	CLEO	$e^+ e^-$ at $\psi(3770)$

[49] COAN 05 uses both $K^- \pi^0$ and $K^0_S \pi^-$ events.

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{20}/Γ_{34}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.74±0.06 OUR FIT					
0.76±0.12±0.06	152	[50] BEAN	93C	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[50] BEAN 93C uses $K^{*-} \mu^+ \nu_\mu$ as well as $K^{*-} e^+ \nu_e$ 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_{21}/Γ_{34}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.674±0.068±0.026	175 ± 17	[51] LINK	05B	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

[51] LINK 05B finds that in $D^0 \to \overline{K}^0 \pi^- \mu^+ \nu_\mu$ the $\overline{K}^0 \pi^-$ system is 6% in S-wave.

$\Gamma(K^- \pi^+ \pi^- e^+ \nu_e)/\Gamma_{total}$ — Γ_{24}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$2.8^{+1.4}_{-1.1}\pm 0.3$	8	ARTUSO	07A	CLEO	e^+e^- at $\Upsilon(3770)$

$\Gamma(K_1(1270)^- e^+ \nu_e)/\Gamma_{total}$ — Γ_{25}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$7.6^{+4.1}_{-3.0}\pm 0.9$	8	[52] ARTUSO	07A	CLEO	e^+e^- at $\Upsilon(3770)$

[52] This ARTUSO 07A result is corrected for all decay modes of the $K_1(1270)^-$.

$\Gamma(K^- \pi^+ \pi^- \mu^+ \nu_\mu)/\Gamma(K^- \mu^+ \nu_\mu)$ — Γ_{26}/Γ_{19}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.037	90	KODAMA	93B	E653	π^- emulsion 600 GeV

$\Gamma((\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu)/\Gamma(K^- \mu^+ \nu_\mu)$ — Γ_{27}/Γ_{19}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.043	90	[53] KODAMA	93B	E653	π^- emulsion 600 GeV

[53] KODAMA 93B searched in $K^-\pi^+\pi^-\mu^+\nu_\mu$, but the limit includes other $(\overline{K}^*(892)\pi)^-$ charge states.

$\Gamma(\pi^- e^+ \nu_e)/\Gamma_{total}$ — Γ_{28}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.289±0.008 OUR FIT Error includes scale factor of 1.1.					
0.287±0.008 OUR AVERAGE					
0.288±0.008±0.003	1374	[54] BESSON	09	CLEO	e^+e^- at $\psi(3770)$
0.279±0.027±0.016	126 ± 12	[55] WIDHALM	06	BELL	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.299±0.011±0.009		[56] DOBBS	08	CLEO	See BESSON 09
0.262±0.025±0.008	117 ± 11	COAN	05	CLEO	See DOBBS 08

[54] See the form-factor parameters near the end of this D^0 Listing.

[55] The $\pi^- e^+ \nu_e$ and $K^- e^+ \nu_e$ results of WIDHALM 06 give $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.042 \pm 0.003 \pm 0.003$.

[56] DOBBS 08 establishes $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^\pi(0)}{f_+^K(0)}| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K} e^+ \nu_e$ and $\pi e^+ \nu_e$.

$\Gamma(\pi^- e^+ \nu_e)/\Gamma(K^- e^+ \nu_e)$ — Γ_{28}/Γ_{18}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0813±0.0025 OUR FIT Error includes scale factor of 1.1.					
0.085 ±0.007 OUR AVERAGE					
0.082 ±0.006 ±0.005		[57] HUANG	05	CLEO	$e^+e^- \approx \Upsilon(4S)$
0.101 ±0.020 ±0.003	91	[58] FRABETTI	96B	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.103 ±0.039 ±0.013	87	[59] BUTLER	95	CLE2	< 0.156 (90% CL)

[57] HUANG 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 $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}|^2 = 0.038^{+0.006}_{-0.007}{}^{+0.005}_{-0.003}$.

[58] 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 $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}|^2 = 0.050 \pm 0.011 \pm 0.002$.

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

$\Gamma(\pi^- \mu^+ \nu_\mu)/\Gamma_{total}$ Γ_{29}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.237±0.024 OUR FIT					
0.231±0.026±0.019	106 ± 13	WIDHALM	06	BELL	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^- \mu^+ \nu_\mu)/\Gamma(K^- \mu^+ \nu_\mu)$ Γ_{29}/Γ_{19}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.072±0.007 OUR FIT					
0.074±0.008±0.007	288 ± 29	[60] LINK	05	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

[60] LINK 05 finds the form-factor ratio $|f_0^{\pi}(0)/f_0^{K}(0)|$ to be 0.85 ± 0.04 ± 0.04 ± 0.01.

$\Gamma(\rho^- e^+ \nu_e)/\Gamma_{total}$ Γ_{30}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.194±0.039±0.013	31 ± 6	COAN	05	CLEO	$e^+ e^-$ at $\psi(3770)$

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

$\Gamma(K^- \pi^+)/\Gamma_{total}$ Γ_{31}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.89 ±0.05 OUR FIT Error includes scale factor of 1.2.					
3.91 ±0.05 OUR AVERAGE Error includes scale factor of 1.1.					
4.007±0.037±0.072	33.8 ± 0.3k	AUBERT	08L	BABR	$e^+ e^-$ at $\Upsilon(4S)$
3.891±0.035±0.069		[61] DOBBS	07	CLEO	$e^+ e^-$ at $\psi(3770)$
3.82 ±0.07 ±0.12		[62] ARTUSO	98	CLE2	CLEO average
3.90 ±0.09 ±0.12	5392	[63] BARATE	97C	ALEP	From Z decays
3.41 ±0.12 ±0.28	1173 ± 37	[63] ALBRECHT	94F	ARG	$e^+ e^- \approx \Upsilon(4S)$
3.62 ±0.34 ±0.44		[63] DECAMP	91J	ALEP	From Z decays
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.91 ±0.08 ±0.09	10.3k ±100	[61] HE	05	CLEO	See DOBBS 07
3.81 ±0.15 ±0.16	1165	[64] ARTUSO	98	CLE2	$e^+ e^-$ at $\Upsilon(4S)$
3.69 ±0.11 ±0.16		[65] COAN	98	CLE2	See ARTUSO 98
4.5 ±0.6 ±0.4		[66] ALBRECHT	94	ARG	$e^+ e^- \approx \Upsilon(4S)$
3.95 ±0.08 ±0.17	4208	[63,67] AKERIB	93	CLE2	See ARTUSO 98
4.5 ±0.8 ±0.5	56	[63] ABACHI	88	HRS	$e^+ e^-$ 29 GeV
4.2 ±0.4 ±0.4	930	ADLER	88C	MRK3	$e^+ e^-$ 3.77 GeV
4.1 ±0.6	263 ± 17	[68] SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV
4.3 ±1.0	130	[69] PERUZZI	77	LGW	$e^+ e^-$ 3.77 GeV

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

[62] This combines the CLEO results of ARTUSO 98, COAN 98, and AKERIB 93.

[63] ABACHI 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 $D^*(2010)^+ \rightarrow D^0\pi^+$ events, and the fraction with $D^0 \rightarrow K^-\pi^+$ gives the $D^0 \rightarrow K^-\pi^+$ branching fraction.

[64] ARTUSO 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.

[65] COAN 98 assumes that $\Gamma(B \rightarrow \overline{D} X\ell^+\nu)/\Gamma(B \rightarrow X\ell^+\nu) = 1.0 - 3|V_{ub}/V_{cb}|^2 - 0.010 \pm 0.005$, 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.

[66] ALBRECHT 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.

[67] 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.

[68] 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.

[69] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ 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.

$\Gamma(K_S^0\pi^0)/\Gamma_{total}$ — Γ_{32}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.22 ±0.05 OUR FIT					
1.240±0.017±0.056	614	HE	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(K_S^0\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{32}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.315±0.014 OUR FIT					
0.68 ±0.12 ±0.11	119	ANJOS	92B	E691	γ Be 80–240 GeV

$\Gamma(K_S^0\pi^0)/\Gamma(K_S^0\pi^+\pi^-)$ — Γ_{32}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.415±0.025 OUR FIT Error includes scale factor of 1.1.					
0.378±0.033 OUR AVERAGE					
0.44 ±0.02 ±0.05	1942 ± 64	PROCARIO	93B	CLE2	e^+e^- 10.36–10.7 GeV
0.34 ±0.04 ±0.02	92	[70] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.36 ±0.04 ±0.08	104	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[70] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K_L^0\pi^0)/\Gamma_{total}$ — Γ_{33}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.998±0.049±0.048	1116	[71] HE	08	CLEO	e^+e^- at $\psi(3770)$

[71] The difference of HE 08 $D^0 \rightarrow K_S^0\pi^0$ and $K_L^0\pi^0$ branching fractions over the sum is $0.108 \pm 0.025 \pm 0.024$. This is consistent with U-spin symmetry and the Cabibbo angle.

$\Gamma(K^0_S \pi^+ \pi^-)/\Gamma_{total}$ — Γ_{34}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
2.94±0.16 OUR FIT Error includes scale factor of 1.1.				
2.68±0.29 OUR AVERAGE				
2.52±0.20±0.25	284 ± 22	[72] ALBRECHT 94F	ARG	$e^+ e^- \approx \Upsilon(4S)$
3.2 ±0.3 ±0.5		ADLER 87	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.6 ±0.8	32 ± 8	[73] SCHINDLER 81	MRK2	$e^+ e^-$ 3.771 GeV
4.0 ±1.2	28	[74] PERUZZI 77	LGW	$e^+ e^-$ 3.77 GeV

[72] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^- \pi^+)/\Gamma_{total}$ for the method used.

[73] SCHINDLER 81 (MARK-2) measures $\sigma(e^+ e^- \to \psi(3770)) \times$ 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.

[74] PERUZZI 77 (MARK-1) measures $\sigma(e^+ e^- \to \psi(3770)) \times$ 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.

$\Gamma(K^0_S \pi^+ \pi^-)/\Gamma(K^- \pi^+)$ — Γ_{34}/Γ_{31}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.76±0.04 OUR FIT Error includes scale factor of 1.1.				
0.81±0.05±0.08	856 ± 35	FRABETTI 94J	E687	γ Be $\overline{E}_\gamma$=220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.85±0.40	35	AVERY 80	SPEC	$\gamma N \to D^{*+}$
1.4 ±0.5	116	PICCOLO 77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma(K^0_S \rho^0)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{35}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID	TECN	COMMENT
$0.224^{+0.017}_{-0.023}$ OUR AVERAGE Error includes scale factor of 1.7.			
0.210±0.016	[75] AUBERT 08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.264 \pm 0.009^{+0.010}_{-0.026}$	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±0.028±0.067	FRABETTI 94G	E687	Dalitz fit, 597 evts
0.227±0.032±0.009	ALBRECHT 93D	ARG	Dalitz fit, 440 evts
0.215±0.051±0.037	ANJOS 93	E691	γ Be 90–260 GeV
0.20 ±0.06 ±0.03	FRABETTI 92B	E687	γ Be, $\overline{E}_\gamma$= 221 GeV
0.12 ±0.01 ±0.07	ADLER 87	MRK3	$e^+ e^-$ 3.77 GeV

[75] The 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_{36}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID	TECN	COMMENT
0.0073±0.0020 OUR AVERAGE			
0.009 ±0.010	[76] AUBERT 08AL	BABR	Dalitz fit, ≈ 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

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

$\Gamma(K^0_S(\pi^+\pi^-)_{S-wave})/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{37}/Γ_{34}

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.

VALUE	DOCUMENT ID		TECN	COMMENT
0.119±0.026	[77] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts

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

$\Gamma(K^0_S f_0(980), f_0(980) \to \pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{38}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.043\pm0.005^{+0.012}_{-0.006}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.042\pm0.005^{+0.011}_{-0.005}$	ASNER	04A	CLEO	See MURAMATSU 02
0.068±0.016±0.018	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.046±0.018±0.006	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

$\Gamma(K^0_S f_0(1370), f_0(1370) \to \pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{39}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.099\pm0.011^{+0.028}_{-0.044}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.098\pm0.014^{+0.026}_{-0.036}$	ASNER	04A	CLEO	See MURAMATSU 02
0.077±0.022±0.031	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.082±0.028±0.013	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

$\Gamma(K^0_S f_2(1270), f_2(1270) \to \pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{40}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.0032^{+0.0035}_{-0.0022}$ OUR AVERAGE				
0.006 ±0.007	[78] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.0027\pm0.0015^{+0.0037}_{-0.0017}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0036\pm0.0022^{+0.0032}_{-0.0019}$	ASNER	04A	CLEO	See MURAMATSU 02
0.037 ±0.014 ±0.017	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.050 ±0.021 ±0.008	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

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

$\Gamma\big(K^*(892)^-\pi^+, K^*(892)^- \to K^0_S\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{41}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.588^{+0.034}_{-0.050}$ OUR AVERAGE	Error includes scale factor of 2.0.			
0.557 ± 0.028	[79] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.657\pm0.013^{+0.018}_{-0.040}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.663\pm0.013^{+0.024}_{-0.043}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.625\pm0.036\pm0.026$	FRABETTI	94G	E687	Dalitz fit, 597 evts
$0.718\pm0.042\pm0.030$	ALBRECHT	93D	ARG	Dalitz fit, 440 evts
0.480 ± 0.097	ANJOS	93	E691	γ Be 90–260 GeV
$0.56\ \pm0.04\ \pm0.05$	ADLER	87	MRK3	e^+e^- 3.77 GeV

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

$\Gamma\big(K^*_0(1430)^-\pi^+, K^*_0(1430)^- \to K^0_S\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{42}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.095^{+0.014}_{-0.010}$ OUR AVERAGE				
0.102 ± 0.015	[80] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.073\pm0.007^{+0.031}_{-0.011}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.072\pm0.007^{+0.014}_{-0.013}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.109\pm0.027\pm0.029$	FRABETTI	94G	E687	Dalitz fit, 597 evts
$0.129\pm0.034\pm0.021$	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

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

$\Gamma\big(K^*_2(1430)^-\pi^+, K^*_2(1430)^- \to K^0_S\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{43}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.0120^{+0.0070}_{-0.0035}$ OUR AVERAGE				
$0.022\ \pm0.016$	[81] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.011\ \pm0.002\ ^{+0.007}_{-0.003}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.011\ \pm0.002\ ^{+0.005}_{-0.003}$	ASNER	04A	CLEO	See MURAMATSU 02

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

$\Gamma\big(K^*(1680)^-\pi^+, K^*(1680)^- \to K^0_S\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{44}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE		DOCUMENT ID		TECN	COMMENT
0.016±0.013 OUR AVERAGE					
0.007±0.019	[82]	AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.022\pm0.004^{+0.018}_{-0.015}$		MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.023\pm0.005^{+0.007}_{-0.014}$		ASNER	04A	CLEO	See MURAMATSU 02

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

$\Gamma\big(K^*(892)^+\pi^-, K^*(892)^+ \to K^0_S\pi^+\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{45}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE (units 10^{-3})		DOCUMENT ID		TECN	COMMENT
$4.0^{+2.0}_{-1.2}$ OUR AVERAGE					
4.6±2.3	[83]	AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$3.4\pm1.3^{+4.1}_{-0.4}$		MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$3.4\pm1.3^{+3.6}_{-0.5}$		ASNER	04A	CLEO	See MURAMATSU 02

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

$\Gamma\big(K^*_0(1430)^+\pi^-, K^*_0(1430)^+ \to K^0_S\pi^+\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{46}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5\times10^{-4}$	95	AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts

$\Gamma\big(K^*_2(1430)^+\pi^-, K^*_2(1430)^+ \to K^0_S\pi^+\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{47}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.2\times10^{-3}$	95	AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts

$\Gamma\big(K^0_S\pi^+\pi^-$ nonresonant$\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{48}/Γ_{34}

This is the "fit fraction" from the Dalitz-plot analysis. Neither FRABETTI 94G nor ALBRECHT 93D (quoted in many of the earlier submodes of $K^0_S\pi^+\pi^-$) sees evidence for a nonresonant component.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.009\pm0.004^{+0.020}_{-0.004}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.007\pm0.007^{+0.021}_{-0.006}$	ASNER	04A	CLEO	See MURAMATSU 02
0.263±0.024±0.041	ANJOS	93	E691	γ Be 90–260 GeV
0.26 ±0.08 ±0.05	FRABETTI	92B	E687	γ Be, $\overline{E}_\gamma$= 221 GeV
0.33 ±0.05 ±0.10	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^0)/\Gamma_{total}$ — Γ_{49}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
13.9 ±0.5 OUR FIT Error includes scale factor of 1.7.					
14.57±0.12±0.38		[84] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
14.9 ±0.3 ±0.5	19k ±150	[84] HE	05	CLEO	See DOBBS 07
13.3 ±1.2 ±1.3	931	ADLER	88C	MRK3	e^+e^- 3.77 GeV
11.7 ±4.3	37	[85] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

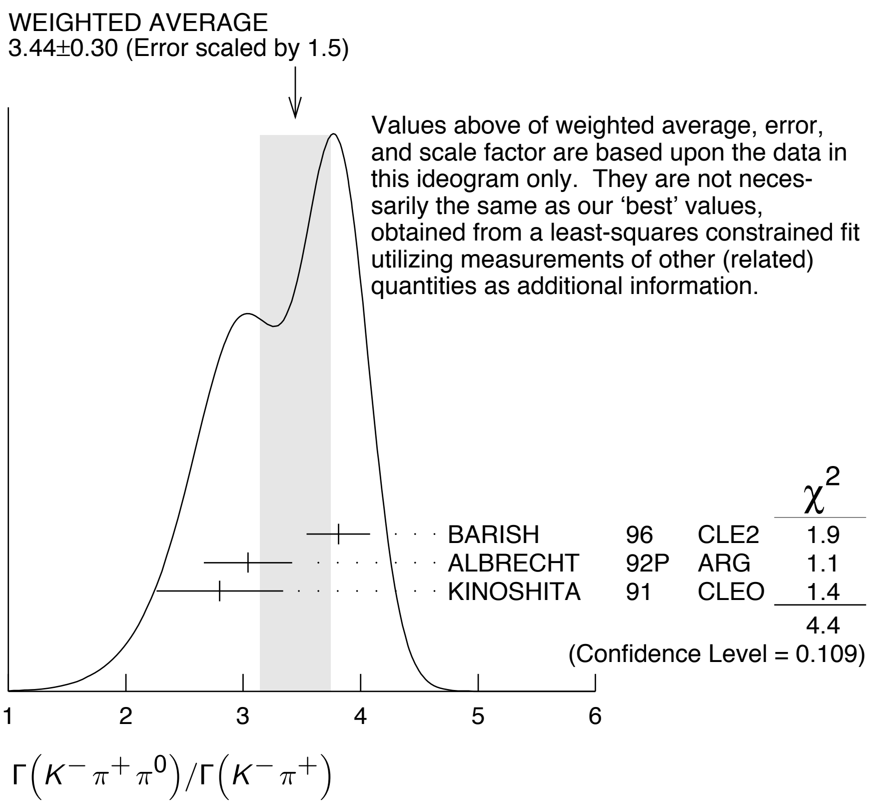
[84] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[85] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.68 ± 0.23 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^-\pi^+\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{49}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
3.57±0.13 OUR FIT Error includes scale factor of 1.9.					
3.44±0.30 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.					
3.81±0.07±0.26	10k	BARISH	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
3.04±0.16±0.34	931	[86] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
2.8 ±0.14±0.52	1050	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[86] This value is calculated from numbers in Table 1 of ALBRECHT 92P.



$\Gamma(K^-\rho^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{50}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.78 ±0.04 OUR AVERAGE				
0.788±0.019±0.048	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
0.765±0.041±0.054	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.647±0.039±0.150	ANJOS	93	E691	γBe 90–260 GeV
0.81 ±0.03 ±0.06	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\rho(1700)^+, \rho(1700)^+\to\pi^+\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{51}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.057±0.008±0.009	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma(K^*(892)^-\pi^+, K^*(892)^-\to K^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{52}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.160^{+0.025}_{-0.013}$ OUR AVERAGE				
$0.161\pm0.007^{+0.027}_{-0.011}$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
0.148±0.028±0.049	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.084±0.011±0.012	ANJOS	93	E691	γBe 90–260 GeV
0.12 ±0.02 ±0.03	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\pi^0, \overline{K}^*(892)^0\to K^-\pi^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{53}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.135±0.016 OUR AVERAGE				
0.127±0.009±0.016	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
0.165±0.031±0.015	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.142±0.018±0.024	ANJOS	93	E691	γBe 90–260 GeV
0.13 ±0.02 ±0.03	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K_0^*(1430)^-\pi^+, K_0^*(1430)^-\to K^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{54}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.033±0.006±0.014	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma(\overline{K}_0^*(1430)^0\pi^0, \overline{K}_0^*(1430)^0\to K^-\pi^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{55}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.041\pm0.006^{+0.032}_{-0.009}$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma(K^*(1680)^-\pi^+, K^*(1680)^-\to K^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{56}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.013±0.003±0.004	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma(K^-\pi^+\pi^0 \text{ nonresonant})/\Gamma(K^-\pi^+\pi^0)$ — Γ_{57}/Γ_{49}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.080^{+0.040}_{-0.014}$ OUR AVERAGE					
$0.075\pm0.009^{+0.056}_{-0.011}$		KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
$0.101\pm0.033\pm0.040$		FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.036\pm0.004\pm0.018$		ANJOS	93	E691	γ Be 90–260 GeV
$0.09\pm0.02\pm0.04$		ADLER	87	MRK3	e^+e^- 3.77 GeV
0.51 ± 0.22	21	SUMMERS	84	E691	Photoproduction

$\Gamma(K^0_S 2\pi^0)/\Gamma_{\text{total}}$ — Γ_{58}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$8.34\pm0.45\pm0.42$	ASNER	08	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\pi^0, \overline{K}^*(892)^0 \to K^0_S\pi^0)/\Gamma(K^0_S\pi^0)$ — Γ_{59}/Γ_{32}

VALUE	DOCUMENT ID		TECN	COMMENT
$0.55^{+0.13}_{-0.10}\pm0.07$	PROCARIO	93B	CLE2	Dalitz plot fit, 122 evts

$\Gamma(K^0_S 2\pi^0 \text{ nonresonant})/\Gamma(K^0_S\pi^0)$ — Γ_{60}/Γ_{32}

VALUE	DOCUMENT ID		TECN	COMMENT
$0.37\pm0.08\pm0.04$	PROCARIO	93B	CLE2	Dalitz plot fit, 122 evts

$\Gamma(K^- 2\pi^+\pi^-)/\Gamma_{\text{total}}$ — Γ_{61}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$8.09^{+0.21}_{-0.18}$ OUR FIT Error includes scale factor of 1.3.					
8.17 ± 0.33 OUR AVERAGE Error includes scale factor of 1.7. See the ideogram below.					
$8.30\pm0.07\pm0.20$		[87] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
$7.9\pm1.5\pm0.9$		[88] ALBRECHT	94	ARG	$e^+e^- \approx \Upsilon(4S)$
$6.80\pm0.27\pm0.57$	1430 ± 52	[89] ALBRECHT	94F	ARG	$e^+e^- \approx \Upsilon(4S)$
$9.1\pm0.8\pm0.8$	992	ADLER	88C	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$8.3\pm0.2\pm0.3$	$15k\pm130$	[87] HE	05	CLEO	See DOBBS 07
11.7 ± 2.5	185	[90] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
6.2 ± 1.9	44	[91] PERUZZI	77	LGW	e^+e^- 3.77 GeV

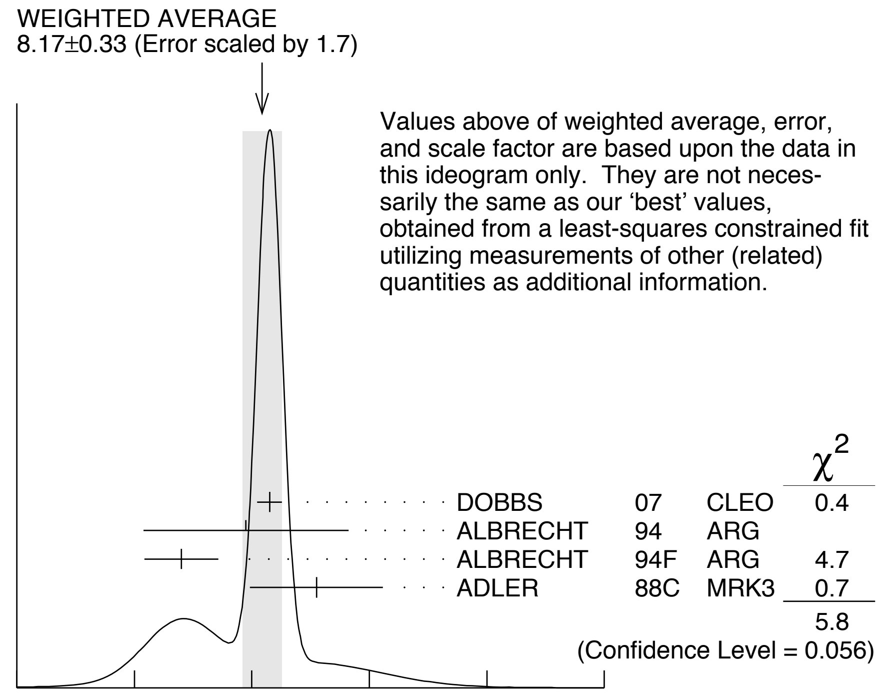
[87] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

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

[89] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^-\pi^+)/\Gamma_{\text{total}}$ for the method used.

[90] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ 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.

[91] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \to \psi(3770)) \times$ 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.



$\Gamma\big(K^- 2\pi^+ \pi^-\big)/\Gamma_{total}$ (units 10^{-2})

$\Gamma\big(K^- 2\pi^+ \pi^-\big)/\Gamma\big(K^- \pi^+\big)$ Γ_{61}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
2.08±0.05 OUR FIT Error includes scale factor of 1.5.					
1.97±0.09 OUR AVERAGE					
$1.94 \pm 0.07 ^{+0.09}_{-0.11}$		JUN	00	SELX	Σ^- nucleus, 600 GeV
$1.7 \pm 0.2 \pm 0.2$	1745	ANJOS	92C	E691	γ Be 90–260 GeV
$1.90 \pm 0.25 \pm 0.20$	337	ALVAREZ	91B	NA14	Photoproduction
$2.12 \pm 0.16 \pm 0.09$		BORTOLETTO	88	CLEO	$e^+ e^-$ 10.55 GeV
$2.17 \pm 0.28 \pm 0.23$		ALBRECHT	85F	ARG	$e^+ e^-$ 10 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.0 ± 0.9	48	BAILEY	86	ACCM	π^- Be fixed target
2.0 ± 1.0	10	BAILEY	83B	SPEC	π^- Be $\rightarrow$ D^0
2.2 ± 0.8	214	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma\big(K^- \pi^+ \rho^0 \text{total}\big)/\Gamma\big(K^- 2\pi^+ \pi^-\big)$ Γ_{62}/Γ_{61}

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 AVERAGE				
$0.80 \pm 0.03 \pm 0.05$	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
$0.855 \pm 0.032 \pm 0.030$	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.98 \pm 0.12 \pm 0.10$	ALVAREZ	91B	NA14	Photoproduction

$\Gamma(K^- \pi^+ \rho^0 \text{3-body})/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{63}/Γ_{61}

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	EVTS	DOCUMENT ID		TECN	COMMENT
0.063±0.028 OUR AVERAGE					
0.05 ±0.03 ±0.02		ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
0.084±0.022±0.04		COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.77 ±0.06 ±0.06		[92] ALVAREZ	91B	NA14	Photoproduction
0.85 $^{+0.11}_{-0.22}$	180	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

[92] This value is for ρ^0 ($K^- \pi^+$)-nonresonant. ALVAREZ 91B cannot determine what fraction of this is $K^- a_1(1260)^+$.

$\Gamma(\overline{K}^*(892)^0 \rho^0)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{95}/Γ_{61}

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	EVTS	DOCUMENT ID		TECN	COMMENT
0.195±0.03±0.03		ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.34 ±0.09±0.09		ALVAREZ	91B	NA14	Photoproduction
0.75 ±0.3	5	BAILEY	83B	SPEC	π Be → D^0
0.15 $^{+0.16}_{-0.15}$	20	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{transverse})/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{96}/Γ_{61}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.213±0.024±0.075	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{ S-wave})/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{97}/Γ_{61}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.375±0.045±0.06	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{ S-wave long.})/\Gamma_{\text{total}}$ — Γ_{98}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.003	90	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{ P-wave})/\Gamma_{\text{total}}$ — Γ_{99}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.003	90	COFFMAN	92B	MRK3	1281±45 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.009	90	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0 \rho^0$ D-wave$)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{100}/Γ_{61}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.255±0.045±0.06	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K^- \pi^+ f_0(980))/\Gamma_{total}$ — Γ_{101}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.011	90	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0 f_0(980))/\Gamma_{total}$ — Γ_{102}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.007	90	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K^- a_1(1260)^+)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{91}/Γ_{61}

Unseen decay modes of the $a_1(1260)^+$ are included, assuming that the $a_1(1260)^+$ decays entirely to $\rho\pi$ [or at least to $(\pi\pi)_{I=1}\ \pi$].

VALUE	DOCUMENT ID		TECN	COMMENT
0.97 ±0.14 OUR AVERAGE				
0.94 ±0.13 ±0.20	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
0.984±0.048±0.16	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K^- a_2(1320)^+)/\Gamma_{total}$ — Γ_{92}/Γ

Unseen decay modes of the $a_2(1320)^+$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.002	90	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.006	90	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K_1(1270)^- \pi^+)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{103}/Γ_{61}

Unseen decay modes of the $K_1(1270)^-$ are included. The MARK3 and E691 experiments disagree considerably here.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.194±0.056±0.088		COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.013	90	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K_1(1400)^- \pi^+)/\Gamma_{total}$ — Γ_{104}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.012	90	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K^*(1410)^- \pi^+)/\Gamma_{total}$ — Γ_{105}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma\big(\overline{K}^*(892)^0\pi^+\pi^-\text{ total}\big)/\Gamma\big(K^-2\pi^+\pi^-\big)$ Γ_{93}/Γ_{61}

This includes $\overline{K}^*(892)^0\rho^0$, *etc.* The next entry gives the specifically 3-body fraction. Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.30±0.06±0.03	ANJOS	92C	E691	1745 $K^-2\pi^+\pi^-$ evts

$\Gamma\big(\overline{K}^*(892)^0\pi^+\pi^-\text{ 3-body}\big)/\Gamma\big(K^-2\pi^+\pi^-\big)$ Γ_{94}/Γ_{61}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.18 ±0.04 OUR AVERAGE				
0.165±0.03 ±0.045	ANJOS	92C	E691	1745 $K^-2\pi^+\pi^-$ evts
0.210±0.027±0.06	COFFMAN	92B	MRK3	1281 ± 45 $K^-2\pi^+\pi^-$ evts

$\Gamma\big(K^-2\pi^+\pi^-\text{ nonresonant}\big)/\Gamma\big(K^-2\pi^+\pi^-\big)$ Γ_{69}/Γ_{61}

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.233±0.032 OUR AVERAGE				
0.23 ±0.02 ±0.03	ANJOS	92C	E691	1745 $K^-2\pi^+\pi^-$ evts
0.242±0.025±0.06	COFFMAN	92B	MRK3	1281 ± 45 $K^-2\pi^+\pi^-$ evts

$\Gamma\big(K^0_S\pi^+\pi^-\pi^0\big)/\Gamma_{\text{total}}$ Γ_{70}/Γ

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
5.4±0.6 OUR FIT					
5.2±1.1±1.2	140	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$6.7^{+1.6}_{-1.7}$		[93] BARLAG	92C	ACCM	π^- Cu 230 GeV

[93] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma\big(K^0_S\pi^+\pi^-\pi^0\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ Γ_{70}/Γ_{34}

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 ± 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	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.82±0.20 OUR FIT					
1.86±0.23 OUR AVERAGE					
1.80±0.20±0.21	190	[94] ALBRECHT	92P	ARG	$e^+e^-\approx$ 10 GeV
2.8 ±0.8 ±0.8	46	ANJOS	92C	E691	γBe 90–260 GeV
1.85±0.26±0.30	158	KINOSHITA	91	CLEO	$e^+e^-\sim$ 10.7 GeV

[94] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma\big(K^0_S\eta\big)/\Gamma_{\text{total}}$ Γ_{88}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
4.29±0.27 OUR FIT				
4.42±0.15±0.28	ASNER	08	CLEO	$e^+e^-\to D^0\overline{D}^0$, 3.77 GeV

$\Gamma(K^0_S\eta)/\Gamma(K^0_S\pi^0)$ Γ_{88}/Γ_{32}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.351±0.025 OUR FIT				
0.32 ±0.04 ±0.03	225 ± 30	PROCARIO 93B	CLE2	$\eta \to \gamma\gamma$

$\Gamma(K^0_S\eta)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{88}/Γ_{34}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.146±0.011 OUR FIT				
0.14 ±0.02 ±0.02	80 ± 12	PROCARIO 93B	CLE2	$\eta \to \pi^+\pi^-\pi^0$

$\Gamma(K^0_S\omega)/\Gamma_{total}$ Γ_{89}/Γ

Unseen decay modes of the ω are included.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
1.11±0.06 OUR FIT			
1.12±0.04±0.05	ASNER 08	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV

$\Gamma(K^0_S\omega)/\Gamma(K^-\pi^+)$ Γ_{89}/Γ_{31}

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. • • •			
0.50±0.18±0.10	ALBRECHT 89D	ARG	e^+e^- 10 GeV

$\Gamma(K^0_S\omega)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{89}/Γ_{34}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.379±0.029 OUR FIT Error includes scale factor of 1.1.				
0.33 ±0.09 OUR AVERAGE Error includes scale factor of 1.1.				
0.29 ±0.08 ±0.05	16	[95] ALBRECHT 92P	ARG	$e^+e^- \approx$ 10 GeV
0.54 ±0.14 ±0.16	40	KINOSHITA 91	CLEO	$e^+e^- \sim$ 10.7 GeV

[95] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^0_S\omega)/\Gamma(K^0_S\pi^+\pi^-\pi^0)$ Γ_{89}/Γ_{70}

Unseen decay modes of the ω are included.

VALUE	DOCUMENT ID	TECN	COMMENT
0.208±0.026 OUR FIT			
0.220±0.048±0.0116	COFFMAN 92B	MRK3	1281 ± 45 $K^-2\pi^+\pi^-$ evts

$\Gamma(K^0_S\eta'(958))/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{90}/Γ_{34}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.32±0.04 OUR AVERAGE				
0.31±0.02±0.04	594	PROCARIO 93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$
0.37±0.13±0.06	18	[96] ALBRECHT 92P	ARG	$e^+e^- \approx$ 10 GeV

[96] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+2\pi^0)/\Gamma_{total}$ — Γ_{73}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.177 ± 0.029		[97] BARLAG	92C	ACCM	π^- Cu 230 GeV
$0.149\pm0.037\pm0.030$	24	[98] ADLER	88C	MRK3	e^+e^- 3.77 GeV
$0.209^{+0.074}_{-0.043}\pm0.012$	9	[97] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[97] AGUILAR-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.

[98] ADLER 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.

$\Gamma(K^-2\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{74}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.09±0.10 OUR FIT					
0.98±0.11±0.11	225	[99] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[99] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-2\pi^+\pi^-\pi^0)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{74}/Γ_{61}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.52±0.05 OUR FIT					
0.56±0.07 OUR AVERAGE					
$0.55\pm0.07^{+0.12}_{-0.09}$	167	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV
$0.57\pm0.06\pm0.05$	180	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^-\pi^0)/\Gamma(K^-2\pi^+\pi^-\pi^0)$ — Γ_{106}/Γ_{74}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.45±0.15±0.15	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+)$ — Γ_{107}/Γ_{31}

Unseen decay modes of the $\overline{K}^*(892)^0$ and η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.58\pm0.19^{+0.24}_{-0.28}$	46	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{107}/Γ_{49}

Unseen decay modes of the $\overline{K}^*(892)^0$ and η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.13\pm0.02\pm0.03$	214	PROCARIO	93B	CLE2	$\overline{K}^{*0}\eta \rightarrow K^-\pi^+/\gamma\gamma$

$\Gamma(K^0_S\eta\pi^0)/\Gamma(K^0_S\pi^0)$ — Γ_{78}/Γ_{32}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.46±0.07±0.06	155 ± 22	[100] RUBIN	04	CLEO	$e^+e^- \approx$ 10 GeV

[100] The η here is detected in its $\gamma\gamma$ mode, but other η modes are included in the value given.

$\Gamma(K^0_S a_0(980), a_0(980) \to \eta\pi^0)/\Gamma(K^0_S \eta\pi^0)$ — Γ_{79}/Γ_{78}

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
1.19±0.09±0.26	[101] RUBIN	04	CLEO	Dalitz fit, 155 evts

[101] In addition to $K^0_S a_0(980)$ and $\overline{K}^*(892)^0 \eta$ modes, RUBIN 04 finds a fit fraction of $0.246 \pm 0.092 \pm 0.091$ for other, undetermined modes.

$\Gamma(\overline{K}^*(892)^0 \eta, \overline{K}^*(892)^0 \to K^0_S \pi^0)/\Gamma(K^0_S \eta\pi^0)$ — Γ_{80}/Γ_{78}

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.293±0.062±0.035	[102] RUBIN	04	CLEO	Dalitz fit, 155 evts

[102] See the note on RUBIN 04 in the preceding data block.

$\Gamma(K^-\pi^+\omega)/\Gamma(K^-\pi^+)$ — Γ_{108}/Γ_{31}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.78±0.12±0.10	99	[103] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[103] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^*(892)^0 \omega)/\Gamma(K^-\pi^+)$ — Γ_{109}/Γ_{31}

Unseen decay modes of the $\overline{K}^*(892)^0$ and ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.28±0.11±0.04	17	[104] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[104] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+\eta'(958))/\Gamma(K^- 2\pi^+\pi^-)$ — Γ_{110}/Γ_{61}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.093±0.014±0.019	286	PROCARIO	93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$

$\Gamma(\overline{K}^*(892)^0 \eta'(958))/\Gamma(K^-\pi^+\eta'(958))$ — $\Gamma_{111}/\Gamma_{110}$

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN
<0.15	90	PROCARIO	93B	CLE2

$\Gamma(K^0_S 2\pi^+ 2\pi^-)/\Gamma(K^0_S \pi^+\pi^-)$ — Γ_{81}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.095±0.005±0.007	1283 ± 57	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.07 ±0.02 ±0.01	11	[105] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.149±0.026	56	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
0.18 ±0.07 ±0.04	6	ANJOS	90D	E691	Photoproduction

[105] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^0_S \rho^0 \pi^+\pi^-, \text{no } K^*(892)^-)/\Gamma(K^0_S 2\pi^+ 2\pi^-)$ — Γ_{82}/Γ_{81}

VALUE	DOCUMENT ID		TECN	COMMENT
0.40±0.24±0.07	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^*(892)^- 2\pi^+\pi^-, K^*(892)^- \rightarrow K^0_S\pi^-, \text{no } \rho^0)/\Gamma(K^0_S 2\pi^+ 2\pi^-)$ Γ_{83}/Γ_{81}

VALUE	DOCUMENT ID		TECN	COMMENT
0.17±0.28±0.02	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(K^*(892)^- \rho^0\pi^+, K^*(892)^- \rightarrow K^0_S\pi^-)/\Gamma(K^0_S 2\pi^+ 2\pi^-)$ Γ_{84}/Γ_{81}

VALUE	DOCUMENT ID		TECN	COMMENT
0.60±0.21±0.09	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(K^0_S 2\pi^+ 2\pi^- \text{ nonresonant})/\Gamma(K^0_S 2\pi^+ 2\pi^-)$ Γ_{85}/Γ_{81}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.46	90	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(K^- 3\pi^+ 2\pi^-)/\Gamma(K^- 2\pi^+\pi^-)$ Γ_{87}/Γ_{61}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.70±0.58±0.38	48 ± 10	LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx 180$ GeV

Hadronic modes with three K's

$\Gamma(K^0_S K^+ K^-)/\Gamma(K^0_S \pi^+\pi^-)$ Γ_{112}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.158±0.001±0.005	14k±116	AUBERT,B	05J	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.20 ±0.05 ±0.04	47	FRABETTI	92B	E687	γ Be, $\overline{E}_\gamma = 221$ GeV
0.170±0.022	136	AMMAR	91	CLEO	$e^+e^- \approx 10.5$ GeV
0.24 ±0.08		BEBEK	86	CLEO	e^+e^- near $\Upsilon(4S)$
0.185±0.055	52	ALBRECHT	85B	ARG	e^+e^- 10 GeV

$\Gamma(K^0_S a_0(980)^0, a^0_0 \rightarrow K^+K^-)/\Gamma(K^0_S K^+ K^-)$ $\Gamma_{113}/\Gamma_{112}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.664±0.016±0.070	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^- a_0(980)^+, a^+_0 \rightarrow K^+K^0_S)/\Gamma(K^0_S K^+ K^-)$ $\Gamma_{114}/\Gamma_{112}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.134±0.011±0.037	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^+ a_0(980)^-, a^-_0 \rightarrow K^-K^0_S)/\Gamma(K^0_S K^+ K^-)$ $\Gamma_{115}/\Gamma_{112}$

This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.025	95	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S f_0(980), f_0 \rightarrow K^+K^-)/\Gamma(K^0_S K^+ K^-)$ $\Gamma_{116}/\Gamma_{112}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.021	95	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S \phi, \phi \to K^+ K^-)/\Gamma(K^0_S K^+ K^-)$ — $\Gamma_{117}/\Gamma_{112}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.459±0.007±0.007	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S f_0(1370), f_0 \to K^+ K^-)/\Gamma(K^0_S K^+ K^-)$ — $\Gamma_{118}/\Gamma_{112}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.038±0.007±0.023	[106] AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

[106] AUBERT,B 05J calls the mode $K^0_S f_0(1400)$, but insofar as it is seen here at all, it is certainly the same as $f_0(1370)$.

$\Gamma(3K^0_S)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{119}/Γ_{34}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.2 ±0.4 OUR AVERAGE					
3.58±0.54±0.52	170 ± 26	LINK	05A	FOCS	γBe, $\overline{E}_\gamma \approx$ 180 GeV
2.78±0.38±0.48	61	ASNER	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$
7.0 ±2.4 ±1.2	10 ± 3	FRABETTI	94J	E687	γBe, $\overline{E}_\gamma$=220 GeV
3.2 ±1.0	22	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
3.4 ±1.4 ±1.0	5	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^+ 2K^- \pi^+)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{120}/Γ_{61}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0027 ±0.0004 OUR AVERAGE	Error includes scale factor of 1.1.				
0.00257±0.00034±0.00024	143	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
0.0054 ±0.0016 ±0.0008	18	AITALA	01D	E791	π^- A, 500 GeV
0.0028 ±0.0007 ±0.0001	20	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(\phi \overline{K}^*(892)^0, \phi \to K^+ K^-, \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{123}/\Gamma_{120}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.48±0.06±0.01	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^- \pi^+ \phi, \phi \to K^+ K^-)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{122}/\Gamma_{120}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.18±0.06±0.04	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^+ K^- \overline{K}^*(892)^0, \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{121}/\Gamma_{120}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.20±0.07±0.02	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^+ 2K^- \pi^+ \text{ nonresonant})/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{124}/\Gamma_{120}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.15±0.06±0.02	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(2K^0_S K^\pm \pi^\mp)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{125}/Γ_{34}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.12±0.38±0.20	57 ± 10	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV

Pionic modes

$\Gamma(\pi^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{126}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.59 ±0.05 OUR AVERAGE					
3.62 ±0.10 ±0.08	2085 ± 54	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$
3.594±0.054±0.040	7334 ± 97	ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}=1.96$ TeV
3.53 ±0.12 ±0.06	3453	LINK	03	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
3.51 ±0.16 ±0.17	710	CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
4.0 ±0.2 ±0.3	2043	AITALA	98C	E791	π^- A, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.4 ±0.7 ±0.1	76 ± 15	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
4.3 ±0.7 ±0.3	177	FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
3.48 ±0.30 ±0.23	227	SELEN	93	CLE2	$e^+e^- \approx \Upsilon(4S)$
5.5 ±0.8 ±0.5	120	ANJOS	91D	E691	Photoproduction
5.0 ±0.7 ±0.5	110	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(2\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{127}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.07±0.19 OUR AVERAGE					
2.05±0.13±0.16	499 ± 32	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$
2.2 ±0.4 ±0.4	40	SELEN	93	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{128}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
37.0±1.6 OUR FIT Error includes scale factor of 2.0.					
34.4±0.5±1.2	11k±164	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{128}/Γ_{49}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.34±0.24 OUR FIT Error includes scale factor of 2.2.					
10.41±0.23 OUR AVERAGE Error includes scale factor of 2.0.					
10.12±0.04±0.18	123k±490	ARINSTEIN	08	BELL	$e^+e^- \approx \Upsilon(4S)$
10.59±0.06±0.13	60k±343	AUBERT,B	06X	BABR	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\rho^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{129}/\Gamma_{128}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference. See GASPERO 08 for an isospin decomposition of the $D^0 \rightarrow \pi^+\pi^0\pi^-$ Dalitz plot, based on the amplitudes of AUBERT 07BJ. It quantifies the conclusion that the final state is dominantly isospin 0.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
68.1±0.6 OUR AVERAGE				
67.8±0.0±0.6	AUBERT	07BJ	BABR	Dalitz fit, 45k events
76.3±1.9±2.5	CRONIN-HEN...	05	CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho^0\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{130}/\Gamma_{128}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
25.9±1.1 OUR AVERAGE				
26.2±0.5±1.1	AUBERT	07BJ	BABR	Dalitz fit, 45k events
24.4±2.0±2.1	CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho^-\pi^+)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{131}/\Gamma_{128}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
34.6±0.8 OUR AVERAGE				
34.6±0.8±0.3	AUBERT	07BJ	BABR	Dalitz fit, 45k events
34.5±2.4±1.3	CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho(1450)^+\pi^-, \rho(1450)^+ \to \pi^+\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{132}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.11±0.07±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1450)^0\pi^0, \rho(1450)^0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{133}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.30±0.11±0.07	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1450)^-\pi^+, \rho(1450)^- \to \pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{134}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
1.79±0.22±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^+\pi^-, \rho(1700)^+ \to \pi^+\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{135}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
4.1±0.7±0.7	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^0\pi^0, \rho(1700)^0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{136}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
5.0±0.6±1.0	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^-\pi^+, \rho(1700)^- \to \pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{137}/\Gamma_{128}$

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
3.2±0.4±0.6	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(980)\pi^0, f_0(980) \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{138}/\Gamma_{128}$

VALUE (units 10^{-2})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.25 ±0.04±0.04		AUBERT	07BJ	BABR	Dalitz fit, 45k events
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.026	95	[107] CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

[107] 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 $f_0(600)\pi^0$ 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.

$\Gamma\big(f_0(600)\pi^0,\, f_0(600) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{139}/\Gamma_{128}$

The $f_0(600)$ is the σ.

VALUE (units 10^{-2})	CL%	DOCUMENT ID		TECN	COMMENT
0.82±0.10±0.10		AUBERT	07BJ	BABR	Dalitz fit, 45k events
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.21	95	[108] CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

[108] See the note on CRONIN-HENNESSY 05 in the proceeding data block.

$\Gamma\big((\pi^+\pi^-)_{S-\mathrm{wave}}\pi^0\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{140}/\Gamma_{128}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.019	95	[109] CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

[109] See the note on CRONIN-HENNESSY 05 two data blocks up.

$\Gamma\big(f_0(1370)\pi^0,\, f_0(1370) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{141}/\Gamma_{128}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.37±0.11±0.09	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma\big(f_0(1500)\pi^0,\, f_0(1500) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{142}/\Gamma_{128}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.39±0.08±0.07	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma\big(f_0(1710)\pi^0,\, f_0(1710) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{143}/\Gamma_{128}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.31±0.07±0.08	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma\big(f_2(1270)\pi^0,\, f_2(1270) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{144}/\Gamma_{128}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.32±0.08±0.10	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma\big(\pi^+\pi^-\pi^0\,\mathrm{nonresonant}\big)/\Gamma\big(\pi^+\pi^-\pi^0\big)$ — $\Gamma_{145}/\Gamma_{128}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.84±0.21±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma\big(3\pi^0\big)/\Gamma_{\mathrm{total}}$ — Γ_{146}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.5 × 10⁻⁴	90	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma\big(2\pi^+2\pi^-\big)/\Gamma\big(K^-\pi^+\big)$ — Γ_{147}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
19.1±0.5 OUR FIT	Error includes scale factor of 1.1.				
19.1±0.4±0.6	7331 ± 130	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(2\pi^+ 2\pi^-)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{147}/Γ_{61}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.19±0.23 OUR FIT Error includes scale factor of 1.1.					
9.20±0.26 OUR AVERAGE					
9.14±0.18±0.22	6360±115	LINK	07A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV
7.9 ±1.8 ±0.5	162	ABLIKIM	05F	BES	$e^+ e^- \approx \psi(3770)$
9.5 ±0.7 ±0.2	814	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
10.2 ±1.3	345	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
11.5 ±2.3 ±1.6	64	ADAMOVICH	92	OMEG	π^- 340 GeV
10.8 ±2.4 ±0.8	79	FRABETTI	92	E687	γ Be
9.6 ±1.8 ±0.7	66	ANJOS	91	E691	γ Be 80–240 GeV

$\Gamma(a_1(1260)^+ \pi^-,\ a_1^+ \to 2\pi^+ \pi^-$ total$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{148}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
60.0±3.0±2.4	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(a_1(1260)^+ \pi^-,\ a_1^+ \to \rho^0 \pi^+$ S-wave$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{149}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
43.3±2.5±1.9	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(a_1(1260)^+ \pi^-,\ a_1^+ \to \rho^0 \pi^+$ D-wave$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{150}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.5±0.5±0.4	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(a_1(1260)^+ \pi^-,\ a_1^+ \to \sigma \pi^+)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{151}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.3±0.7±0.6	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(2\rho^0$ total$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{152}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
24.5±1.3±1.0	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(2\rho^0$, parallel helicities$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{153}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.1±0.3±0.3	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(2\rho^0$, perpendicular helicities$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{154}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
6.4±0.6±0.5	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(2\rho^0$, longitudinal helicities$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{155}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
16.8±1.0±0.8	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma($Resonant $(\pi^+\pi^-)\pi^+\pi^-$ 3-body total$)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{156}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
20.0±1.2±1.0	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(\sigma\pi^+\pi^-)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{157}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.2±0.9±0.7	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(f_0(980)\pi^+\pi^-, f_0 \to \pi^+\pi^-)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{158}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.4±0.5±0.4	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(f_2(1270)\pi^+\pi^-, f_2 \to \pi^+\pi^-)/\Gamma(2\pi^+ 2\pi^-)$ — $\Gamma_{159}/\Gamma_{147}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.9±0.6±0.5	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma(\pi^+\pi^- 2\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{160}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
25.8±1.5±1.8	2724 ± 166	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^0)/\Gamma_{total}$ — Γ_{161}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.4±1.0±0.4	156 ± 24	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{161}/Γ_{31}

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.47±0.34±0.11	62 ± 14	RUBIN	06	CLEO	See ARTUSO 08

$\Gamma(\omega\pi^0)/\Gamma_{total}$ — Γ_{162}/Γ

Unseen decay modes of the ω are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.6 \times 10^{-4}$	90	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(2\pi^+ 2\pi^- \pi^0)/\Gamma(K^-\pi^+)$ — Γ_{163}/Γ_{31}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.7±1.2±0.5	1614 ± 171	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^+\pi^-)/\Gamma_{total}$ — Γ_{164}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
10.9±1.3±0.9		257 ± 32	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<19	90		RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\omega\pi^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{165}/Γ_{31}

Unseen decay modes of the ω are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.1±1.2±0.4	472 ± 132	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(3\pi^+3\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{166}/Γ_{61}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.23±0.59±1.35	149 ± 17	LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(3\pi^+3\pi^-)/\Gamma(K^-3\pi^+2\pi^-)$ — Γ_{166}/Γ_{87}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.93±047±0.48	[110] LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx$ 180 GeV

[110] This LINK 04B result is not independent of other results in these Listings.

$\Gamma(\eta'(958)\pi^0)/\Gamma_{total}$ — Γ_{167}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
8.1±1.5±0.6	50 ± 9	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta'(958)\pi^+\pi^-)/\Gamma_{total}$ — Γ_{168}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.5±1.6±0.5	21 ± 8	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(2\eta)/\Gamma_{total}$ — Γ_{169}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
16.7±1.4±1.3	255 ± 22	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\eta'(958))/\Gamma_{total}$ — Γ_{170}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
12.6±2.5±1.1	46 ± 9	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

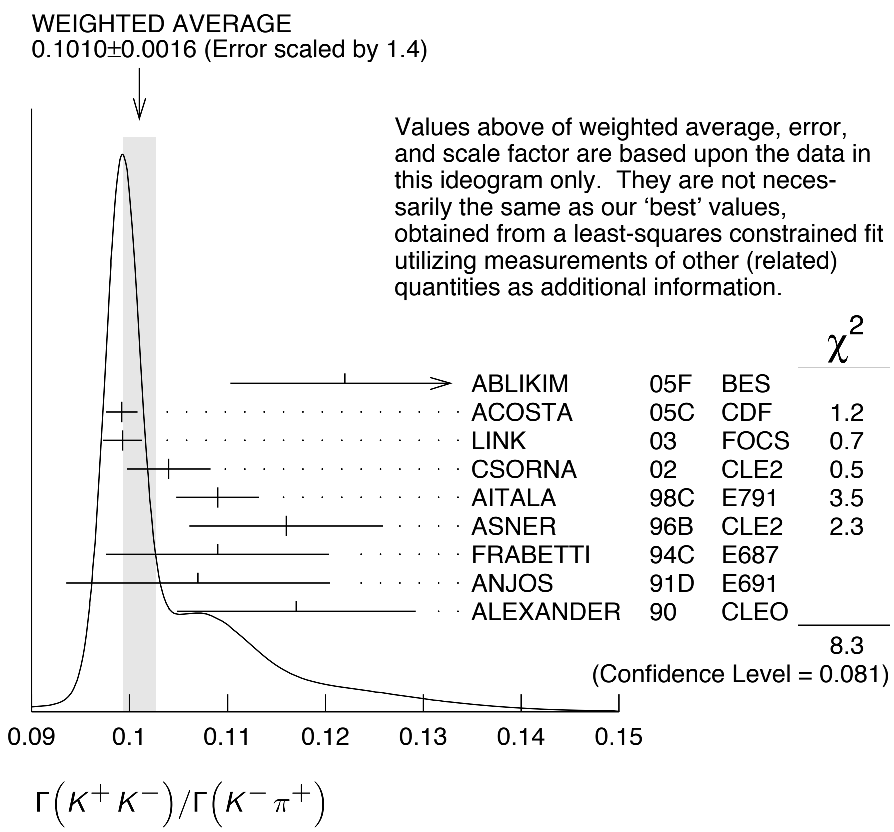
Hadronic modes with a $K\overline{K}$ pair

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{171}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.94±0.07 OUR FIT	Error includes scale factor of 1.3.				
4.08±0.08±0.09	4746 ± 74	BONVICINI	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ Γ_{171}/Γ_{31}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.1015±0.0015 OUR FIT Error includes scale factor of 1.4.					
0.1010±0.0016 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.					
0.122 ±0.011 ±0.004	242 ± 20	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
0.0992±0.0011±0.0012	16k±200	ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
0.0993±0.0014±0.0014	11k	LINK	03	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
0.1040±0.0033±0.0027	1900	CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.003 ±0.003	3317	AITALA	98C	E791	π^- nucleus, 500 GeV
0.116 ±0.007 ±0.007	1102	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.007 ±0.009	581	FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
0.107 ±0.010 ±0.009	193	ANJOS	91D	E691	Photoproduction
0.117 ±0.010 ±0.007	249	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.107 ±0.029 ±0.015	103	ADAMOVICH	92	OMEG	π^- 340 GeV
0.138 ±0.027 ±0.010	155	FRABETTI	92	E687	γBe
0.16 ±0.05	34	ALVAREZ	91B	NA14	Photoproduction
0.10 ±0.02 ±0.01	131	ALBRECHT	90C	ARG	$e^+e^- \approx$ 10 GeV
0.122 ±0.018 ±0.012	118	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV
0.113 ±0.030		ABRAMS	79D	MRK2	e^+e^- 3.77 GeV



$\Gamma(K^+K^-)/\Gamma(\pi^+\pi^-)$ — $\Gamma_{171}/\Gamma_{126}$

The unused results here are redundant with $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ and $\Gamma(\pi^+\pi^-)/\Gamma(K^-\pi^+)$ measurements by the same experiments.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$2.760\pm0.040\pm0.034$	7334	ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
$2.81\pm0.10\pm0.06$		LINK	03	FOCS	γ nucleus, $\overline{E}_\gamma\approx$ 180 GeV
$2.96\pm0.16\pm0.15$	710	CSORNA	02	CLE2	$e^+e^-\approx\Upsilon(4S)$
$2.75\pm0.15\pm0.16$		AITALA	98C	E791	π^- nucleus, 500 GeV
$2.53\pm0.46\pm0.19$		FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
$2.23\pm0.81\pm0.46$		ADAMOVICH	92	OMEG	π^- 340 GeV
$1.95\pm0.34\pm0.22$		ANJOS	91D	E691	Photoproduction
2.5 ± 0.7		ALBRECHT	90C	ARG	$e^+e^-\approx$ 10 GeV
$2.35\pm0.37\pm0.28$		ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(2K^0_S)/\Gamma_{total}$ — Γ_{172}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.9 ±0.7 OUR FIT	Error includes scale factor of 2.5.				
1.46±0.32±0.09	68 ± 15	BONVICINI	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(2K^0_S)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{172}/Γ_{34}

This is the same as $\Gamma(K^0\overline{K}^0)$ / $\Gamma(\overline{K}^0\pi^+\pi^-)$ because $D^0\to K^0_S K^0_L$ is forbidden by CP conservation.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0065±0.0025 OUR FIT	Error includes scale factor of 2.4.				
0.0120±0.0022 OUR AVERAGE					
$0.0144\pm0.0032\pm0.0016$	79 ± 17	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma\approx$ 180 GeV
$0.0101\pm0.0022\pm0.0016$	26	ASNER	96B	CLE2	$e^+e^-\approx\Upsilon(4S)$
$0.039\pm0.013\pm0.013$	20 ± 7	FRABETTI	94J	E687	γBe $\overline{E}_\gamma$=220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.021^{+0.011}_{-0.008}\pm0.002$	5	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(K^0_S K^-\pi^+)/\Gamma(K^-\pi^+)$ — Γ_{173}/Γ_{31}

VALUE	DOCUMENT ID		TECN	COMMENT
0.089±0.013 OUR FIT	Error includes scale factor of 1.1.			
0.08 ±0.03	ANJOS [111]	91	E691	γBe 80–240 GeV

[111] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^0_S K^-\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{173}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.117±0.017 OUR FIT	Error includes scale factor of 1.1.				
0.119±0.021 OUR AVERAGE	Error includes scale factor of 1.3.				
0.108 ± 0.019	61	AMMAR	91	CLEO	$e^+e^-\approx$ 10.5 GeV
$0.16\pm0.03\pm0.02$	39	ALBRECHT	90C	ARG	$e^+e^-\approx$ 10 GeV

$\Gamma(\overline{K}^*(892)^0 K^0_S,$ $\overline{K}^*(892)^0 \to K^-\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{174}/Γ_{34}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.019	90	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.02	90	ALBRECHT	90C	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(K^0_S K^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{175}/Γ_{31}

VALUE	DOCUMENT ID		TECN	COMMENT
0.068±0.013 OUR FIT				
0.05 ±0.025	[112] ANJOS	91	E691	γ Be 80–240 GeV

[112] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^0_S K^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{175}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.089±0.017 OUR FIT					
0.098±0.020	55	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV

$\Gamma(K^*(892)^0 K^0_S,$ $K^*(892)^0 \to K^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{176}/Γ_{34}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.010	90	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV

$\Gamma(K^+K^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{177}/Γ_{49}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.37±0.03±0.04	11k±122	AUBERT,B	06X	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.95±0.26	151	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(K^*(892)^+ K^-,$ $K^*(892)^+ \to K^+\pi^0)/\Gamma(K^+K^-\pi^0)$ — $\Gamma_{178}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
44.4±0.8±0.6	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
46.1±3.1	[113] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[113] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma(K^*(892)^- K^+,$ $K^*(892)^- \to K^-\pi^0)/\Gamma(K^+K^-\pi^0)$ — $\Gamma_{179}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
15.9±0.7±0.6	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
12.3±2.2	[114] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[114] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma\big((K^+\pi^0)_{S-wave}K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{180}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
71.1±3.7±1.9	[115] AUBERT	07T	BABR	Dalitz fit II, 11k evts

[115] The only major difference between fits I and II in the AUBERT 07T analysis is in this mode, where the fit-I fraction is (16.3 ± 3.4 ± 2.1)%.

$\Gamma\big((K^-\pi^0)_{S-wave}K^+\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{181}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.9±0.9±1.0	AUBERT	07T	BABR	Dalitz fit II, 11k evts

$\Gamma\big(f_0(980)\pi^0,\ f_0\to K^+K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{182}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
10.5±1.1±1.2	[116] AUBERT	07T	BABR	Dalitz fit II, 11k evts

[116] When AUBERT 07T replace the $f_0(980)\pi^0$ mode with $a_0(980)\pi^0$, the fit fraction is a negligibly different (11.0 ± 1.5 ± 1.2)%.

$\Gamma\big(\phi\pi^0,\ \phi\to K^+K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{183}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
19.4±0.6±0.5	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
14.9±1.6	[117] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[117] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma\big(K^+K^-\pi^0\,\text{nonresonant}\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{184}/\Gamma_{177}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.360±0.037	[118] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[118] The error is statistical only. CAWLFIELD 06A also fits the Dalitz plot replacing this flat nonresonant background with broad S−wave $\kappa^\pm \to K^\pm\pi^0$ resonances. There is no significant improvement in the fit, and $K^{*\pm}K^\mp$ and $\phi\pi^0$ results are not much changed.

$\Gamma\big(2K^0_S\pi^0\big)/\Gamma_{\text{total}}$ — Γ_{185}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
<0.00059	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma\big(\phi\pi^0\big)/\Gamma\big(K^+K^-\big)$ — $\Gamma_{198}/\Gamma_{171}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.194±0.006±0.009	1254	TAJIMA	04	BELL	e^+e^- at $\Upsilon(4S)$

$\Gamma\big(\phi\eta\big)/\Gamma\big(K^+K^-\big)$ — $\Gamma_{199}/\Gamma_{171}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.59±1.14±0.18	31	TAJIMA	04	BELL	e^+e^- at $\Upsilon(4S)$

$\Gamma(\phi\omega)/\Gamma_{total}$ — Γ_{200}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0021	90	ALBRECHT	94I	ARG	$e^+e^- \approx 10$ GeV

$\Gamma(K^+K^-\pi^+\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{186}/Γ_{61}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.00±0.13 OUR AVERAGE					
2.95±0.11±0.08	2669 ± 101	[119] LINK	05G	FOCS	γBe, $\overline{E}_\gamma \approx 180$ GeV
3.13±0.37±0.36	136 ± 15	AITALA	98D	E791	π^- nucleus, 500 GeV
3.5 ±0.4 ±0.2	244 ± 26	FRABETTI	95C	E687	γBe, $\overline{E}_\gamma \approx 200$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.4 ±1.8 ±0.5	19 ± 8	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
4.1 ±0.7 ±0.5	114 ± 20	ALBRECHT	94I	ARG	$e^+e^- \approx 10$ GeV
3.14±1.0	89 ± 29	AMMAR	91	CLEO	$e^+e^- \approx 10.5$ GeV
2.8 $^{+0.8}_{-0.7}$		ANJOS	91	E691	γBe 80–240 GeV

[119] LINK 05G uses a smaller, cleaner subset of 1279 ± 48 events for the amplitude analysis that gives the results in the next data blocks.

$\Gamma(\phi\pi^+\pi^-\text{ 3-body}, \phi\to K^+K^-)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{187}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.01±0.01	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(\phi\rho^0, \phi\to K^+K^-)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{188}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.29±0.02 ±0.01	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(K^+K^-\rho^0\text{ 3-body})/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{189}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.02±0.02 ±0.02	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(f_0(980)\pi^+\pi^-, f_0\to K^+K^-)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{190}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.15±0.03±0.02	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(K^*(892)^0K^\mp\pi^\pm\text{ 3-body}, K^{*0}\to K^\pm\pi^\mp)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{191}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.11±0.02 ±0.01	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(K^*(892)^0\overline{K}^*(892)^0, K^{*0}\to K^\pm\pi^\mp)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{192}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.03±0.02 ±0.01	LINK	05G	FOCS	1279 ± 48 $K^+K^-\pi^+\pi^-$ evts.

$\Gamma(K_1(1270)^\pm K^\mp, K_1(1270)^\pm \to K^\pm \pi^+ \pi^-)/\Gamma(K^+ K^- \pi^+ \pi^-)$ — $\Gamma_{193}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.33±0.06±0.04	[120] LINK	05G	FOCS	1279 ± 48 $K^+ K^- \pi^+ \pi^-$ evts.

[120] This LINK 05G value includes $K_1(1270)^\pm \to \rho^0 K^\pm$, $\to K_0^*(1430)^0 \pi^\pm$, and $K^*(892)^0 \pi^\pm$.

$\Gamma(K_1(1400)^\pm K^\mp, K_1(1400)^\pm \to K^\pm \pi^+ \pi^-)/\Gamma(K^+ K^- \pi^+ \pi^-)$ — $\Gamma_{194}/\Gamma_{186}$

This is the fraction from a coherent amplitude analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.22±0.03±0.04	LINK	05G	FOCS	1279 ± 48 $K^+ K^- \pi^+ \pi^-$ evts.

$\Gamma(2K_S^0 \pi^+ \pi^-)/\Gamma(K_S^0 \pi^+ \pi^-)$ — Γ_{195}/Γ_{34}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.3 ±0.8 OUR AVERAGE					
4.16±0.70±0.42	113 ± 21	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV
6.2 ±2.0 ±1.6	25	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K_S^0 K^- 2\pi^+ \pi^-)/\Gamma(K_S^0 2\pi^+ 2\pi^-)$ — Γ_{196}/Γ_{81}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.054	90	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^+ K^- \pi^+ \pi^- \pi^0)/\Gamma_{total}$ — Γ_{197}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.0031±0.0020	[121] BARLAG	92C	ACCM	π^- Cu 230 GeV

[121] BARLAG 92C computes the branching fraction using topological normalization.

Radiative modes

$\Gamma(\rho^0 \gamma)/\Gamma_{total}$ — Γ_{201}/Γ

VALUE	CL%	DOCUMENT ID		TECN
<2.4 × 10^{-4}	90	ASNER	98	CLE2

$\Gamma(\omega \gamma)/\Gamma_{total}$ — Γ_{202}/Γ

VALUE	CL%	DOCUMENT ID		TECN
<2.4 × 10^{-4}	90	ASNER	98	CLE2

$\Gamma(\phi \gamma)/\Gamma(K^+ K^-)$ — $\Gamma_{203}/\Gamma_{171}$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
6.8 ±0.9 OUR FIT					
$6.31^{+1.70}_{-1.48}{}^{+0.30}_{-0.36}$	28	TAJIMA	04	BELL	$e^+ e^-$ at $\Upsilon(4S)$

$\Gamma(\phi \gamma)/\Gamma(K^- \pi^+)$ — Γ_{203}/Γ_{31}

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.9 ±0.9 OUR FIT					
7.15±0.78±0.69	243 ± 25	AUBERT	08AZ	BABR	$e^+ e^- \approx$ 10.6 GeV

$\Gamma(\overline{K}^*(892)^0\gamma)/\Gamma(K^-\pi^+)$ — Γ_{204}/Γ_{31}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
8.43±0.51±0.70	2286 ± 113	AUBERT	08AZ	BABR	$e^+e^- \approx 10.6$ GeV

Doubly Cabibbo-suppressed / Mixing modes

$\Gamma(K^+\ell^-\overline{\nu}_\ell \text{ via } \overline{D}^0)/\Gamma(K^-\ell^+\nu_\ell)$ — Γ_{205}/Γ_{17}

This is a limit on R_M without the complications of possible doubly Cabibbo-suppressed decays that occur when using hadronic modes. 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
< 6.1 × 10⁻⁴	90	[122] BITENC	08	BELL	e^+e^-, 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<50 \times 10^{-4}$	90	[123] AITALA	96C	E791	π^- nucleus, 500 GeV

[122] The BITENC 08 right-sign sample includes about 15% of $D^0 \to K^-\pi^0\ell^+\nu_\ell$ and other decays.

[123] AITALA 96C uses $D^{*+} \to D^0\pi^+$ (and charge conjugate) decays to identify the charm at production and $D^0 \to K^-\ell^+\nu_\ell$ (and charge conjugate) decays to identify the charm at decay.

$\Gamma(K^+ \text{ or } K^*(892)^+ e^-\overline{\nu}_e \text{ via } \overline{D}^0)/[\Gamma(K^-e^+\nu_e) + \Gamma(K^*(892)^-e^+\nu_e)]$ — $\Gamma_{206}/(\Gamma_{18}+\Gamma_{20})$

This is a limit on R_M without the complications of possible doubly Cabibbo-suppressed decays that occur when using hadronic modes. The experiments use $D^{*+} \to D^0\pi^+$ (and charge conjugate) decays to identify the charm at production and the charge of the e to identify the charm at decay. These limits do not allow CP violation. 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
<0.001	90	BITENC	05	BELL	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$-0.0013 < R < +0.0012$	90	AUBERT	07AB	BABR	$e^+e^- \approx$ 10.58 GeV
<0.0078	90	CAWLFIELD	05	CLEO	$e^+e^- \approx$ 10.6 GeV
<0.0042	90	AUBERT,B	04Q	BABR	See AUBERT 07AB

$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{207}/Γ_{31}

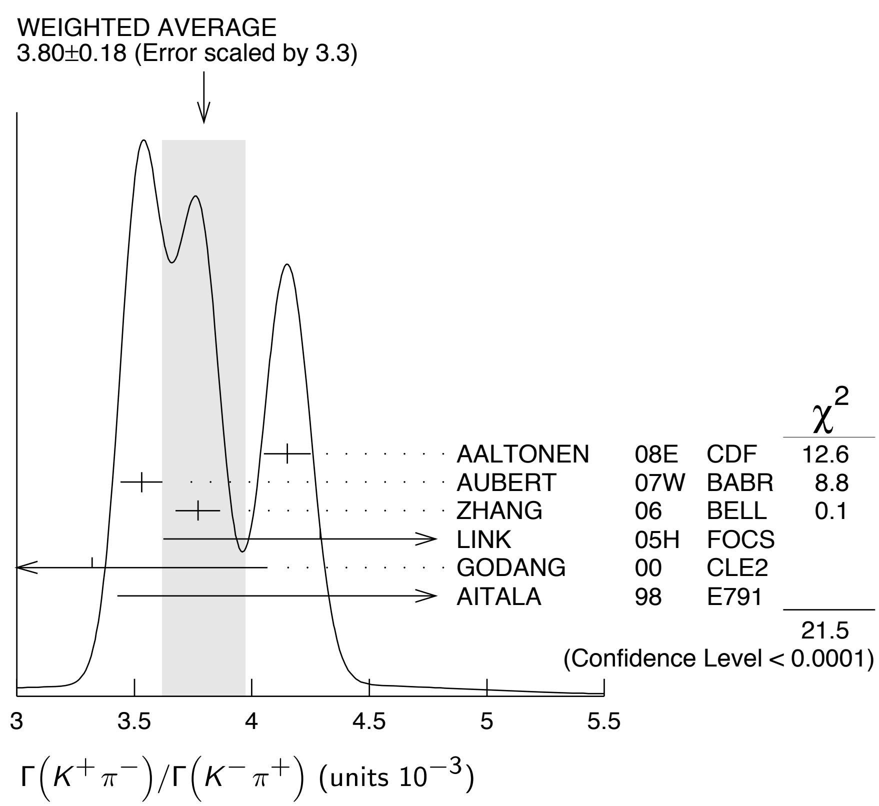
This is R, the time-integrated wrong-sign rate compared to the right-sign rate. See the note on "D^0-$\overline{D}^0$ Mixing," near the start of the D^0 Listings.

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\,\pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-$ 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. 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, G **33** 1 (2006)).

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.80±0.18 OUR AVERAGE	Error includes scale factor of 3.3. See the ideogram below.				
4.15 ± 0.10	12.7 ± 0.3k	[124] AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s}=1.96$ TeV
$3.53\pm0.08\pm0.04$	4030 ± 90	[125] AUBERT	07W	BABR	$e^+e^-\approx$ 10.6 GeV
$3.77\pm0.08\pm0.05$	4024 ± 88	[124] ZHANG	06	BELL	e^+e^-
$4.29^{+0.63}_{-0.61}\pm0.27$	234	[126] LINK	05H	FOCS	γ nucleus
$3.32^{+0.63}_{-0.65}\pm0.40$	45	[124] GODANG	00	CLE2	e^+e^-
$6.8\ ^{+3.4}_{-3.3}\ \pm0.7$	34	[125] AITALA	98	E791	π^- nucl., 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$4.05\pm0.21\pm0.11$	2.0 ± 0.1k	[127] ABULENCIA	06X	CDF	See AALTONEN 08E
$3.81\pm0.17^{+0.08}_{-0.16}$	845 ± 40	[125] LI	05A	BELL	See ZHANG 06
$3.57\pm0.22\pm0.27$		[128] AUBERT	03Z	BABR	See AUBERT 07W
$4.04\pm0.85\pm0.25$	149	[129] LINK	01	FOCS	γ nucleus

[124] GODANG 00, ZHANG 06, and AALTONEN 08E allow *CP* violation.
[125] AITALA 98, LI 05A, and AUBERT 07W assume no *CP* violation.
[126] This LINK 05H result assumes no mixing but allows *CP* violation. If neither mixing nor *CP* violation is allowed, $R = (4.29 \pm 0.63 \pm 0.28) \times 10^{-3}$.
[127] This ABULENCIA 06X result assumes no mixing.
[128] This AUBERT 03Z result allows *CP* violation. If *CP* violation is not allowed, $R = 0.00359 \pm 0.00020 \pm 0.00027$.
[129] This LINK 01 result assumes no mixing or *CP* violation.



$\Gamma(K^+\pi^- \text{ via DCS})/\Gamma(K^-\pi^+)$ — Γ_{208}/Γ_{31}

This is R_D, the doubly Cabibbo-suppressed ratio when mixing is allowed.

VALUE (units 10^{-3})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.37± 0.21 OUR AVERAGE			Error includes scale factor of 1.8. See the ideogram below.			
3.04± 0.55		12.7±0.3k	AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s}$ =1.96 TeV
3.03± 0.16±0.10		4030 ± 90	[130] AUBERT	07W	BABR	$e^+e^- \approx$ 10.6 GeV
3.64± 0.17		4024 ± 88	[131] ZHANG	06	BELL	e^+e^-
$5.17^{+1.47}_{-1.58}\pm0.76$		234	[132] LINK	05H	FOCS	γ nucleus
4.8 ± 1.2 ±0.4		45	[133] GODANG	00	CLE2	e^+e^-
• • • We do not use the 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		[134] AUBERT	03Z	BABR	See AUBERT 07W
$9.0\ ^{+12.0}_{-10.9}\ \pm4.4$		34	[135] AITALA	98	E791	π^- nucl., 500 GeV

[130] This AUBERT 07W result is the same whether or not *CP* violation is allowed.

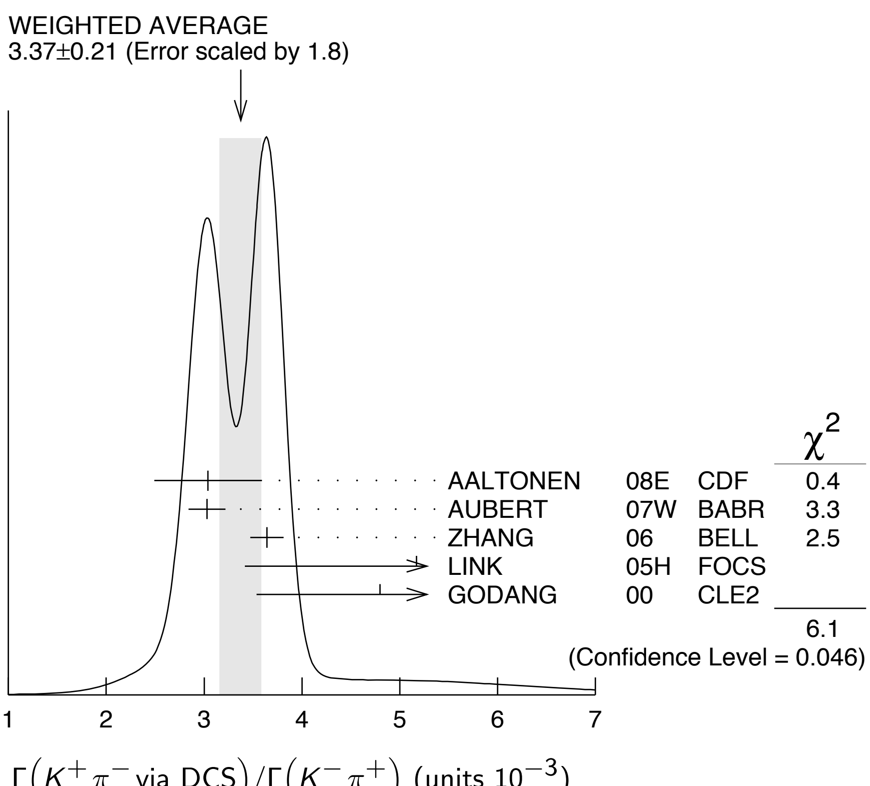
[131] This ZHANG 06 assumes no *CP* violation.

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

[133] This GODANG 00 result allows *CP* violation.

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

[135] This AITALA 98 result assumes no *CP* violation.



$\Gamma(K^+\pi^- \text{ via } \overline{D}^0)/\Gamma(K^-\pi^+)$ Γ_{209}/Γ_{31}

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 $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\ \pi^\pm$ 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%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.00040	95		[136] ZHANG	06	BELL	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.00046	95		[137] LI	05A	BELL	See ZHANG 06
<0.0063	95		[138] LINK	05H	FOCS	γ nucleus
<0.0013	95		[139] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
<0.00041	95		[140] GODANG	00	CLE2	e^+e^-
<0.0092	95		[141] BARATE	98W	ALEP	e^+e^- at Z^0
<0.005	90	1 ± 4	[142] ANJOS	88C	E691	Photoproduction

[136] This ZHANG 06 result allows *CP* violation, but the result does not change if *CP* violation is not allowed.

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

[138] LINK 05H obtains the same result whether or not *CP* violation is allowed.

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

[140] This GODANG 00 result allows *CP* violation and assumes that the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is small, and limits only $D^0 \to \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is 0.0017.

[141] 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).

[142] This ANJOS 88C 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 0.019.

$\Gamma(K^0_S\pi^+\pi^- \text{ in } D^0 \to \overline{D}^0)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{210}/Γ_{34}

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 $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\ \pi^\pm$ 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	[143] ASNER	05	CLEO	$e^+e^- \approx$ 10 GeV

[143] This ASNER 05 limit allows *CP* violation. If *CP* violation is not allowed, the limit is 0.0042 at 95% CL.

$\Gamma(K^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{214}/Γ_{49}

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

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.20±0.10 OUR AVERAGE					
$2.14\pm0.08\pm0.08$	763 ± 51	[144] AUBERT,B	06N	BABR	$e^+e^- \approx \Upsilon(4S)$
$2.29\pm0.15^{+0.13}_{-0.09}$	1978 ± 104	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$
$4.3\ ^{+1.1}_{-1.0}\ \pm0.7$	38	BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

[144] This AUBERT,B 06N result assumes no mixing.

$\Gamma(K^+\pi^-\pi^0\,\text{via}\,\overline{D}^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{215}/Γ_{49}

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 $D^*(2010)^\pm \to (D^0$ 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*
$\mathbf{5.25^{+0.25}_{-0.31}\pm0.12}$		AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.54	95	[145] AUBERT,B	06N	BABR	$e^+e^- \approx \Upsilon(4S)$

[145] 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 $(1.0^{+2.2}_{-0.7} \pm 0.3) \times 10^{-4}$.

$\Gamma(K^+\pi^+2\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{216}/Γ_{61}

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-\pi^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-\pi^+\pi^-$ 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*
$\mathbf{3.24^{+0.25}_{-0.22}}$ **OUR AVERAGE**						
$3.20\pm0.18^{+0.18}_{-0.13}$		1721 ± 75	[146] TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$
$4.4\ ^{+1.3}_{-1.2}\ \pm0.4$		54	[146] DYTMAN	01	CLE2	$e^+e^- \approx \Upsilon(4S)$
$2.5\ ^{+3.6}_{-3.4}\ \pm0.3$			[147] AITALA	98	E791	π^- nucl., 500 GeV

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

<18	90		[146] AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
<18	90	5 ± 12	[148] ANJOS	88C	E691	Photoproduction

[146] AMMAR 91 cannot and DYTMAN 01 and TIAN 05 do not distinguish between doubly Cabibbo-suppressed decay and D^0-$\overline{D}^0$ mixing.

[147] This AITALA 98 result 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.

[148] 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.

$\Gamma(K^+\pi^+2\pi^- \text{ via } \overline{D}^0)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{217}/Γ_{61}

This is a D^0-$\overline{D}^0$ mixing limit. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\,\pi^\pm$ 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.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.005	90	0 ± 4	[149] ANJOS	88C	E691	Photoproduction

[149] 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.

$\Gamma(K^+\pi^- \text{ or } K^+\pi^+2\pi^- \text{ via } \overline{D}^0)/\Gamma(K^-\pi^+ \text{ or } K^-2\pi^+\pi^-)$ — Γ_{218}/Γ_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	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0085	90	[150] AITALA	98	E791	π^- nucleus, 500 GeV
<0.0037	90	[151] ANJOS	88C	E691	Photoproduction

[150] 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 $0.0039^{+0.0036}_{-0.0032} \pm 0.0016$. When interference is disallowed, the result becomes $0.0021 \pm 0.0009 \pm 0.0002$.

[151] 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.

$\Gamma(\mu^- \text{ anything via } \overline{D}^0)/\Gamma(\mu^+ \text{ anything})$ — Γ_{219}/Γ_6

This is a D^0-$\overline{D}^0$ mixing limit. See the somewhat better limits above.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0056	90	LOUIS	86	SPEC	π^- W 225 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	BENVENUTI	85	CNTR	μC, 200 GeV
<0.044	90	BODEK	82	SPEC	π^-, pFe $\to$ D^0

Rare or forbidden modes

$\Gamma(\gamma\gamma)/\Gamma(2\pi^0)$ — $\Gamma_{220}/\Gamma_{127}$

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.033	90	COAN	03	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(e^+e^-)/\Gamma_{total}$ — Γ_{221}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.2 \times 10^{-6}$	90	3	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<8.19 \times 10^{-6}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<6.2 \times 10^{-6}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$<1.3 \times 10^{-5}$	90	0	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<1.3 \times 10^{-4}$	90		ADLER	88	MRK3	e^+e^- 3.77 GeV
$<1.7 \times 10^{-4}$	90	7	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$<2.2 \times 10^{-4}$	90	8	HAAS	88	CLEO	e^+e^- 10 GeV

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$ — Γ_{222}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.3 \times 10^{-6}$	90	1	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<2.0 \times 10^{-6}$	90		ABT	04	HERB	pA, 920 GeV
$<2.5 \times 10^{-6}$	90		ACOSTA	03F	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
$<1.56 \times 10^{-5}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<5.2 \times 10^{-6}$	90		AITALA	99G	E791	$\pi^- N$ 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	p Si, 800 GeV
$<3.4 \times 10^{-5}$	90	1	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<7.6 \times 10^{-6}$	90	0	ADAMOVICH	95	BEAT	See ADAMOVICH 97
$<4.4 \times 10^{-5}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<3.1 \times 10^{-5}$	90		[152] MISHRA	94	E789	-4.1 ± 4.8 events
$<7.0 \times 10^{-5}$	90	3	ALBRECHT	88G	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. $\mu^- N$

[152] Here MISHRA 94 uses "the statistical approach advocated by the PDG." For an alternate approach, giving a limit of 9×10^{-6} at 90% confidence level, see the paper.

$\Gamma(\pi^0 e^+e^-)/\Gamma_{total}$ — Γ_{223}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<4.5 \times 10^{-5}$	90	0	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\pi^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{224}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-4}	90	2	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<5.4 \times 10^{-4}$	90	3	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^+ e^-)/\Gamma_{total}$ — Γ_{225}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-4}	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\eta \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{226}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<5.3 × 10^{-4}	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+ \pi^- e^+ e^-)/\Gamma_{total}$ — Γ_{227}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<3.73 × 10^{-4}	90	9	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^+ e^-)/\Gamma_{total}$ — Γ_{228}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-4}	90	2	[153] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.24 \times 10^{-4}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV
$<4.5 \times 10^{-4}$	90	2	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[153] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.8 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{229}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-5}	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{230}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<2.2 × 10^{-5}	90	0	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<4.9 \times 10^{-4}$	90	1	[154] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$<2.3 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<8.1 \times 10^{-4}$	90	5	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[154] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 4.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\omega e^+ e^-)/\Gamma_{total}$ — Γ_{231}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.8 \times 10^{-4}$	90	1	[155] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[155] 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.

$\Gamma(\omega \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{232}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<8.3 \times 10^{-4}$	90	0	[156] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[156] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 6.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ e^+ e^-)/\Gamma_{total}$ — Γ_{233}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.15 \times 10^{-4}$	90	9	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^+ e^-)/\Gamma_{total}$ — Γ_{234}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<5.2 \times 10^{-5}$	90	2	[157] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.9 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV

[157] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 7.6 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{235}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.3 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{236}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.1 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.1 \times 10^{-4}$	90	0	[158] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[158] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.4 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^+ e^-)/\Gamma_{total}$ — Γ_{237}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.7 \times 10^{-3}$	90		ADLER	89C	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{238}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.6 \times 10^{-4}$	90	2	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<6.7 \times 10^{-4}$	90	1	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^- \pi^+ e^+ e^-)/\Gamma_{total}$ — Γ_{239}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.85 \times 10^{-4}$	90	6	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^+ e^-)/\Gamma_{total}$ — Γ_{240}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<4.7 \times 10^{-5}$	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.4 \times 10^{-4}$	90	1	[159] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[159] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.0 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^- \pi^+ \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{241}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.59 \times 10^{-4}$	90	12	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{242}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.4 \times 10^{-5}$	90	3	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.18 \times 10^{-3}$	90	1	[160] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[160] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.0 \times 10^{-3}$ using a photon pole amplitude model.

$\Gamma(\pi^+\pi^-\pi^0\mu^+\mu^-)/\Gamma_{total}$ — Γ_{243}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<8.1 \times 10^{-4}$	90	1	KODAMA	95	E653	π^- emulsion 600 GeV

$\Gamma(\mu^\pm e^\mp)/\Gamma_{total}$ — Γ_{244}/Γ

A test of lepton family number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$< 8.1 \times 10^{-7}$	90	0	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$< 1.72 \times 10^{-5}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$< 8.1 \times 10^{-6}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$< 1.9 \times 10^{-5}$	90	2	[161] FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$< 1.0 \times 10^{-4}$	90	4	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$< 2.7 \times 10^{-4}$	90	9	HAAS	88	CLEO	e^+e^- 10 GeV
$< 1.2 \times 10^{-4}$	90		BECKER	87C	MRK3	e^+e^- 3.77 GeV
$< 9 \times 10^{-4}$	90		PALKA	87	SILI	200 GeV πp
$<21 \times 10^{-4}$	90	0	[162] RILES	87	MRK2	e^+e^- 29 GeV

[161] This is the corrected result given in the erratum to FREYBERGER 96.
[162] RILES 87 assumes B($D \to K\pi$) = 3.0% and has production model dependency.

$\Gamma(\pi^0 e^\pm\mu^\mp)/\Gamma_{total}$ — Γ_{245}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<8.6 \times 10^{-5}$	90	2	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^\pm\mu^\mp)/\Gamma_{total}$ — Γ_{246}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+\pi^- e^\pm\mu^\mp)/\Gamma_{total}$ — Γ_{247}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.5 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^\pm\mu^\mp)/\Gamma_{total}$ — Γ_{248}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<4.9 \times 10^{-5}$	90	0	[163] FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<6.6 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

[163] 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.

$\Gamma(\omega e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{249}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.2\times10^{-4}$	90	0	[164] FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

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

$\Gamma(K^- K^+ e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{250}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.8\times10^{-4}$	90	5	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{251}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.4\times10^{-5}$	90	0	[165] FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.7\times10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV

[165] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 3.3\times10^{-5}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{252}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.0\times10^{-4}$	90	0	FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(K^-\pi^+ e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{253}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<5.53\times10^{-4}$	90	15	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^{\pm}\mu^{\mp})/\Gamma_{total}$ — Γ_{254}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<8.3\times10^{-5}$	90	9	AITALA 01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.0\times10^{-4}$	90	0	[166] FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

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

$\Gamma(2\pi^- 2e^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{255}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.12\times10^{-4}$	90	1	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(2\pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{256}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.9 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{257}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.06 \times 10^{-4}$	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{258}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.9 \times 10^{-4}$	90	14	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(2K^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{259}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.52 \times 10^{-4}$	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(2K^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{260}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<9.4 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\pi^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{261}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<7.9 \times 10^{-5}$	90	4	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{262}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.18 \times 10^{-4}$	90	7	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(2K^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{263}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<5.7 \times 10^{-5}$	90	0	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(p e^-)/\Gamma_{\text{total}}$ Γ_{264}/Γ

A test of baryon- and lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-5}$	90	[167] RUBIN	09	CLEO	$e^+ e^-$ at $\psi(3770)$

[167] This RUBIN 09 limit is for either $D^0 \rightarrow p e^-$ or $\overline{D}^0 \rightarrow p e^-$ decay.

$\Gamma(\overline{p} e^+)/\Gamma_{total}$ Γ_{265}/Γ

A test of baryon- and lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-5}	90	[168] RUBIN	09	CLEO	$e^+ e^-$ at $\psi(3770)$

[168] This RUBIN 09 limit is for either $D^0 \rightarrow \overline{p} e^+$ or $\overline{D}^0 \rightarrow \overline{p} e^+$ decay.

D^0 *CP*-VIOLATING DECAY-RATE ASYMMETRIES

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \rightarrow D^0 \pi^+$ and $D^{*-} \rightarrow \overline{D}^0 \pi^-$.

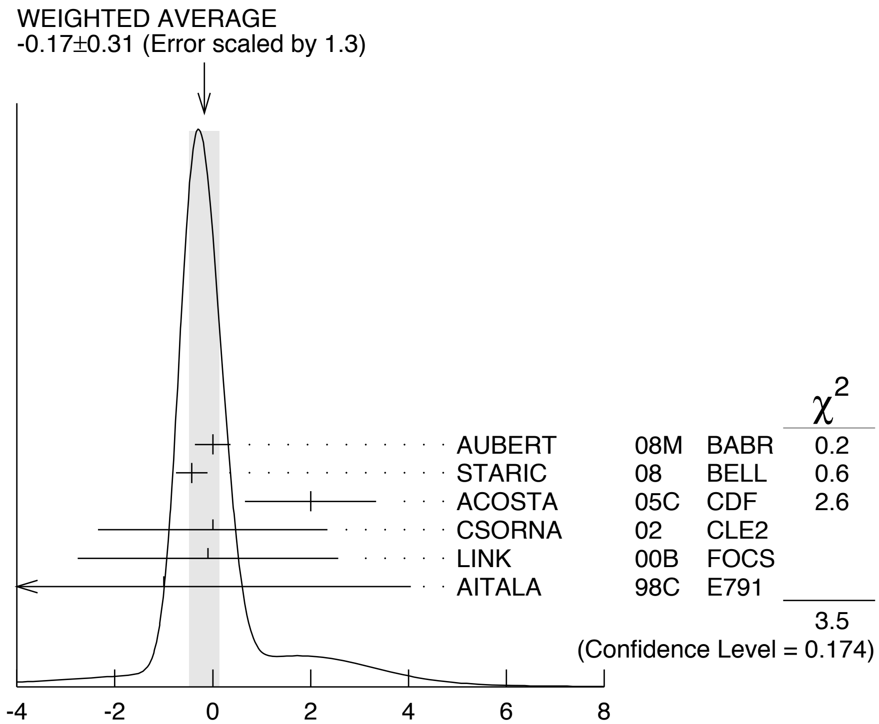
$A_{CP}(K^+ K^-)$ in D^0, $\overline{D}^0 \rightarrow K^+ K^-$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−0.17±0.31 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
0.00±0.34±0.13	129k	[169] AUBERT	08M	BABR	$e^+ e^- \approx$ 10.6 GeV
−0.43±0.30±0.11	120k	[170] STARIC	08	BELL	$e^+ e^- \approx \Upsilon(4S)$
+2.0 ±1.2 ±0.6		[171] ACOSTA	05C	CDF	$p \overline{p}$, $\sqrt{s}$=1.96 TeV
0.0 ±2.2 ±0.8	3023	[171] CSORNA	02	CLE2	$e^+ e^- \approx \Upsilon(4S)$
−0.1 ±2.2 ±1.5	3330	[171] LINK	00B	FOCS	
−1.0 ±4.9 ±1.2	609	[171] AITALA	98C	E791	$-0.093 < A_{CP} < +0.073$ (90% CL)

[169] AUBERT 08M uses corrected numbers of events directly, not ratios with $K^{\mp} \pi^{\pm}$ events.

[170] STARIC 08 uses $D^0 \rightarrow K^- \pi^+$ and $\overline{D}^0 \rightarrow K^+ \pi^-$ decays to correct for detector-induced asymmetries.

[171] AITALA 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 $\overline{D}^0$.



$A_{CP}(K^+K^-)$ in D^0, $\overline{D}^0 \rightarrow K^+K^-$ (units 10^{-2})

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

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
−0.23±0.19	65	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV

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

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.2 ±0.4 OUR AVERAGE					
−0.24±0.52±0.22	63.7k	[172] AUBERT	08M	BABR	$e^+e^- \approx$ 10.6 GeV
+0.43±0.52±0.12	51k	[173] STARIC	08	BELL	$e^+e^- \approx \Upsilon(4S)$
+1.0 ±1.3 ±0.6		[174] ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
+1.9 ±3.2 ±0.8	1136	[174] CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
+4.8 ±3.9 ±2.5	1177	[174] LINK	00B	FOCS	
−4.9 ±7.8 ±3.0	343	[174] AITALA	98C	E791	$-0.186 < A_{CP} < +0.088$ (90% CL)

[172] AUBERT 08M uses corrected numbers of events directly, not ratios with $K^{\mp}\pi^{\pm}$ events.

[173] STARIC 08 uses $D^0 \rightarrow K^-\pi^+$ and $\overline{D}^0 \rightarrow K^+\pi^-$ decays to correct for detector-induced asymmetries.

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

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

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
+0.001±0.048	810	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV

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

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.3 ±0.4 OUR AVERAGE					
+0.43±1.30	123k±490	ARINSTEIN	08	BELL	$e^+e^- \approx \Upsilon(4S)$
+0.31±0.41±0.17	80 ± .3k	AUBERT	08AO	BABR	$e^+e^- \approx$ 10.6 GeV
$+1 \ ^{+9}_{-7} \ \pm 5$		CRONIN-HEN..05		CLEO	$e^+e^- \approx$ 10 GeV

$A_{CP}(\rho(770)^+\pi^- \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho^+\pi^-$, $\overline{D}^0 \rightarrow \rho^-\pi^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+1.6±1.1±0.4	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(770)^0\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow \rho^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.6±1.4±0.6	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(770)^-\pi^+ \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho^-\pi^+$, $\overline{D}^0 \rightarrow \rho^+\pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.7±1.1±0.5	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1450)^+\pi^- \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho(1450)^+\pi^-$, $\overline{D}^0 \rightarrow \rho(1450)^-\pi^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.0±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1450)^0\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow \rho(1450)^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.1±0.2 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1450)^-\pi^+ \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho(1450)^-\pi^+$, $\overline{D}^0 \rightarrow \rho(1450)^+\pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.2±0.3 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1700)^+\pi^- \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho(1700)^+\pi^-$, $\overline{D}^0 \rightarrow \rho(1700)^-\pi^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.4±1.0±0.4	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1700)^0\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow \rho(1700)^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+1.3±0.8±0.3	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\rho(1700)^-\pi^+ \rightarrow \pi^+\pi^-\pi^0)$ in $D^0 \rightarrow \rho(1700)^-\pi^+$, $\overline{D}^0 \rightarrow \rho(1700)^+\pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.5±0.6±0.3	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_0(980)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow f_0(980)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.0±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_0(1370)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow f_0(1370)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.2±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_0(1500)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow f_0(1500)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.0±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_0(1710)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow f_0(1710)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.0±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_2(1270)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow f_2(1270)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.1±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\sigma(400)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow \sigma(400)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.1±0.1 ±0.1	AUBERT	08AO	BABR	Dalitz fit-fraction difference

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

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.2±0.3±0.2	AUBERT	08AO	BABR	Dalitz fit-fraction difference

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

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−1.00±1.67±0.25	11 ± 0.11k	AUBERT	08AO	BABR	$e^+e^- \approx$ 10.6 GeV

$A_{CP}(K^*(892)^+K^- \rightarrow K^+K^-\pi^0)$ in $D^0 \rightarrow K^*(892)^+K^-$, $\overline{D}^0 \rightarrow K^*(892)^-K^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.8±1.1±0.4	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(K^*(1410)^+K^- \rightarrow K^+K^-\pi^0)$ in $D^0 \rightarrow K^*(1410)^+K^-$, $\overline{D}^0 \rightarrow K^*(1410)^-K^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.7±1.8±0.6	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}((K^+\pi^0)_{S-wave}K^- \rightarrow K^+K^-\pi^0)$ in $D^0 \rightarrow (K^+\pi^0)_S K^-$, $\overline{D}^0 \rightarrow (K^-\pi^0)_S K^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+2.3±4.7±1.0	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(\phi(1020)\pi^0 \to K^+K^-\pi^0)$ in D^0, $\overline{D}^0 \to \phi(1020)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.4±0.8±0.2	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_0(980)\pi^0 \to K^+K^-\pi^0)$ in D^0, $\overline{D}^0 \to f_0(980)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.4±2.6±0.2	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(a_0(980)^0\pi^0 \to K^+K^-\pi^0)$ in D^0, $\overline{D}^0 \to a_0(980)^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.6±1.9±0.2	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(f_2'(1525)\pi^0 \to K^+K^-\pi^0)$ in D^0, $\overline{D}^0 \to f_2'(1525)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.0±0.1 ±0.3	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(K^*(892)^-K^+ \to K^+K^-\pi^0)$ in $D^0 \to K^*(892)^-K^+$, $\overline{D}^0 \to K^*(892)^+K^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.7±1.3±0.4	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}(K^*(1410)^-K^+ \to K^+K^-\pi^0)$ in $D^0 \to K^*(1410)^-K^+$, $\overline{D}^0 \to K^*(1410)^+K^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.7±2.8±0.7	AUBERT	08AO	BABR	Dalitz fit-fraction difference

$A_{CP}((K^-\pi^0)_{S-wave}K^+ \to K^+K^-\pi^0)$ in $D^0 \to (K^-\pi^0)_S K^+$, $\overline{D}^0 \to (K^+\pi^0)_S K^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.4±2.4±0.5	AUBERT	08AO	BABR	Dalitz fit-fraction difference

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

VALUE	DOCUMENT ID		TECN	COMMENT
−0.028±0.094	BARTELT	95	CLE2	$-0.182 < A_{CP} < +0.126$ (90%CL)

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.001±0.013	9099	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.018±0.030		BARTELT	95	CLE2	See BONVICINI 01

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

VALUE	DOCUMENT ID		TECN	COMMENT
−0.004±0.005±0.009	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.022±0.032 OUR AVERAGE					
$-0.021\pm0.052\pm0.015$	4030 ± 90	AUBERT	07W	BABR	$e^+e^- \approx$ 10.6 GeV
$+0.023\pm0.047$	4024 ± 88	[175] ZHANG	06	BELL	e^+e^-
$+0.18\ \pm0.14\ \pm0.04$		[176] LINK	05H	FOCS	γ nucleus
$+0.095\pm0.061\pm0.083$		[177] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
$+0.02\ ^{+0.19}_{-0.20}\ \pm0.01$	45	[178] GODANG	00	CLE2	$-0.43 < A_{CP} < +0.34$ (95%CL)

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

-0.080 ± 0.077	845 ± 40	[179] LI	05A	BELL	See ZHANG 06

[175] This ZHANG 06 result allows mixing.

[176] This LINK 05H result assumes no mixing. If mixing is allowed, it becomes $0.13^{+0.33}_{-0.25}\pm$ 0.10.

[177] This AUBERT 03Z limit assumes no mixing. If mixing is allowed, the 95% confidence-level interval is $(-2.8 < A_D < 4.9)\times10^{-3}$.

[178] This GODANG 00 result assumes no D^0-$\overline{D}^0$ mixing; it becomes $-0.01^{+0.16}_{-0.17}\pm0.01$ when mixing is allowed.

[179] This LI 05A result allows mixing.

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.002±0.009 OUR AVERAGE				
$+0.002\pm0.004\pm0.008$	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
-0.031 ± 0.086	[180] KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV

[180] KOPP 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 $D^0 \to K^+\pi^-\pi^0$, $\overline{D}^0 \to K^-\pi^+\pi^0$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.00 ±0.05 OUR AVERAGE					
-0.006 ± 0.053	1978 ± 104	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$
$+0.09\ ^{+0.25}_{-0.22}$	38	BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{-0.009\pm0.021^{+0.016}_{-0.057}}$	4854	[181] ASNER	04A	CLEO	$e^+e^- \approx$ 10 GeV

[181] 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 $\overline{D}^0 \to K^0_S\pi^+\pi^-$ Dalitz plots. These limits range from $< 3.5\times10^{-4}$ to 28.4×10^{-4} at 95% CL.

$A_{CP}(K^*(892)^{\mp}\pi^{\pm} \to K^0_S\pi^+\pi^-)$ in $D^0 \to K^{*-}\pi^+$, $\overline{D}^0 \to K^{*+}\pi^-$

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<3.5	95	[182] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[182] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \to K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^*(892)^{\pm}\pi^{\mp} \rightarrow K^0_S\pi^+\pi^-)$ in $D^0 \rightarrow K^{*+}\pi^-$, $\overline{D}^0 \rightarrow K^{*-}\pi^+$

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<7.8	95	[183] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[183] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

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

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<4.8	95	[184] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[184] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

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

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<9.2	95	[185] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[185] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^0_S f_0(980) \rightarrow K^0_S\pi^+\pi^-)$ in $D^0 \rightarrow \overline{K}^0 f_0(980)$, $\overline{D}^0 \rightarrow K^0 f_0(980)$

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<6.8	95	[186] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[186] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^0_S f_2(1270) \rightarrow K^0_S\pi^+\pi^-)$ in $D^0 \rightarrow \overline{K}^0 f_2(1270)$, $\overline{D}^0 \rightarrow K^0 f_2(1270)$

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<13.5	95	[187] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[187] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^0_S f_0(1370) \rightarrow K^0_S\pi^+\pi^-)$ in $D^0 \rightarrow \overline{K}^0 f_0(1370)$, $\overline{D}^0 \rightarrow K^0 f_0(1370)$

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<25.5	95	[188] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[188] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^*_0(1430)^{\mp}\pi^{\pm} \rightarrow K^0_S\pi^+\pi^-)$ in $D^0 \rightarrow K^*_0(1430)^-\pi^+$, $\overline{D}^0 \rightarrow K^*_0(1430)^+\pi^-$

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<9.0	95	[189] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[189] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K_2^*(1430)^\mp\pi^\pm \rightarrow K_S^0\pi^+\pi^-)$ in $D^0 \rightarrow K_2^*(1430)^-\pi^+$, $\overline{D}^0 \rightarrow K_2^*(1430)^+\pi^-$

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<6.5	95	[190] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[190] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K_S^0\pi^+\pi^-$ Dalitz plots.

$A_{CP}(K^*(1680)^\mp\pi^\pm \rightarrow K_S^0\pi^+\pi^-)$ in $D^0 \rightarrow K^*(1680)^-\pi^+$, $\overline{D}^0 \rightarrow K^*(1680)^+\pi^-$

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<28.4	95	[191] ASNER	04A	CLEO	Dalitz fit, 4854 $D^0+\overline{D}^0$ evts

[191] This ASNER 04A limit comes from an amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K_S^0\pi^+\pi^-$ Dalitz plots.

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

VALUE	DOCUMENT ID		TECN	COMMENT
+0.007±0.005±0.009	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.018±0.044	1721 ± 75	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.082±0.056±0.047	828 ± 46	LINK	05E	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

D^0-$\overline{D}^0$ *T*-VIOLATING DECAY-RATE ASYMMETRIES

D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \rightarrow D^0\pi^+$ and $D^{*-} \rightarrow D^0\pi^-$.

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

$C_T \equiv \vec{p}_{K^+} \cdot (\vec{p}_{\pi^+} \times \vec{p}_{\pi^-})$ is a *T*-odd correlation of the K^+, π^+, and π^- momenta 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 $\overline{D}^0$. $A_T \equiv [\Gamma(C_T > 0) - \Gamma(C_T < 0)] \,/\, [\Gamma(C_T > 0) + \Gamma(C_T < 0)]$ would, in the absence of strong phases, test for *T* violation in D^0 decays (the Γ's are partial widths). With $\overline{A}_T \equiv [\Gamma(-\overline{C}_T > 0) - \Gamma(-\overline{C}_T < 0)] \,/\, [\Gamma(-\overline{C}_T > 0) + \Gamma(-\overline{C}_T < 0)]$, the asymmetry $A_{Tviol} \equiv \frac{1}{2}(A_T - \overline{A}_T)$ tests for *T* violation even with nonzero strong phases.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.010±0.057±0.037	828 ± 46	LINK	05E	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

D^0 CPT-VIOLATING DECAY-RATE ASYMMETRIES

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

A_{CPT}(t) is defined in terms of the time-dependent decay probabilities $P(D^0 \to K^-\pi^+)$ and $\overline{P}(\overline{D}^0 \to K^+\pi^-)$ 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 $Im\,\xi$] 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	03B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$D^0 \to K^*(892)^-\ell^+\nu_\ell$ FORM FACTORS

$r_V \equiv V(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
1.71±0.68±0.34	LINK	05B	FOCS	$K^*(892)^-\mu^+\nu_\mu$

$r_2 \equiv A_2(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
0.91±0.37±0.10	LINK	05B	FOCS	$K^*(892)^-\mu^+\nu_\mu$

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

$f_+(0)|V_{cs}|$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
0.726±0.008±0.004	BESSON	09	CLEO	$K^-e^+\nu_e$ 3-parameter fit

$r_1 \equiv a_1/a_0$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
−2.65±0.34±0.08	BESSON	09	CLEO	$K^-e^+\nu_e$ 3-parameter fit

$r_2 \equiv a_1/a_0$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
13±9±1	BESSON	09	CLEO	$K^-e^+\nu_e$ 3-parameter fit

$f_+(0)|V_{cd}|$ in $D^0 \to \pi^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
0.152±0.005±0.001	BESSON	09	CLEO	$\pi^-e^+\nu_e$ 3-parameter fit

$r_1 \equiv a_1/a_0$ in $D^0 \to \pi^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
−2.80±0.49±0.04	BESSON	09	CLEO	$\pi^-e^+\nu_e$ 3-parameter fit

$r_2 \equiv a_1/a_0$ in $D^0 \to \pi^-\ell^+\nu_\ell$

VALUE	DOCUMENT ID		TECN	COMMENT
6±3 ±0	BESSON	09	CLEO	$\pi^-e^+\nu_e$ 3-parameter fit

D^0 REFERENCES

ANASHIN	10A	PL B686 84	V.V. Anashin *et al.*	(VEPP-4M KEDR Collab.)
ASNER	10	PR D81 052007	D.M. Asner *et al.*	(CLEO Collab.)
PDG	10	JPG 37 075021	K. Nakamura *et al.*	(PDG Collab.)
AUBERT	09AI	PR D80 071103R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	09AN	PRL 103 211801	B. Aubert *et al.*	(BABAR Collab.)
BESSON	09	PR D80 032005	D. Besson *et al.*	(CLEO Collab.)
Also		PR D79 052010	J.Y. Ge *et al.*	(CLEO Collab.)
LOWREY	09	PR D80 031105R	N. Lowrey *et al.*	(CLEO Collab.)
RUBIN	09	PR D79 097101	P. Rubin *et al.*	(CLEO Collab.)
ZUPANC	09	PR D80 052006	A. Zupanc *et al.*	(BELLE Collab.)
AALTONEN	08E	PRL 100 121802	T. Aaltonen *et al.*	(CDF Collab.)
ABLIKIM	08L	PL B665 16	M. Ablikim *et al.*	(BES Collab.)
ARINSTEIN	08	PL B662 102	K. Arinstein *et al.*	(BELLE Collab.)
ARTUSO	08	PR D77 092003	M. Artuso *et al.*	(CLEO Collab.)
ASNER	08	PR D78 012001	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT	08AL	PR D78 034023	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08AO	PR D78 051102R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08AZ	PR D78 071101R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08L	PRL 100 051802	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08M	PRL 100 061803	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08U	PR D78 011105R	B. Aubert *et al.*	(BABAR Collab.)
BITENC	08	PR D77 112003	U. Bitenc *et al.*	(BELLE Collab.)
BONVICINI	08	PR D77 091106R	G. Bonvicini *et al.*	(CLEO Collab.)
DOBBS	08	PR D77 112005	S. Dobbs *et al.*	(CLEO Collab.)
Also		PRL 100 251802	D. Cronin-Hennessy *et al.*	(CLEO Collab.)
GASPERO	08	PR D78 014015	M. Gaspero *et al.*	(ROMA, CINN, TELA)
HE	08	PRL 100 091801	Q. He *et al.*	(CLEO Collab.)
PDG	08	PL B667 1	C. Amsler *et al.*	(PDG Collab.)
STARIC	08	PL B670 190	M. Staric *et al.*	(BELLE Collab.)
ABLIKIM	07G	PL B658 1	M. Ablikim *et al.*	(BES Collab.)
ARTUSO	07A	PRL 99 191801	M. Artuso *et al.*	(CLEO Collab.)
AUBERT	07AB	PR D76 014018	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BG	PR D76 052005	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BJ	PRL 99 251801	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07T	PR D76 011102R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07W	PRL 98 211802	B. Aubert *et al.*	(BABAR Collab.)
CAWLFIELD	07	PRL 98 092002	C. Cawlfield *et al.*	(CLEO Collab.)
DOBBS	07	PR D76 112001	S. Dobbs *et al.*	(CLEO Collab.)
LINK	07A	PR D75 052003	J.M. Link *et al.*	(FNAL FOCUS Collab.)
STARIC	07	PRL 98 211803	M. Staric *et al.*	(BELLE Collab.)
ZHANG	07B	PRL 99 131803	L.M. Zhang *et al.*	(BELLE Collab.)
ABLIKIM	06O	EPJ C47 31	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06U	PL B643 246	M. Ablikim *et al.*	(BES Collab.)
ABULENCIA	06X	PR D74 031109R	A. Abulencia *et al.*	(CDF Collab.)
ADAM	06A	PRL 97 251801	N.E. Adam *et al.*	(CLEO Collab.)
AUBERT,B	06N	PRL 97 221803	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	06X	PR D74 091102R	B. Aubert *et al.*	(BABAR Collab.)
CAWLFIELD	06A	PR D74 031108R	C. Cawlfield *et al.*	(CLEO Collab.)
HUANG	06B	PR D74 112005	G.S. Huang *et al.*	(CLEO Collab.)
PDG	06	JPG 33 1	W.-M. Yao *et al.*	(PDG Collab.)
RUBIN	06	PRL 96 081802	P. Rubin *et al.*	(CLEO Collab.)
WIDHALM	06	PRL 97 061804	L. Widhalm *et al.*	(BELLE Collab.)
ZHANG	06	PRL 96 151801	L.M. Zhang *et al.*	(BELLE Collab.)
ABLIKIM	05F	PL B622 6	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05P	PL B625 196	M. Ablikim *et al.*	(BES Collab.)
ACOSTA	05C	PRL 94 122001	D. Acosta *et al.*	(FNAL CDF Collab.)
ASNER	05	PR D72 012001	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT,B	05J	PR D72 052008	B. Aubert *et al.*	(BABAR Collab.)
BITENC	05	PR D72 071101R	U. Bitenc *et al.*	(BELLE Collab.)
CAWLFIELD	05	PR D71 077101	C. Cawlfield *et al.*	(CLEO Collab.)
COAN	05	PRL 95 181802	T.E. Coan *et al.*	(CLEO Collab.)
CRONIN-HEN...	05	PR D72 031102R	D. Cronin-Hennessy *et al.*	(CLEO Collab.)
HE	05	PRL 95 121801	Q. He *et al.*	(CLEO Collab.)
Also		PRL 96 199903 (errat.)	Q. He *et al.*	(CLEO Collab.)
HUANG	05	PRL 94 011802	G.S. Huang *et al.*	(CLEO Collab.)
KAYIS-TOPAK...	05	PL B626 24	A. Kayis-Topaksu *et al.*	(CERN CHORUS Collab.)
LI	05A	PRL 94 071801	J. Li *et al.*	(BELLE Collab.)
LINK	05	PL B607 51	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05A	PL B607 59	J.M. Link *et al.*	(FNAL FOCUS Collab.)

LINK	05B	PL B607 67	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05E	PL B622 239	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05G	PL B610 225	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05H	PL B618 23	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ONENGUT	05	PL B613 105	G. Onengut *et al.*	(CERN CHORUS Collab.)
TIAN	05	PRL 95 231801	X.C. Tian *et al.*	(BELLE Collab.)
ABLIKIM	04C	PL B597 39	M. Ablikim *et al.*	(BEPC BES Collab.)
ABT	04	PL B596 173	I. Abt *et al.*	(HERA B Collab.)
ASNER	04A	PR D70 091101R	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT	04Q	PR D69 051101R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	04Q	PR D70 091102R	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	04Y	PRL 93 191801	B. Aubert *et al.*	(BaBar Collab)
LINK	04B	PL B586 21	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	04D	PL B586 191	J.M. Link *et al.*	(FNAL FOCUS Collab.)
RUBIN	04	PRL 93 111801	P. Rubin *et al.*	(CLEO Collab.)
TAJIMA	04	PRL 92 101803	O. Tajima *et al.*	(BELLE Collab.)
ACOSTA	03F	PR D68 091101R	D. Acosta *et al.*	(CDF Collab.)
AUBERT	03P	PRL 91 121801	B. Aubert *et al.*	(BaBar Collab.)
AUBERT	03Z	PRL 91 171801	B. Aubert *et al.*	(BaBar Collab.)
COAN	03	PRL 90 101801	T.E. Coan *et al.*	(CLEO Collab.)
LINK	03	PL B555 167	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	03B	PL B556 7	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	03G	PL B575 190	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ABE	02I	PRL 88 162001	K. Abe *et al.*	(KEK BELLE Collab.)
CSORNA	02	PR D65 092001	S.E. Csorna *et al.*	(CLEO Collab.)
LINK	02F	PL B537 192	J.M. Link *et al.*	(FNAL FOCUS Collab.)
MURAMATSU	02	PRL 89 251802	H. Muramatsu *et al.*	(CLEO Collab.)
Also		PRL 90 059901 (erratum)	H. Muramatsu *et al.*	(CLEO Collab.)
AITALA	01C	PRL 86 3969	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	01D	PR D64 112003	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	01	PR D63 071101R	G. Bonvicini *et al.*	(CLEO Collab.)
BRANDENB...	01	PRL 87 071802	G. Brandenburg *et al.*	(CLEO Collab.)
DYTMAN	01	PR D64 111101R	S.A. Dytman *et al.*	(CLEO Collab.)
KOPP	01	PR D63 092001	S. Kopp *et al.*	(CLEO Collab.)
KUSHNIR...	01	PRL 86 5243	A. Kushnirenko *et al.*	(FNAL SELEX Collab.)
LINK	01	PRL 86 2955	J.M. Link *et al.*	(FNAL FOCUS Collab.)
BAI	00C	PR D62 052001	J.Z. Bai *et al.*	(BEPC BES Collab.)
GODANG	00	PRL 84 5038	R. Godang *et al.*	(CLEO Collab.)
JUN	00	PRL 84 1857	S.Y. Jun *et al.*	(FNAL SELEX Collab.)
LINK	00	PL B485 62	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	00B	PL B491 232	J.M. Link *et al.*	(FNAL FOCUS Collab.)
Also		PL B495 443 (erratum)	J.M. Link *et al.*	(FNAL FOCUS Collab.)
PRIPSTEIN	00	PR D61 032005	D. Pripstein *et al.*	(FNAL E789 Collab.)
AITALA	99E	PRL 83 32	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	99G	PL B462 401	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	99	PRL 82 4586	G. Bonvicini *et al.*	(CLEO Collab.)
AITALA	98	PR D57 13	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98C	PL B421 405	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98D	PL B423 185	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ARTUSO	98	PRL 80 3193	M. Artuso *et al.*	(CLEO Collab.)
ASNER	98	PR D58 092001	D.M. Asner *et al.*	(CLEO Collab.)
BARATE	98W	PL B436 211	R. Barate *et al.*	(ALEPH Collab.)
COAN	98	PRL 80 1150	T.E. Coan *et al.*	(CLEO Collab.)
PDG	98	EPJ C3 1	C. Caso *et al.*	
ADAMOVICH	97	PL B408 469	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARATE	97C	PL B403 367	R. Barate *et al.*	(ALEPH Collab.)
AITALA	96C	PRL 77 2384	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ALBRECHT	96C	PL B374 249	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXOPOU...	96	PRL 77 2380	T. Alexopoulos *et al.*	(FNAL E771 Collab.)
ASNER	96B	PR D54 4211	D.M. Asner *et al.*	(CLEO Collab.)
BARISH	96	PL B373 334	B.C. Barish *et al.*	(CLEO Collab.)
FRABETTI	96B	PL B382 312	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FREYBERGER	96	PRL 76 3065	A. Freyberger *et al.*	(CLEO Collab.)
Also		PRL 77 2147 (erratum)	A. Freyberger *et al.*	(CLEO Collab.)
KUBOTA	96B	PR D54 2994	Y. Kubota *et al.*	(CLEO Collab.)
ADAMOVICH	95	PL B353 563	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARTELT	95	PR D52 4860	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.)
ALBRECHT	94F	PL B340 125	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	94I	ZPHY C64 375	H. Albrecht *et al.*	(ARGUS Collab.)
FRABETTI	94C	PL B321 295	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94D	PL B323 459	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94G	PL B331 217	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94J	PL B340 254	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	94	PL B336 605	K. Kodama *et al.*	(FNAL E653 Collab.)
MISHRA	94	PR D50 R9	C.S. Mishra *et al.*	(FNAL E789 Collab.)
AKERIB	93	PRL 71 3070	D.S. Akerib *et al.*	(CLEO Collab.)
ALBRECHT	93D	PL B308 435	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	93	PR D48 56	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BEAN	93C	PL B317 647	A. Bean *et al.*	(CLEO Collab.)
FRABETTI	93I	PL B315 203	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	93B	PL B313 260	K. Kodama *et al.*	(FNAL E653 Collab.)
PROCARIO	93B	PR D48 4007	M. Procario *et al.*	(CLEO Collab.)
SELEN	93	PRL 71 1973	M.A. Selen *et al.*	(CLEO Collab.)
ADAMOVICH	92	PL B280 163	M.I. Adamovich *et al.*	(CERN WA82 Collab.)
ALBRECHT	92P	ZPHY C56 7	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	92B	PR D46 R1	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	92C	PR D46 1941	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	92C	ZPHY C55 383	S. Barlag *et al.*	(ACCMOR Collab.)
Also		ZPHY C48 29	S. Barlag *et al.*	(ACCMOR Collab.)
COFFMAN	92B	PR D45 2196	D.M. Coffman *et al.*	(Mark III Collab.)
Also		PRL 64 2615	J. Adler *et al.*	(Mark III Collab.)
FRABETTI	92	PL B281 167	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	92B	PL B286 195	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
ALVAREZ	91B	ZPHY C50 11	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
AMMAR	91	PR D44 3383	R. Ammar *et al.*	(CLEO Collab.)
ANJOS	91	PR D43 R635	J.C. Anjos *et al.*	(FNAL-TPS Collab.)
ANJOS	91D	PR D44 R3371	J.C. Anjos *et al.*	(FNAL-TPS Collab.)
BAI	91	PRL 66 1011	Z. Bai *et al.*	(Mark III Collab.)
COFFMAN	91	PL B263 135	D.M. Coffman *et al.*	(Mark III Collab.)
CRAWFORD	91B	PR D44 3394	G. Crawford *et al.*	(CLEO Collab.)
DECAMP	91J	PL B266 218	D. Decamp *et al.*	(ALEPH Collab.)
FRABETTI	91	PL B263 584	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KINOSHITA	91	PR D43 2836	K. Kinoshita *et al.*	(CLEO Collab.)
KODAMA	91	PRL 66 1819	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	90C	ZPHY C46 9	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXANDER	90	PRL 65 1184	J. Alexander *et al.*	(CLEO Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
ANJOS	90D	PR D42 2414	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	90C	ZPHY C46 563	S. Barlag *et al.*	(ACCMOR Collab.)
ADLER	89	PRL 62 1821	J. Adler *et al.*	(Mark III Collab.)
ADLER	89C	PR D40 906	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	89D	ZPHY C43 181	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	89F	PRL 62 1587	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ABACHI	88	PL B205 411	S. Abachi *et al.*	(HRS Collab.)
ADLER	88	PR D37 2023	J. Adler *et al.*	(Mark III Collab.)
ADLER	88C	PRL 60 89	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	88G	PL B209 380	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	88I	PL B210 267	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	88C	PRL 60 1239	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BORTOLETTO	88	PR D37 1719	D. Bortoletto *et al.*	(CLEO Collab.)
Also		PR D39 1471 (erratum)	D. Bortoletto *et al.*	(CLEO Collab.)
HAAS	88	PRL 60 1614	P. Haas *et al.*	(CLEO Collab.)
RAAB	88	PR D37 2391	J.R. Raab *et al.*	(FNAL E691 Collab.)
ADAMOVICH	87	EPL 4 887	M.I. Adamovich *et al.*	(Photon Emulsion Collab.)
ADLER	87	PL B196 107	J. Adler *et al.*	(Mark III Collab.)
AGUILAR-...	87E	ZPHY C36 551	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also		ZPHY C40 321	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
AGUILAR-...	87F	ZPHY C36 559	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also		ZPHY C38 520 (erratum)	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
BARLAG	87B	ZPHY C37 17	S. Barlag *et al.*	(ACCMOR Collab.)
BECKER	87C	PL B193 147	J.J. Becker *et al.*	(Mark III Collab.)
Also		PL B198 590 (erratum)	J.J. Becker *et al.*	(Mark III Collab.)
PALKA	87	PL B189 238	H. Palka *et al.*	(ACCMOR Collab.)
RILES	87	PR D35 2914	K. Riles *et al.*	(Mark II Collab.)
BAILEY	86	ZPHY C30 51	R. Bailey *et al.*	(ACCMOR Collab.)
BEBEK	86	PRL 56 1893	C. Bebek *et al.*	(CLEO Collab.)
LOUIS	86	PRL 56 1027	W.C. Louis *et al.*	(PRIN, CHIC, ISU)

ALBRECHT	85B	PL 158B 525	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	85F	PL 150B 235	H. Albrecht *et al.*	(ARGUS Collab.)
AUBERT	85	PL 155B 461	J.J. Aubert *et al.*	(EMC Collab.)
BALTRUSAIT...	85E	PRL 55 150	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BENVENUTI	85	PL 158B 531	A.C. Benvenuti *et al.*	(BCDMS Collab.)
ADAMOVICH	84B	PL 140B 123	M.I. Adamovich *et al.*	(CERN WA58 Collab.)
DERRICK	84	PRL 53 1971	M. Derrick *et al.*	(HRS Collab.)
SUMMERS	84	PRL 52 410	D.J. Summers *et al.*	(UCSB, CARL, COLO+)
BAILEY	83B	PL 132B 237	R. Bailey *et al.*	(ACCMOR Collab.)
BODEK	82	PL 113B 82	A. Bodek *et al.*	(ROCH, CIT, CHIC, FNAL+)
FIORINO	81	LNC 30 166	A. Fiorino *et al.*	(Photon-Emul/Omega-Photon)
SCHINDLER	81	PR D24 78	R.H. Schindler *et al.*	(Mark II Collab.)
TRILLING	81	PRPL 75 57	G.H. Trilling	(LBL, UCB) J
ASTON	80E	PL 94B 113	D. Aston *et al.*	(BONN, CERN, EPOL, GLAS+)
AVERY	80	PRL 44 1309	P. Avery *et al.*	(ILL, FNAL, COLU)
ZHOLENTZ	80	PL 96B 214	A.A. Zholents *et al.*	(NOVO)
Also		SJNP 34 814	A.A. Zholents *et al.*	(NOVO)
		Translated from YAF 34 1471.		
ABRAMS	79D	PRL 43 481	G.S. Abrams *et al.*	(Mark II Collab.)
ATIYA	79	PRL 43 414	M.S. Atiya *et al.*	(COLU, ILL, FNAL)
BALTAY	78C	PRL 41 73	C. Baltay *et al.*	(COLU, BNL)
VUILLEMIN	78	PRL 41 1149	V. Vuillemin *et al.*	(LGW Collab.)
GOLDHABER	77	PL 69B 503	G. Goldhaber *et al.*	(Mark I Collab.)
PERUZZI	77	PRL 39 1301	I. Peruzzi *et al.*	(LGW Collab.)
PICCOLO	77	PL 70B 260	M. Piccolo *et al.*	(Mark I Collab.)
GOLDHABER	76	PRL 37 255	G. Goldhaber *et al.*	(Mark I Collab.)

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