B^0

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

Quantum numbers not measured. Values shown are quark-model predictions. NODE=S042

See also the $B^{\pm}/B^0$ ADMIXTURE and $B^{\pm}/B^0/B^0_s/b$-baryon ADMIXTURE sections.

See the Notes "Experimental Highlights of B Meson Production and Decay" and "Semileptonic Decays of B Mesons" at the beginning of the $B^{\pm}$ Particle Listings and the Note on "B^0-$\overline{B}^0$ Mixing and CP Violation in B Decay" near the end of the B^0 Particle Listings.

B^0 MASS

NODE=S042205

The fit uses m_{B^+}, $(m_{B^0} - m_{B^+})$, $m_{B^0_s}$, and $(m_{B^0_s} - (m_{B^+} + m_{B^0})/2)$ to determine m_{B^+}, m_{B^0}, $m_{B^0_s}$, and the mass differences. m_{B^0} data are excluded from the fit because they are not independent. NODE=S042205

NODE=S042M

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*	
5279.2±1.8 OUR FIT						
5279.8±1.6 OUR AVERAGE						
5281.3±2.2 ±1.4	51	[1] ABE	96B	CDF	$p\overline{p}$ at 1.8 TeV	NOTFITTED
5279.2±0.54±2.0	340	[2] ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$	SYCLP1=A;NOTFITTED
5278.0±0.4 ±2.0		[2] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	SYCLP1=A;NOTFITTED
5279.6±0.7 ±2.0	40	[2,3] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$	SYCLP1=A;NOTFITTED
5280.6±0.8 ±2.0		[2] BEBEK	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	SYCLP1=A;NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
5278.2±1.0 ±3.0	40	ALBRECHT	87C	ARG	$e^+e^- \rightarrow \Upsilon(4S)$	
5279.5±1.6 ±3.0	7	[4] ALBRECHT	87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$	

[1] Excluded from fit because it is not independent of ABE 96B B^0_s mass and B^0_s-B mass difference. NODE=S042M;LINKAGE=EE

[2] These experiments all report a common systematic error 2.0 MeV. We have artificially increased the systematic error to allow the experiments to be treated as independent measurements in our average. See "Treatment of Errors" section of the Introductory Text. These experiments actually measure the difference between half of E_{cm} and the B mass. NODE=S042M;LINKAGE=AZ

[3] ALBRECHT 90J assumes 10580 for $\Upsilon(4S)$ mass. Supersedes ALBRECHT 87C and ALBRECHT 87D. NODE=S042M;LINKAGE=E

[4] Found using fully reconstructed decays with J/ψ. ALBRECHT 87D assume $m_{\Upsilon(4S)}$ = 10577 MeV. NODE=S042M;LINKAGE=D

$m_{B^0} - m_{B^+}$

NODE=S042210

The mass difference measurements are not independent of the $B^{\pm}$ and B^0 mass measurement by the same experimenters. The fit uses m_{B^+}, $(m_{B^0} - m_{B^+})$, $m_{B^0_s}$, and $(m_{B^0_s} - (m_{B^+} + m_{B^0})/2)$ to determine m_{B^+}, m_{B^0}, $m_{B^0_s}$, and the mass differences. NODE=S042210

NODE=S042DM

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
0.35±0.29 OUR FIT Error includes scale factor of 1.1.				
0.34±0.32 OUR AVERAGE Error includes scale factor of 1.2.				
0.41±0.25±0.19	ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
−0.4 ±0.6 ±0.5	BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
−0.9 ±1.2 ±0.5	ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
2.0 ±1.1 ±0.3	[5] BEBEK	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[5] BEBEK 87 actually measure the difference between half of E_{cm} and the $B^{\pm}$ or B^0 mass, so the $m_{B^0} - m_{B^{\pm}}$ is more accurate. Assume $m_{\Upsilon(4S)}$ = 10580 MeV. NODE=S042DM;LINKAGE=B

$m_{B^0_H} - m_{B^0_L}$

NODE=S042214

See the B^0-$\overline{B}^0$ MIXING PARAMETERS section near the end of these B^0 Listings. NODE=S042214

B^0 MEAN LIFE

NODE=S042211

See $B^{\pm}/B^0/B^0_s/b$-baryon ADMIXTURE section for data on B-hadron mean life averaged over species of bottom particles.

NODE=S042211

"OUR EVALUATION" is an average of the data listed below performed by the LEP B Lifetimes Working Group as described in our review "Production and Decay of b-flavored Hadrons" in the $B^{\pm}$ Section of the Listings. The averaging procedure takes into account correlations between the measurements and asymmetric lifetime errors.

NODE=S042T

NODE=S042T

→ NOT CHECKED ←

VALUE (10^{-12} s)	EVTS	DOCUMENT ID	TECN	COMMENT
1.54 ±0.03 OUR EVALUATION				
1.523±0.057±0.053		[6] ABBIENDI 99J	OPAL	$e^+e^- \rightarrow Z$
1.58 ±0.09 ±0.02		[7] ABE 98B	CDF	$p\overline{p}$ at 1.8 TeV
$1.474 \pm 0.039 ^{+0.052}_{-0.051}$		[8] ABE 98Q	CDF	$p\overline{p}$ at 1.8 TeV
1.52 ±0.06 ±0.04		[6] ACCIARRI 98S	L3	$e^+e^- \rightarrow Z$
1.64 ±0.08 ±0.08		[6] ABE 97J	SLD	$e^+e^- \rightarrow Z$
1.532±0.041±0.040		[9] ABREU 97F	DLPH	$e^+e^- \rightarrow Z$
1.61 ±0.07 ±0.04		[8] BUSKULIC 96J	ALEP	$e^+e^- \rightarrow Z$
$1.25 ^{+0.15}_{-0.13} \pm 0.05$	121	[7] BUSKULIC 96J	ALEP	$e^+e^- \rightarrow Z$
$1.49 ^{+0.17}_{-0.15} {}^{+0.08}_{-0.06}$		[10] BUSKULIC 96J	ALEP	$e^+e^- \rightarrow Z$
$1.61 ^{+0.14}_{-0.13} \pm 0.08$		[8,11] ABREU 95Q	DLPH	$e^+e^- \rightarrow Z$
1.63 ±0.14 ±0.13		[12] ADAM 95	DLPH	$e^+e^- \rightarrow Z$
1.53 ±0.12 ±0.08		[8,13] AKERS 95T	OPAL	$e^+e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.54 ±0.08 ±0.06		[8] ABE 96C	CDF	Repl. by ABE 98Q
1.55 ±0.06 ±0.03		[14] BUSKULIC 96J	ALEP	$e^+e^- \rightarrow Z$
1.62 ±0.12		[15] ADAM 95	DLPH	$e^+e^- \rightarrow Z$
1.57 ±0.18 ±0.08	121	[7] ABE 94D	CDF	Repl. by ABE 98B
$1.17 ^{+0.29}_{-0.23} \pm 0.16$	96	[8] ABREU 93D	DLPH	Sup. by ABREU 95Q
1.55 ±0.25 ±0.18	76	[12] ABREU 93G	DLPH	Sup. by ADAM 95
$1.51 ^{+0.24}_{-0.23} {}^{+0.12}_{-0.14}$	78	[8] ACTON 93C	OPAL	Sup. by AKERS 95T
$1.52 ^{+0.20}_{-0.18} {}^{+0.07}_{-0.13}$	77	[8] BUSKULIC 93D	ALEP	Sup. by BUSKULIC 96J
$1.20 ^{+0.52}_{-0.36} {}^{+0.16}_{-0.14}$	15	[16] WAGNER 90	MRK2	E^{ee}_{cm}= 29 GeV
$0.82 ^{+0.57}_{-0.37} \pm 0.27$		[17] AVERILL 89	HRS	E^{ee}_{cm}= 29 GeV

OCCUR=2
OCCUR=3
OCCUR=4
OCCUR=2

[6] Data analyzed using charge of secondary vertex. NODE=S042T;LINKAGE=M

[7] Measured mean life using fully reconstructed decays. NODE=S042T;LINKAGE=CD

[8] Data analyzed using D / $D^* \ell$X event vertices. NODE=S042T;LINKAGE=C

[9] Data analyzed using inclusive $D/D^* \ell X$. NODE=S042T;LINKAGE=L

[10] Measured mean life using partially reconstructed $D^{*-} \pi^+$ X vertices. NODE=S042T;LINKAGE=I

[11] ABREU 95Q assumes B($B^0 \rightarrow D^{**-} \ell^+ \nu_\ell$) = 3.2 ± 1.7%. NODE=S042T;LINKAGE=CQ

[12] Data analyzed using vertex-charge technique to tag B charge. NODE=S042T;LINKAGE=F

[13] AKERS 95T assumes B($B^0 \rightarrow D_s{}^{(*)} D^{0\,(*)}$) = 5.0 ± 0.9% to find B^+/B^0 yield. NODE=S042T;LINKAGE=H

[14] Combined result of $D/D^* \ell$x analysis, fully reconstructed B analysis, and partially reconstruced $D^{*-} \pi^+$ X analysis. NODE=S042T;LINKAGE=J

[15] Combined ABREU 95Q and ADAM 95 result. NODE=S042T;LINKAGE=K

[16] WAGNER 90 tagged B^0 mesons by their decays into $D^{*-} e^+ \nu$ and $D^{*-} \mu^+ \nu$ where the D^{*-} is tagged by its decay into $\pi^- \overline{D}^0$. NODE=S042T;LINKAGE=BB

[17] AVERILL 89 is an estimate of the B^0 mean lifetime assuming that $B^0 \rightarrow D^{*+}$ + X always. NODE=S042T;LINKAGE=A

MEAN LIFE RATIO τ_{B^+}/τ_{B^0}

NODE=S042212

τ_{B^+}/τ_{B^0} (average of direct and inferred)

NODE=S042DT
NODE=S042DT

VALUE	DOCUMENT ID
1.060±0.029 OUR AVERAGE	Includes data from the 2 datablocks that follow this one.

NODE=S042DT1

τ_{B^+}/τ_{B^0} (direct measurements)

NODE=S042DT1

"OUR EVALUATION" is an average of the data listed below performed by the LEP B Lifetimes Working Group as described in our review "Production and Decay of b-flavored Hadrons" in the $B^{\pm}$ Section of the Listings. The averaging procedure takes into account correlations between the measurements and asymmetric lifetime errors.

NODE=S042DT1

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.					
1.07 ±0.03 OUR EVALUATION					
1.079±0.064±0.041		[18] ABBIENDI	99J	OPAL	$e^+e^- \rightarrow Z$
1.06 ±0.07 ±0.02		[19] ABE	98B	CDF	$p\overline{p}$ at 1.8 TeV
$1.110\pm0.056^{+0.033}_{-0.030}$		[20] ABE	98Q	CDF	$p\overline{p}$ at 1.8 TeV
1.09 ±0.07 ±0.03		[18] ACCIARRI	98S	L3	$e^+e^- \rightarrow Z$
1.01 ±0.07 ±0.06		[18] ABE	97J	SLD	$e^+e^- \rightarrow Z$
0.98 ±0.08 ±0.03		[20] BUSKULIC	96J	ALEP	$e^+e^- \rightarrow Z$
$1.27\ ^{+0.23}_{-0.19}\ ^{+0.03}_{-0.02}$		[19] BUSKULIC	96J	ALEP	$e^+e^- \rightarrow Z$
$1.00\ ^{+0.17}_{-0.15}\ \pm0.10$		[20,21] ABREU	95Q	DLPH	$e^+e^- \rightarrow Z$
$1.06\ ^{+0.13}_{-0.10}\ \pm0.10$		[22] ADAM	95	DLPH	$e^+e^- \rightarrow Z$
$0.99\ \pm0.14\ ^{+0.05}_{-0.04}$		[20,23] AKERS	95T	OPAL	$e^+e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.01 ±0.11 ±0.02		[20] ABE	96C	CDF	Repl. by ABE 98Q
1.03 ±0.08 ±0.02		[24] BUSKULIC	96J	ALEP	$e^+e^- \rightarrow Z$
1.02 ±0.16 ±0.05	269	[19] ABE	94D	CDF	Repl. by ABE 98B
$1.11\ ^{+0.51}_{-0.39}\ \pm0.11$	188	[20] ABREU	93D	DLPH	Sup. by ABREU 95Q
$1.01\ ^{+0.29}_{-0.22}\ \pm0.12$	253	[22] ABREU	93G	DLPH	Sup. by ADAM 95
$1.0\ ^{+0.33}_{-0.25}\ \pm0.08$	130	ACTON	93C	OPAL	Sup. by AKERS 95T
$0.96\ ^{+0.19}_{-0.15}\ ^{+0.18}_{-0.12}$	154	[20] BUSKULIC	93D	ALEP	Sup. by BUSKULIC 96J

→ NOT CHECKED ←

OCCUR=2
OCCUR=3

[18] Data analyzed using charge of secondary vertex. NODE=S042DT1;LINKAGE=M
[19] Measured using fully reconstructed decays. NODE=S042DT1;LINKAGE=CD
[20] Data analyzed using $D\,/\,D^*\ell$X vertices. NODE=S042DT1;LINKAGE=G
[21] ABREU 95Q assumes B($B^0 \rightarrow D^{**-}\ell^+\nu_\ell$) = 3.2 ± 1.7%. NODE=S042DT1;LINKAGE=CQ
[22] Data analyzed using vertex-charge technique to tag B charge. NODE=S042DT1;LINKAGE=F
[23] AKERS 95T assumes B($B^0 \rightarrow D_s^{(*)}D^{0(*)}$) = 5.0 ± 0.9% to find B^+/B^0 yield. NODE=S042DT1;LINKAGE=H
[24] Combined result of $D/D^*\ell$X analysis and fully reconstructed B analysis. NODE=S042DT1;LINKAGE=GC

NODE=S042DT2

τ_{B^+}/τ_{B^0} (inferred from branching fractions)

NODE=S042DT2

These measurements are inferred from the branching fractions for semileptonic decay or other spectator-dominated decays by assuming that the rates for such decays are equal for B^0 and B^+. We do not use measurements which assume equal production of B^0 and B^+ because of the large uncertainty in the production ratio.

NODE=S042DT2

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.						
$\mathbf{0.95^{+0.117}_{-0.080}\pm0.091}$			[25] ARTUSO	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.15±0.17 ±0.06			[26] JESSOP	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
0.93±0.18 ±0.12			[27] ATHANAS	94	CLE2	Sup. by ARTUSO 97
0.91±0.27 ±0.21			[28] ALBRECHT	92C	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
1.0 ±0.4		29	[28,29] ALBRECHT	92G	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.89±0.19 ±0.13			[28] FULTON	91	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
1.00±0.23 ±0.14			[28] ALBRECHT	89L	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.49 to 2.3	90		[30] BEAN	87B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[25] ARTUSO 97 uses partial reconstruction of $B \rightarrow D^*\ell\nu_\ell$ and independent of B^0 and B^+ production fraction. NODE=S042DT2;LINKAGE=B
[26] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042DT2;LINKAGE=JJ
[27] ATHANAS 94 uses events tagged by fully reconstructed B^- decays and partially or fully reconstructed B^0 decays. NODE=S042DT2;LINKAGE=E
[28] Assumes equal production of B^0 and B^+. NODE=S042DT2;LINKAGE=A
[29] ALBRECHT 92G data analyzed using $B \rightarrow D_s\overline{D}$, $D_s\overline{D}^*$, $D_s^*\overline{D}$, $D_s^*\overline{D}^*$ events. NODE=S042DT2;LINKAGE=D
[30] BEAN 87B assume the fraction of $B^0\overline{B}^0$ events at the $\Upsilon(4S)$ is 0.41. NODE=S042DT2;LINKAGE=F

B^0 DECAY MODES

NODE=S042215;NODE=S042

NODE=S042

$\overline{B}^0$ modes are charge conjugates of the modes below. Reactions indicate the weak decay vertex and do not include mixing. Modes which do not identify the charge state of the B are listed in the $B^{\pm}/B^0$ ADMIXTURE section.

The branching fractions listed below assume 50% $B^0\overline{B}^0$ and 50% B^+B^- production at the $\Upsilon(4S)$. We have attempted to bring older measurements up to date by rescaling their assumed $\Upsilon(4S)$ production ratio to 50:50 and their assumed D, D_s, D^*, and ψ branching ratios to current values whenever this would affect our averages and best limits significantly.

Indentation is used to indicate a subchannel of a previous reaction. All resonant subchannels have been corrected for resonance branching fractions to the final state so the sum of the subchannel branching fractions can exceed that of the final state.

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	
Γ_1	$\ell^+\nu_\ell$ anything	[a] $(10.5\ \pm\ 0.8\ )\ \%$		CLUMP=A;DESIG=94
Γ_2	$D^-\ell^+\nu_\ell$	[a] $(\ 2.00\pm\ 0.25)\ \%$		DESIG=37
Γ_3	$D^*(2010)^-\ell^+\nu_\ell$	[a] $(\ 4.60\pm\ 0.27)\ \%$		DESIG=181
Γ_4	$\rho^-\ell^+\nu_\ell$	[a] $(\ 2.5\ ^{+\ 0.8}_{-\ 1.0}\ )\times10^{-4}$		DESIG=95
Γ_5	$\pi^-\ell^+\nu_\ell$	$(\ 1.8\ \pm\ 0.6\ )\times10^{-4}$		DESIG=150
	Inclusive modes			NODE=S042;CLUMP=I
Γ_6	$\pi^-\mu^+\nu_\mu$			DESIG=83
Γ_7	K^+ anything	$(78\ \ \pm8\ \ )\ \%$		DESIG=151
	***D*, *D**, or *D*$_s$ modes**			NODE=S042;CLUMP=B
Γ_8	$D^-\pi^+$	$(\ 3.0\ \pm\ 0.4\ )\times10^{-3}$		DESIG=30
Γ_9	$D^-\rho^+$	$(\ 7.9\ \pm\ 1.4\ )\times10^{-3}$		DESIG=34
Γ_{10}	$\overline{D}^0\pi^+\pi^-$	$<\ 1.6\ \ \times10^{-3}$	CL=90%	DESIG=1
Γ_{11}	$D^*(2010)^-\pi^+$	$(\ 2.76\pm\ 0.21)\times10^{-3}$		DESIG=2
Γ_{12}	$D^-\pi^+\pi^+\pi^-$	$(\ 8.0\ \pm\ 2.5\ )\times10^{-3}$		DESIG=88
Γ_{13}	$(D^-\pi^+\pi^+\pi^-)$ nonresonant	$(\ 3.9\ \pm\ 1.9\ )\times10^{-3}$		DESIG=89
Γ_{14}	$D^-\pi^+\rho^0$	$(\ 1.1\ \pm\ 1.0\ )\times10^{-3}$		DESIG=91
Γ_{15}	$D^-a_1(1260)^+$	$(\ 6.0\ \pm\ 3.3\ )\times10^{-3}$		DESIG=93
Γ_{16}	$D^*(2010)^-\pi^+\pi^0$	$(\ 1.5\ \pm\ 0.5\ )\ \%$		DESIG=19
Γ_{17}	$D^*(2010)^-\rho^+$	$(\ 6.8\ \pm\ 3.4\ )\times10^{-3}$		DESIG=3
Γ_{18}	$D^*(2010)^-\pi^+\pi^+\pi^-$	$(\ 7.6\ \pm\ 1.8\ )\times10^{-3}$	S=1.4	DESIG=20
Γ_{19}	$(D^*(2010)^-\pi^+\pi^+\pi^-)$ non-resonant	$(\ 0.0\ \pm\ 2.5\ )\times10^{-3}$		DESIG=90
Γ_{20}	$D^*(2010)^-\pi^+\rho^0$	$(\ 5.7\ \pm\ 3.2\ )\times10^{-3}$		DESIG=92
Γ_{21}	$D^*(2010)^-a_1(1260)^+$	$(\ 1.30\pm\ 0.27)\ \%$		DESIG=87
Γ_{22}	$D^*(2010)^-\pi^+\pi^+\pi^-\pi^0$	$(\ 3.5\ \pm\ 1.8\ )\ \%$		DESIG=67
Γ_{23}	$\overline{D}_2^*(2460)^-\pi^+$	$<\ 2.2\ \ \times10^{-3}$	CL=90%	DESIG=124
Γ_{24}	$\overline{D}_2^*(2460)^-\rho^+$	$<\ 4.9\ \ \times10^{-3}$	CL=90%	DESIG=125
Γ_{25}	D^-D^+	$<\ 5.9\ \ \times10^{-3}$	CL=90%	DESIG=184
Γ_{26}	$D^-D_s^+$	$(\ 8.0\ \pm\ 3.0\ )\times10^{-3}$		DESIG=50
Γ_{27}	$D^*(2010)^-D_s^+$	$(\ 9.6\ \pm\ 3.4\ )\times10^{-3}$		DESIG=49
Γ_{28}	$D^-D_s^{*+}$	$(\ 1.0\ \pm\ 0.5\ )\ \%$		DESIG=103
Γ_{29}	$D^*(2010)^-D_s^{*+}$	$(\ 2.0\ \pm\ 0.7\ )\ \%$		DESIG=66
Γ_{30}	$D_s^+\pi^-$	$<\ 2.8\ \ \times10^{-4}$	CL=90%	DESIG=51
Γ_{31}	$D_s^{*+}\pi^-$	$<\ 5\ \ \times10^{-4}$	CL=90%	DESIG=108
Γ_{32}	$D_s^+\rho^-$	$<\ 7\ \ \times10^{-4}$	CL=90%	DESIG=110

Γ_{33}	$D_s^{*+} \rho^-$	$<$ 8	$\times 10^{-4}$	CL=90%	DESIG=111
Γ_{34}	$D_s^+ a_1(1260)^-$	$<$ 2.6	$\times 10^{-3}$	CL=90%	DESIG=112
Γ_{35}	$D_s^{*+} a_1(1260)^-$	$<$ 2.2	$\times 10^{-3}$	CL=90%	DESIG=113
Γ_{36}	$D_s^- K^+$	$<$ 2.4	$\times 10^{-4}$	CL=90%	DESIG=52
Γ_{37}	$D_s^{*-} K^+$	$<$ 1.7	$\times 10^{-4}$	CL=90%	DESIG=120
Γ_{38}	$D_s^- K^*(892)^+$	$<$ 9.9	$\times 10^{-4}$	CL=90%	DESIG=114
Γ_{39}	$D_s^{*-} K^*(892)^+$	$<$ 1.1	$\times 10^{-3}$	CL=90%	DESIG=115
Γ_{40}	$D_s^- \pi^+ K^0$	$<$ 5	$\times 10^{-3}$	CL=90%	DESIG=116
Γ_{41}	$D_s^{*-} \pi^+ K^0$	$<$ 3.1	$\times 10^{-3}$	CL=90%	DESIG=117
Γ_{42}	$D_s^- \pi^+ K^*(892)^0$	$<$ 4	$\times 10^{-3}$	CL=90%	DESIG=118
Γ_{43}	$D_s^{*-} \pi^+ K^*(892)^0$	$<$ 2.0	$\times 10^{-3}$	CL=90%	DESIG=119
Γ_{44}	$\overline{D}^0 \pi^0$	$<$ 1.2	$\times 10^{-4}$	CL=90%	DESIG=128
Γ_{45}	$\overline{D}^0 \rho^0$	$<$ 3.9	$\times 10^{-4}$	CL=90%	DESIG=35
Γ_{46}	$\overline{D}^0 \eta$	$<$ 1.3	$\times 10^{-4}$	CL=90%	DESIG=129
Γ_{47}	$\overline{D}^0 \eta'$	$<$ 9.4	$\times 10^{-4}$	CL=90%	DESIG=130
Γ_{48}	$\overline{D}^0 \omega$	$<$ 5.1	$\times 10^{-4}$	CL=90%	DESIG=131
Γ_{49}	$\overline{D}^*(2007)^0 \pi^0$	$<$ 4.4	$\times 10^{-4}$	CL=90%	DESIG=132
Γ_{50}	$\overline{D}^*(2007)^0 \rho^0$	$<$ 5.6	$\times 10^{-4}$	CL=90%	DESIG=133
Γ_{51}	$\overline{D}^*(2007)^0 \eta$	$<$ 2.6	$\times 10^{-4}$	CL=90%	DESIG=134
Γ_{52}	$\overline{D}^*(2007)^0 \eta'$	$<$ 1.4	$\times 10^{-3}$	CL=90%	DESIG=135
Γ_{53}	$\overline{D}^*(2007)^0 \omega$	$<$ 7.4	$\times 10^{-4}$	CL=90%	DESIG=136
Γ_{54}	$D^*(2010)^+ D^*(2010)^-$	$<$ 2.2	$\times 10^{-3}$	CL=90%	DESIG=154
Γ_{55}	$D^*(2010)^+ D^-$	$<$ 1.8	$\times 10^{-3}$	CL=90%	DESIG=155
Γ_{56}	$D^+ D^*(2010)^-$	$<$ 1.2	$\times 10^{-3}$	CL=90%	DESIG=156
Γ_{57}	$D^{(*)0} \overline{D}^{(*)0}$	$<$ 2.7	%	CL=90%	DESIG=185
	Charmonium modes				NODE=S042;CLUMP=C
Γ_{58}	$J/\psi(1S) K^0$	(8.9 $\pm$ 1.2)	$\times 10^{-4}$		DESIG=23
Γ_{59}	$J/\psi(1S) K^+ \pi^-$	(1.2 $\pm$ 0.6)	$\times 10^{-3}$		DESIG=4
Γ_{60}	$J/\psi(1S) K^*(892)^0$	(1.50 $\pm$ 0.17)	$\times 10^{-3}$		DESIG=22
Γ_{61}	$J/\psi(1S) \pi^0$	$<$ 5.8	$\times 10^{-5}$	CL=90%	DESIG=140
Γ_{62}	$J/\psi(1S) \eta$	$<$ 1.2	$\times 10^{-3}$	CL=90%	DESIG=153
Γ_{63}	$J/\psi(1S) \rho^0$	$<$ 2.5	$\times 10^{-4}$	CL=90%	DESIG=148
Γ_{64}	$J/\psi(1S) \omega$	$<$ 2.7	$\times 10^{-4}$	CL=90%	DESIG=149
Γ_{65}	$\psi(2S) K^0$	$<$ 8	$\times 10^{-4}$	CL=90%	DESIG=68
Γ_{66}	$\psi(2S) K^+ \pi^-$	$<$ 1	$\times 10^{-3}$	CL=90%	DESIG=70
Γ_{67}	$\psi(2S) K^*(892)^0$	(9.3 $\pm$ 2.3)	$\times 10^{-4}$		DESIG=69
Γ_{68}	$\chi_{c1}(1P) K^0$	$<$ 2.7	$\times 10^{-3}$	CL=90%	DESIG=126
Γ_{69}	$\chi_{c1}(1P) K^*(892)^0$	$<$ 2.1	$\times 10^{-3}$	CL=90%	DESIG=127
	***K* or *K** modes**				NODE=S042;CLUMP=D
Γ_{70}	$K^+ \pi^-$	(1.5 $^{+0.5}_{-0.4}$)	$\times 10^{-5}$		DESIG=10
Γ_{71}	$K^0 \pi^0$	$<$ 4.1	$\times 10^{-5}$	CL=90%	DESIG=144
Γ_{72}	$\eta' K^0$	(4.7 $^{+2.8}_{-2.2}$)	$\times 10^{-5}$		DESIG=163
Γ_{73}	$\eta' K^*(892)^0$	$<$ 3.9	$\times 10^{-5}$	CL=90%	DESIG=164
Γ_{74}	$\eta K^*(892)^0$	$<$ 3.0	$\times 10^{-5}$	CL=90%	DESIG=165
Γ_{75}	ηK^0	$<$ 3.3	$\times 10^{-5}$	CL=90%	DESIG=166
Γ_{76}	ωK^0	$<$ 5.7	$\times 10^{-5}$	CL=90%	DESIG=172
Γ_{77}	$\omega K^*(892)^0$	$<$ 2.3	$\times 10^{-5}$	CL=90%	DESIG=173
Γ_{78}	$K^+ K^-$	$<$ 4.3	$\times 10^{-6}$	CL=90%	DESIG=106
Γ_{79}	$K^0 \overline{K}^0$	$<$ 1.7	$\times 10^{-5}$	CL=90%	DESIG=162
Γ_{80}	$K^+ \rho^-$	$<$ 3.5	$\times 10^{-5}$	CL=90%	DESIG=145
Γ_{81}	$K^0 \pi^+ \pi^-$				DESIG=80
Γ_{82}	$K^0 \rho^0$	$<$ 3.9	$\times 10^{-5}$	CL=90%	DESIG=12
Γ_{83}	$K^0 f_0(980)$	$<$ 3.6	$\times 10^{-4}$	CL=90%	DESIG=44
Γ_{84}	$K^*(892)^+ \pi^-$	$<$ 7.2	$\times 10^{-5}$	CL=90%	DESIG=11
Γ_{85}	$K^*(892)^0 \pi^0$	$<$ 2.8	$\times 10^{-5}$	CL=90%	DESIG=146
Γ_{86}	$K_2^*(1430)^+ \pi^-$	$<$ 2.6	$\times 10^{-3}$	CL=90%	DESIG=72
Γ_{87}	$K^0 K^+ K^-$	$<$ 1.3	$\times 10^{-3}$	CL=90%	DESIG=81

Γ_{88}	$K^0 \phi$		$<$ 3.1	$\times 10^{-5}$	CL=90%	DESIG=13
Γ_{89}	$K^- \pi^+ \pi^+ \pi^-$	[b]	$<$ 2.3	$\times 10^{-4}$	CL=90%	DESIG=143
Γ_{90}	$K^*(892)^0 \pi^+ \pi^-$		$<$ 1.4	$\times 10^{-3}$	CL=90%	DESIG=84
Γ_{91}	$K^*(892)^0 \rho^0$		$<$ 4.6	$\times 10^{-4}$	CL=90%	DESIG=15
Γ_{92}	$K^*(892)^0 f_0(980)$		$<$ 1.7	$\times 10^{-4}$	CL=90%	DESIG=45
Γ_{93}	$K_1(1400)^+ \pi^-$		$<$ 1.1	$\times 10^{-3}$	CL=90%	DESIG=86
Γ_{94}	$K^- a_1(1260)^+$	[b]	$<$ 2.3	$\times 10^{-4}$	CL=90%	DESIG=142
Γ_{95}	$K^*(892)^0 K^+ K^-$		$<$ 6.1	$\times 10^{-4}$	CL=90%	DESIG=85
Γ_{96}	$K^*(892)^0 \phi$		$<$ 2.1	$\times 10^{-5}$	CL=90%	DESIG=14
Γ_{97}	$K_1(1400)^0 \rho^0$		$<$ 3.0	$\times 10^{-3}$	CL=90%	DESIG=73
Γ_{98}	$K_1(1400)^0 \phi$		$<$ 5.0	$\times 10^{-3}$	CL=90%	DESIG=75
Γ_{99}	$K_2^*(1430)^0 \rho^0$		$<$ 1.1	$\times 10^{-3}$	CL=90%	DESIG=74
Γ_{100}	$K_2^*(1430)^0 \phi$		$<$ 1.4	$\times 10^{-3}$	CL=90%	DESIG=76
Γ_{101}	$K^*(892)^0 \gamma$		(4.0 $\pm$ 1.9)	$\times 10^{-5}$		DESIG=16
Γ_{102}	$K_1(1270)^0 \gamma$		$<$ 7.0	$\times 10^{-3}$	CL=90%	DESIG=38
Γ_{103}	$K_1(1400)^0 \gamma$		$<$ 4.3	$\times 10^{-3}$	CL=90%	DESIG=39
Γ_{104}	$K_2^*(1430)^0 \gamma$		$<$ 4.0	$\times 10^{-4}$	CL=90%	DESIG=40
Γ_{105}	$K^*(1680)^0 \gamma$		$<$ 2.0	$\times 10^{-3}$	CL=90%	DESIG=41
Γ_{106}	$K_3^*(1780)^0 \gamma$		$<$ 1.0	%	CL=90%	DESIG=42
Γ_{107}	$K_4^*(2045)^0 \gamma$		$<$ 4.3	$\times 10^{-3}$	CL=90%	DESIG=43
	Light unflavored meson modes					NODE=S042;CLUMP=E
Γ_{108}	$\pi^+ \pi^-$		$<$ 1.5	$\times 10^{-5}$	CL=90%	DESIG=5
Γ_{109}	$\pi^0 \pi^0$		$<$ 9.3	$\times 10^{-6}$	CL=90%	DESIG=137
Γ_{110}	$\eta \pi^0$		$<$ 8	$\times 10^{-6}$	CL=90%	DESIG=60
Γ_{111}	$\eta \eta$		$<$ 1.8	$\times 10^{-5}$	CL=90%	DESIG=139
Γ_{112}	$\eta' \pi^0$		$<$ 1.1	$\times 10^{-5}$	CL=90%	DESIG=167
Γ_{113}	$\eta' \eta'$		$<$ 4.7	$\times 10^{-5}$	CL=90%	DESIG=168
Γ_{114}	$\eta' \eta$		$<$ 2.7	$\times 10^{-5}$	CL=90%	DESIG=169
Γ_{115}	$\eta' \rho^0$		$<$ 2.3	$\times 10^{-5}$	CL=90%	DESIG=170
Γ_{116}	$\eta \rho^0$		$<$ 1.3	$\times 10^{-5}$	CL=90%	DESIG=171
Γ_{117}	$\omega \eta$		$<$ 1.2	$\times 10^{-5}$	CL=90%	DESIG=174
Γ_{118}	$\omega \eta'$		$<$ 6.0	$\times 10^{-5}$	CL=90%	DESIG=175
Γ_{119}	$\omega \rho^0$		$<$ 1.1	$\times 10^{-5}$	CL=90%	DESIG=176
Γ_{120}	$\omega \omega$		$<$ 1.9	$\times 10^{-5}$	CL=90%	DESIG=177
Γ_{121}	$\phi \pi^0$		$<$ 5	$\times 10^{-6}$	CL=90%	DESIG=178
Γ_{122}	$\phi \eta$		$<$ 9	$\times 10^{-6}$	CL=90%	DESIG=179
Γ_{123}	$\phi \eta'$		$<$ 3.1	$\times 10^{-5}$	CL=90%	DESIG=180
Γ_{124}	$\phi \rho^0$		$<$ 1.3	$\times 10^{-5}$	CL=90%	DESIG=182
Γ_{125}	$\phi \omega$		$<$ 2.1	$\times 10^{-5}$	CL=90%	DESIG=183
Γ_{126}	$\phi \phi$		$<$ 1.2	$\times 10^{-5}$	CL=90%	DESIG=147
Γ_{127}	$\pi^+ \pi^- \pi^0$		$<$ 7.2	$\times 10^{-4}$	CL=90%	DESIG=53
Γ_{128}	$\rho^0 \pi^0$		$<$ 2.4	$\times 10^{-5}$	CL=90%	DESIG=54
Γ_{129}	$\rho^\mp \pi^\pm$	[c]	$<$ 8.8	$\times 10^{-5}$	CL=90%	DESIG=24
Γ_{130}	$\pi^+ \pi^- \pi^+ \pi^-$		$<$ 2.3	$\times 10^{-4}$	CL=90%	DESIG=55
Γ_{131}	$\rho^0 \rho^0$		$<$ 2.8	$\times 10^{-4}$	CL=90%	DESIG=26
Γ_{132}	$a_1(1260)^\mp \pi^\pm$	[c]	$<$ 4.9	$\times 10^{-4}$	CL=90%	DESIG=27
Γ_{133}	$a_2(1320)^\mp \pi^\pm$	[c]	$<$ 3.0	$\times 10^{-4}$	CL=90%	DESIG=28
Γ_{134}	$\pi^+ \pi^- \pi^0 \pi^0$		$<$ 3.1	$\times 10^{-3}$	CL=90%	DESIG=56
Γ_{135}	$\rho^+ \rho^-$		$<$ 2.2	$\times 10^{-3}$	CL=90%	DESIG=57
Γ_{136}	$a_1(1260)^0 \pi^0$		$<$ 1.1	$\times 10^{-3}$	CL=90%	DESIG=58
Γ_{137}	$\omega \pi^0$		$<$ 1.4	$\times 10^{-5}$	CL=90%	DESIG=59
Γ_{138}	$\pi^+ \pi^+ \pi^- \pi^- \pi^0$		$<$ 9.0	$\times 10^{-3}$	CL=90%	DESIG=61
Γ_{139}	$a_1(1260)^+ \rho^-$		$<$ 3.4	$\times 10^{-3}$	CL=90%	DESIG=62
Γ_{140}	$a_1(1260)^0 \rho^0$		$<$ 2.4	$\times 10^{-3}$	CL=90%	DESIG=63
Γ_{141}	$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^-$		$<$ 3.0	$\times 10^{-3}$	CL=90%	DESIG=64
Γ_{142}	$a_1(1260)^+ a_1(1260)^-$		$<$ 2.8	$\times 10^{-3}$	CL=90%	DESIG=46
Γ_{143}	$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^0$		$<$ 1.1	%	CL=90%	DESIG=65

NODE=S042;CLUMP=F

Baryon modes

Γ_{144}	$p\overline{p}$		< 1.8	$\times 10^{-5}$	CL=90%	DESIG=29
Γ_{145}	$p\overline{p}\pi^+\pi^-$		< 2.5	$\times 10^{-4}$	CL=90%	DESIG=32
Γ_{146}	$p\overline{\Lambda}\pi^-$		< 1.8	$\times 10^{-4}$	CL=90%	DESIG=33
Γ_{147}	$\Delta^0\overline{\Delta}^0$		< 1.5	$\times 10^{-3}$	CL=90%	DESIG=47
Γ_{148}	$\Delta^{++}\Delta^{--}$		< 1.1	$\times 10^{-4}$	CL=90%	DESIG=48
Γ_{149}	$\overline{\Sigma}_c^{--}\Delta^{++}$		< 1.0	$\times 10^{-3}$	CL=90%	DESIG=123
Γ_{150}	$\Lambda_c^- p\pi^+\pi^-$		(1.3 ± 0.6)	$\times 10^{-3}$		DESIG=161
Γ_{151}	$\Lambda_c^- p$		< 2.1	$\times 10^{-4}$	CL=90%	DESIG=157
Γ_{152}	$\Lambda_c^- p\pi^0$		< 5.9	$\times 10^{-4}$	CL=90%	DESIG=158
Γ_{153}	$\Lambda_c^- p\pi^+\pi^-\pi^0$		< 5.07	$\times 10^{-3}$	CL=90%	DESIG=159
Γ_{154}	$\Lambda_c^- p\pi^+\pi^-\pi^+\pi^-$		< 2.74	$\times 10^{-3}$	CL=90%	DESIG=160

Lepton Family number (*LF*) violating modes, or $\Delta B = 1$ weak neutral current (*B1*) modes

NODE=S042;CLUMP=G

Γ_{155}	$\gamma\gamma$	B1	< 3.9	$\times 10^{-5}$	CL=90%	DESIG=141
Γ_{156}	e^+e^-	B1	< 5.9	$\times 10^{-6}$	CL=90%	DESIG=6
Γ_{157}	$\mu^+\mu^-$	B1	< 6.8	$\times 10^{-7}$	CL=90%	DESIG=7
Γ_{158}	$K^0e^+e^-$	B1	< 3.0	$\times 10^{-4}$	CL=90%	DESIG=18
Γ_{159}	$K^0\mu^+\mu^-$	B1	< 3.6	$\times 10^{-4}$	CL=90%	DESIG=17
Γ_{160}	$K^*(892)^0e^+e^-$	B1	< 2.9	$\times 10^{-4}$	CL=90%	DESIG=82
Γ_{161}	$K^*(892)^0\mu^+\mu^-$	B1	< 2.3	$\times 10^{-5}$	CL=90%	DESIG=71
Γ_{162}	$K^*(892)^0\nu\overline{\nu}$	B1	< 1.0	$\times 10^{-3}$	CL=90%	DESIG=152
Γ_{163}	$e^\pm\mu^\mp$	LF	[c] < 5.9	$\times 10^{-6}$	CL=90%	DESIG=8
Γ_{164}	$e^\pm\tau^\mp$	LF	[c] < 5.3	$\times 10^{-4}$	CL=90%	DESIG=121
Γ_{165}	$\mu^\pm\tau^\mp$	LF	[c] < 8.3	$\times 10^{-4}$	CL=90%	DESIG=122

[a] An ℓ indicates an e or a μ mode, not a sum over these modes. LINKAGE=DX

[b] B^0 and B_s^0 contributions not separated. Limit is on weighted average of the two decay rates. LINKAGE=BBS

[c] The value is for the sum of the charge states or particle/antiparticle states indicated. LINKAGE=SG

B^0 BRANCHING RATIOS

NODE=S042220

For branching ratios in which the charge of the decaying B is not determined, see the $B^\pm$ section.

NODE=S042220

$\Gamma(\ell^+\nu_\ell \text{anything})/\Gamma_{\text{total}}$ — Γ_1/Γ

NODE=S042R94
NODE=S042R94

VALUE	DOCUMENT ID		TECN	COMMENT
0.105 ±0.008 OUR AVERAGE				
0.1078±0.0060±0.0069	[31] ARTUSO	97	CLE2	$e^+e^- \to \Upsilon(4S)$
0.093 ±0.011 ±0.015	ALBRECHT	94	ARG	$e^+e^- \to \Upsilon(4S)$
0.099 ±0.030 ±0.009	HENDERSON	92	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.109 ±0.007 ±0.011	ATHANAS	94	CLE2	Sup. by ARTUSO 97

[31] ARTUSO 97 uses partial reconstruction of $B \to D^*\ell\nu_\ell$ and inclusive semileptonic branching ratio from BARISH 96B ($0.1049 \pm 0.0017 \pm 0.0043$). NODE=S042R94;LINKAGE=B

$\Gamma(D^-\ell^+\nu_\ell)/\Gamma_{\text{total}}$ — Γ_2/Γ

NODE=S042R35

ℓ denotes e or μ, not the sum.

NODE=S042R35
NODE=S042R35

VALUE	DOCUMENT ID		TECN	COMMENT
0.0200±0.0025 OUR AVERAGE				
0.0187±0.0015±0.0032	[32] ATHANAS	97	CLE2	$e^+e^- \to \Upsilon(4S)$
0.0235±0.0020±0.0044	[33] BUSKULIC	97	ALEP	$e^+e^- \to Z$
0.018 ±0.006 ±0.003	[34] FULTON	91	CLEO	$e^+e^- \to \Upsilon(4S)$
0.020 ±0.007 ±0.006	[35] ALBRECHT	89J	ARG	$e^+e^- \to \Upsilon(4S)$

[32] ATHANAS 97 uses missing energy and missing momentum to reconstruct neutrino. NODE=S042R35;LINKAGE=C

[33] BUSKULIC 97 assumes fraction (B^+) = fraction (B^0) = (37.8 ± 2.2)% and PDG 96 values for B lifetime and branching ratio of D^* and D decays. NODE=S042R35;LINKAGE=I

[34] FULTON 91 assumes assuming equal production of B^0 and B^+ at the $\Upsilon(4S)$ and uses Mark III D and D^* branching ratios. NODE=S042R35;LINKAGE=B

[35] ALBRECHT 89J reports $0.018 \pm 0.006 \pm 0.005$. We rescale using the method described in STONE 94 but with the updated PDG 94 B($D^0 \to K^-\pi^+$). NODE=S042R35;LINKAGE=A

NODE=S042R21
NODE=S042R21

$\Gamma(D^*(2010)^- \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_3/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0460±0.0027 OUR AVERAGE					
0.0508±0.0021±0.0066		[36] ACKERSTAFF	97G	OPAL	$e^+e^- \to Z$
0.0553±0.0026±0.0052		[37] BUSKULIC	97	ALEP	$e^+e^- \to Z$
0.0552±0.0017±0.0068		[38] ABREU	96P	DLPH	$e^+e^- \to Z$
0.0449±0.0032±0.0039	376	[39] BARISH	95	CLE2	$e^+e^- \to \Upsilon(4S)$
0.045 ±0.003 ±0.004		[40] ALBRECHT	94	ARG	$e^+e^- \to \Upsilon(4S)$
0.047 ±0.005 ±0.005	235	[41] ALBRECHT	93	ARG	$e^+e^- \to \Upsilon(4S)$
0.040 ±0.004 ±0.006		[42] BORTOLETTO	89B	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0518±0.0030±0.0062	410	[43] BUSKULIC	95N	ALEP	Sup. by BUSKULIC 97
seen	398	[44] SANGHERA	93	CLE2	$e^+e^- \to \Upsilon(4S)$
0.070 ±0.018 ±0.014		[45] ANTREASYAN	90B	CBAL	$e^+e^- \to \Upsilon(4S)$
		[46] ALBRECHT	89C	ARG	$e^+e^- \to \Upsilon(4S)$
0.060 ±0.010 ±0.014		[47] ALBRECHT	89J	ARG	$e^+e^- \to \Upsilon(4S)$
0.070 ±0.012 ±0.019	47	[48] ALBRECHT	87J	ARG	$e^+e^- \to \Upsilon(4S)$

SYCLP1=A
SYCLP1=A
SYCLP1=A

[36] ACKERSTAFF 97G assumes fraction (B^+) = fraction $(B^0) = (37.8 \pm 2.2)$% and PDG 96 values for B lifetime and branching ratio of D^* and D decays. NODE=S042R21;LINKAGE=IF

[37] BUSKULIC 97 assumes fraction (B^+) = fraction $(B^0) = (37.8 \pm 2.2)$% and PDG 96 values for B lifetime and D^* and D branching fractions. NODE=S042R21;LINKAGE=I

[38] ABREU 96P result is the average of two methods using exclusive and partial D^* reconstruction. NODE=S042R21;LINKAGE=H

[39] BARISH 95 use $B(D^0 \to K^-\pi^+) = (3.91 \pm 0.08 \pm 0.17)$% and $B(D^{*+} \to D^0\pi^+) = (68.1 \pm 1.0 \pm 1.3)$%. NODE=S042R21;LINKAGE=A1

[40] ALBRECHT 94 assumes $B(D^{*+} \to D^0\pi^+) = 68.1 \pm 1.0 \pm 1.3$%. Uses partial reconstruction of D^{*+} and is independent of D^0 branching ratios. NODE=S042R21;LINKAGE=F

[41] ALBRECHT 93 reports $0.052 \pm 0.005 \pm 0.006$. We rescale using the method described in STONE 94 but with the updated PDG 94 $B(D^0 \to K^-\pi^+)$. We have taken their average e and μ value. They also obtain $\alpha = 2{*}\Gamma^0/(\Gamma^- + \Gamma^+) - 1 = 1.1 \pm 0.4 \pm 0.2$, $A_{AF} = 3/4{*}(\Gamma^- - \Gamma^+)/\Gamma = 0.2 \pm 0.08 \pm 0.06$ and a value of $|V_{cb}| = 0.036$–0.045 depending on model assumptions. NODE=S042R21;LINKAGE=E

[42] We have taken average of the the BORTOLETTO 89B values for electrons and muons, $0.046 \pm 0.005 \pm 0.007$. We rescale using the method described in STONE 94 but with the updated PDG 94 $B(D^0 \to K^-\pi^+)$. The measurement suggests a D^* polarization parameter value $\alpha = 0.65 \pm 0.66 \pm 0.25$. NODE=S042R21;LINKAGE=C

[43] BUSKULIC 95N assumes fraction (B^+) = fraction $(B^0) = 38.2 \pm 1.3 \pm 2.2$% and $\tau_{B^0} = 1.58 \pm 0.06$ ps. $\Gamma(D^{*-}\ell^+\nu_\ell)$/total = [5.18 − 0.13(fraction(B^0) − 38.2) − 1.5(τ_{B^0} − 1.58)]%. NODE=S042R21;LINKAGE=G

[44] Combining $\overline{D}^{*0}\ell^+\nu_\ell$ and $\overline{D}^{*-}\ell^+\nu_\ell$ SANGHERA 93 test $V-A$ structure and fit the decay angular distributions to obtain $A_{FB} = 3/4{*}(\Gamma^- - \Gamma^+)/\Gamma = 0.14 \pm 0.06 \pm 0.03$. Assuming a value of V_{cb}, they measure V, A_1, and A_2, the three form factors for the $D^*\ell\nu_\ell$ decay, where results are slightly dependent on model assumptions. NODE=S042R21;LINKAGE=D

[45] ANTREASYAN 90B is average over B and $\overline{D}^*(2010)$ charge states. NODE=S042R21;LINKAGE=62

[46] The measurement of ALBRECHT 89C suggests a D^* polarization γ_L/γ_T of 0.85 ± 0.45. or $\alpha = 0.7 \pm 0.9$. NODE=S042R21;LINKAGE=B

[47] ALBRECHT 89J is ALBRECHT 87J value rescaled using $B(D^*(2010)^- \to D^0\pi^-) = 0.57 \pm 0.04 \pm 0.04$. Superseded by ALBRECHT 93. NODE=S042R21;LINKAGE=AA

[48] ALBRECHT 87J assume μ-e universality, the $B(\Upsilon(4S) \to B^0\overline{B}^0) = 0.45$, the $B(D^0 \to K^-\pi^+) = (0.042 \pm 0.004 \pm 0.004)$, and the $B(D^*(2010)^- \to D^0\pi^-) = 0.49 \pm 0.08$. Superseded by ALBRECHT 89J. NODE=S042R21;LINKAGE=A

NODE=S042R95

$\Gamma(\rho^- \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_4/Γ

NODE=S042R95
NODE=S042R95

$\ell = e$ or μ, not sum over e and μ modes.

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.5 \pm 0.4^{+0.7}_{-0.9}}$		[49] ALEXANDER	96T	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.1	90	[50] BEAN	93B	CLE2	$e^+e^- \to \Upsilon(4S)$

[49] ALEXANDER 96T gives systematic errors $^{+0.5}_{-0.7} \pm 0.5$ where the second error reflects the estimated model dependence. We combine these in quadrature. Assumes isospin symmetry: $\Gamma(B^0 \to \rho^-\ell^+\nu_\ell) = 2 \times \Gamma(B^+ \to \rho^0\ell^+\nu_\ell) \sim 2 \times \Gamma(B^+ \to \omega\ell^+\nu_\ell)$. NODE=S042R95;LINKAGE=B

[50] BEAN 93B limit set using ISGW Model. Using isospin and the quark model to combine $\Gamma(\rho^0\ell^+\nu_\ell)$ and $\Gamma(\omega\ell^+\nu_\ell)$ with this result, they obtain a limit $<(1.6$–$2.7) \times 10^{-4}$ at 90% CL for $B^+ \to (\omega$ or $\rho^0)\ell^+\nu_\ell$. The range corresponds to the ISGW, WSB, and KS models. An upper limit on $|V_{ub}/V_{cb}| < 0.08$–0.13 at 90% CL is derived as well. NODE=S042R95;LINKAGE=A

$\Gamma(\pi^- \ell^+ \nu_\ell)/\Gamma_{total}$ Γ_5/Γ

NODE=S042S48

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
1.8±0.4±0.4	[51] ALEXANDER 96T	CLE2	$e^+ e^- \to \Upsilon(4S)$

[51] ALEXANDER 96T gives systematic errors ±0.3 ± 0.2 where the second error reflects the estimated model dependence. We combine these in quadrature. Assumes isospin symmetry: $\Gamma(B^0 \to \pi^- \ell^+ \nu_\ell) = 2 \times \Gamma(B^+ \to \pi^0 \ell^+ \nu_\ell)$. NODE=S042S48;LINKAGE=B

$\Gamma(\pi^- \mu^+ \nu_\mu)/\Gamma_{total}$ Γ_6/Γ

NODE=S042R70

VALUE	DOCUMENT ID	TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •		
seen	[52] ALBRECHT 91C	ARG

[52] In ALBRECHT 91C, one event is fully reconstructed providing evidence for the $b \to u$ transition. NODE=S042R70;LINKAGE=A

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

NODE=S042S49

VALUE	DOCUMENT ID	TECN	COMMENT
0.78±0.08	[53] ALBRECHT 96D	ARG	$e^+ e^- \to \Upsilon(4S)$

[53] Average multiplicity. NODE=S042S49;LINKAGE=A

$\Gamma(D^- \pi^+)/\Gamma_{total}$ Γ_8/Γ

NODE=S042R30

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0030±0.0004 OUR AVERAGE				
0.0029±0.0004±0.0002	81	[54] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.0027±0.0006±0.0005		[55] BORTOLETTO 92	CLEO	$e^+ e^- \to \Upsilon(4S)$
0.0048±0.0011±0.0011	22	[56] ALBRECHT 90J	ARG	$e^+ e^- \to \Upsilon(4S)$
$0.0051^{+0.0028+0.0013}_{-0.0025-0.0012}$	4	[57] BEBEK 87	CLEO	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0031±0.0013±0.0010	7	[56] ALBRECHT 88K	ARG	$e^+ e^- \to \Upsilon(4S)$

[54] ALAM 94 reports $[B(B^0 \to D^- \pi^+) \times B(D^+ \to K^- \pi^+ \pi^+)] = 0.000265 \pm 0.000032 \pm 0.000023$. We divide by our best value $B(D^+ \to K^- \pi^+ \pi^+) = (9.0 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R30;LINKAGE=AB

[55] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R30;LINKAGE=B9

[56] ALBRECHT 88K assumes $B^0 \overline{B}^0 : B^+ B^-$ production ratio is 45:55. Superseded by ALBRECHT 90J which assumes 50:50. NODE=S042R30;LINKAGE=B

[57] BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92. NODE=S042R30;LINKAGE=A

$\Gamma(D^- \rho^+)/\Gamma_{total}$ Γ_9/Γ

NODE=S042R33

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0079±0.0014 OUR AVERAGE				
0.0078±0.0013±0.0005	79	[58] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.009 ±0.005 ±0.003	9	[59] ALBRECHT 90J	ARG	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.022 ±0.012 ±0.009	6	[59] ALBRECHT 88K	ARG	$e^+ e^- \to \Upsilon(4S)$

[58] ALAM 94 reports $[B(B^0 \to D^- \rho^+) \times B(D^+ \to K^- \pi^+ \pi^+)] = 0.000704 \pm 0.000096 \pm 0.000070$. We divide by our best value $B(D^+ \to K^- \pi^+ \pi^+) = (9.0 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R33;LINKAGE=AB

[59] ALBRECHT 88K assumes $B^0 \overline{B}^0 : B^+ B^-$ production ratio is 45:55. Superseded by ALBRECHT 90J which assumes 50:50. NODE=S042R33;LINKAGE=A

$\Gamma(\overline{D}^0 \pi^+ \pi^-)/\Gamma_{total}$ Γ_{10}/Γ

NODE=S042R1

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<0.0016	90		[60] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.007	90		[61] BORTOLETTO 92	CLEO	$e^+ e^- \to \Upsilon(4S)$
<0.034	90		[62] BEBEK 87	CLEO	$e^+ e^- \to \Upsilon(4S)$
0.07 ±0.05		5	[63] BEHRENDS 83	CLEO	$e^+ e^- \to \Upsilon(4S)$

[60] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R1;LINKAGE=AB

[61] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. The product branching fraction into $D_0^*(2340)\pi$ NODE=S042R1;LINKAGE=B9

followed by $D_0^*(2340) \to D^0\pi$ is < 0.0001 at 90% CL and into $D_2^*(2460)$ followed by $D_2^*(2460) \to D^0\pi$ is < 0.0004 at 90% CL.

[62] BEBEK 87 assume the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. $B(D^0 \to K^-\pi^+) = (4.2 \pm 0.4 \pm 0.4)\%$ and $B(D^0 \to K^-\pi^+\pi^+\pi^-) = (9.1 \pm 0.8 \pm 0.8)\%$ were used. NODE=S042R1;LINKAGE=C

[63] Corrected by us using assumptions: $B(D^0 \to K^-\pi^+) = (0.042 \pm 0.006)$ and $B(\Upsilon(4S) \to B^0\overline{B}^0) = 50\%$. The product branching ratio is $B(B^0 \to \overline{D}^0\pi^+\pi^-)B(\overline{D}^0 \to K^+\pi^-) = (0.39 \pm 0.26) \times 10^{-2}$. NODE=S042R1;LINKAGE=G

$\Gamma(D^*(2010)^-\pi^+)/\Gamma_{total}$ Γ_{11}/Γ

NODE=S042R2
NODE=S042R2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.00276±0.00021 OUR AVERAGE					
$0.00281 \pm 0.00024 \pm 0.00005$		[64] BRANDENB...	98	CLE2	$e^+e^- \to \Upsilon(4S)$
$0.0026 \pm 0.0003 \pm 0.0004$	82	[65] ALAM	94	CLE2	$e^+e^- \to \Upsilon(4S)$
$0.00337 \pm 0.00096 \pm 0.00002$		[66] BORTOLETTO	92	CLEO	$e^+e^- \to \Upsilon(4S)$
$0.00236 \pm 0.00088 \pm 0.00002$	12	[67] ALBRECHT	90J	ARG	$e^+e^- \to \Upsilon(4S)$
$0.00236^{+0.00150}_{-0.00110} \pm 0.00002$	5	[68] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.010 \pm 0.004 \pm 0.001$	8	[69] AKERS	94J	OPAL	$e^+e^- \to Z$
$0.0027 \pm 0.0014 \pm 0.0010$	5	[70] ALBRECHT	87C	ARG	$e^+e^- \to \Upsilon(4S)$
$0.0035 \pm 0.002 \pm 0.002$		[71] ALBRECHT	86F	ARG	$e^+e^- \to \Upsilon(4S)$
$0.017 \pm 0.005 \pm 0.005$	41	[72] GILES	84	CLEO	$e^+e^- \to \Upsilon(4S)$

SYCLP1=A

[64] BRANDENBURG 98 assume equal production of B^+ and B^0 at $\Upsilon(4S)$ and use the D^* reconstruction technique. The first error is their experiment's error and the second error is the systematic error from the PDG 96 value of $B(D^* \to D\pi)$. NODE=S042R2;LINKAGE=BG

[65] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \to D^0\pi^+)$ and absolute $B(D^0 \to K^-\pi^+)$ and the PDG 1992 $B(D^0 \to K^-\pi^+\pi^0)/B(D^0 \to K^-\pi^+)$ and $B(D^0 \to K^-\pi^+\pi^+\pi^-)/B(D^0 \to K^-\pi^+)$. NODE=S042R2;LINKAGE=EF

[66] BORTOLETTO 92 reports $0.0040 \pm 0.0010 \pm 0.0007$ for $B(D^*(2010)^+ \to D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \to D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R2;LINKAGE=Q1

[67] ALBRECHT 90J reports $0.0028 \pm 0.0009 \pm 0.0006$ for $B(D^*(2010)^+ \to D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \to D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R2;LINKAGE=Q2

[68] BEBEK 87 reports $0.0028^{+0.0015+0.0010}_{-0.0012-0.0006}$ for $B(D^*(2010)^+ \to D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \to D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92 and ALBRECHT 90J. NODE=S042R2;LINKAGE=D

[69] Assumes $B(Z \to b\overline{b}) = 0.217$ and 38% B_d production fraction. NODE=S042R2;LINKAGE=C

[70] ALBRECHT 87C use PDG 86 branching ratios for D and $D^*(2010)$ and assume $B(\Upsilon(4S) \to B^+B^-) = 55\%$ and $B(\Upsilon(4S) \to B^0\overline{B}^0) = 45\%$. Superseded by ALBRECHT 90J. NODE=S042R2;LINKAGE=A

[71] ALBRECHT 86F uses pseudomass that is independent of D^0 and D^+ branching ratios. NODE=S042R2;LINKAGE=H

[72] Assumes $B(D^*(2010)^+ \to D^0\pi^+) = 0.60^{+0.08}_{-0.15}$. Assumes $B(\Upsilon(4S) \to B^0\overline{B}^0) = 0.40 \pm 0.02$ Does not depend on D branching ratios. NODE=S042R2;LINKAGE=G

$\Gamma(D^-\pi^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{12}/Γ

NODE=S042R88
NODE=S042R88

VALUE	DOCUMENT ID		TECN	COMMENT
0.0080±0.0021±0.0014	[73] BORTOLETTO	92	CLEO	$e^+e^- \to \Upsilon(4S)$

[73] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R88;LINKAGE=B9

$\Gamma((D^-\pi^+\pi^+\pi^-)\text{ nonresonant})/\Gamma_{total}$ Γ_{13}/Γ

NODE=S042R89
NODE=S042R89

VALUE	DOCUMENT ID		TECN	COMMENT
0.0039±0.0014±0.0013	[74] BORTOLETTO	92	CLEO	$e^+e^- \to \Upsilon(4S)$

[74] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R89;LINKAGE=B9

$\Gamma(D^-\pi^+\rho^0)/\Gamma_{\text{total}}$ Γ_{14}/Γ

NODE=S042R91
NODE=S042R91

VALUE	DOCUMENT ID	TECN	COMMENT
0.0011±0.0009±0.0004	[75] BORTOLETTO 92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[75] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

NODE=S042R91;LINKAGE=B9

$\Gamma(D^- a_1(1260)^+)/\Gamma_{\text{total}}$ Γ_{15}/Γ

NODE=S042R93
NODE=S042R93

VALUE	DOCUMENT ID	TECN	COMMENT
0.0060±0.0022±0.0024	[76] BORTOLETTO 92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[76] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

NODE=S042R93;LINKAGE=B9

$\Gamma(D^*(2010)^-\pi^+\pi^0)/\Gamma_{\text{total}}$ Γ_{16}/Γ

NODE=S042R19
NODE=S042R19

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0152±0.0052±0.0001	51	[77] ALBRECHT 90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.015 ±0.008 ±0.008	8	[78] ALBRECHT 87C	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[77] ALBRECHT 90J reports $0.018 \pm 0.004 \pm 0.005$ for $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \rightarrow D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

NODE=S042R19;LINKAGE=B9

[78] ALBRECHT 87C use PDG 86 branching ratios for D and $D^*(2010)$ and assume $B(\Upsilon(4S) \rightarrow B^+B^-) = 55\%$ and $B(\Upsilon(4S) \rightarrow B^0\overline{B}^0) = 45\%$. Superseded by ALBRECHT 90J.

NODE=S042R19;LINKAGE=A

$\Gamma(D^*(2010)^-\rho^+)/\Gamma_{\text{total}}$ Γ_{17}/Γ

NODE=S042R3
NODE=S042R3

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0068 ±0.0034 OUR AVERAGE				
0.0160 ±0.0113 ±0.0001		[79] BORTOLETTO 92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.00589±0.00352±0.00004	19	[80] ALBRECHT 90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0074 ±0.0010 ±0.0014	76	[81,82] ALAM 94	CLE2	Sup. by JESSOP 97
0.081 ±0.029 $^{+0.059}_{-0.024}$	19	[83] CHEN 85	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[79] BORTOLETTO 92 reports $0.019 \pm 0.008 \pm 0.011$ for $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \rightarrow D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

NODE=S042R3;LINKAGE=B9

[80] ALBRECHT 90J reports $0.007 \pm 0.003 \pm 0.003$ for $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \rightarrow D^0\pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

NODE=S042R3;LINKAGE=9B

[81] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0\pi^+)$ and absolute $B(D^0 \rightarrow K^-\pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^-\pi^+\pi^0)/B(D^0 \rightarrow K^-\pi^+)$ and $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$.

NODE=S042R3;LINKAGE=EF

[82] This decay is nearly completely longitudinally polarized, $\Gamma_L/\Gamma = (93 \pm 5 \pm 5)\%$, as expected from the factorization hypothesis (ROSNER 90). The nonresonant $\pi^+\pi^0$ contribution under the ρ^+ is less than 9% at 90% CL.

NODE=S042R3;LINKAGE=N

[83] Uses $B(D^* \rightarrow D^0\pi^+) = 0.6 \pm 0.15$ and $B(\Upsilon(4S) \rightarrow B^0\overline{B}^0) = 0.4$. Does not depend on D branching ratios.

NODE=S042R3;LINKAGE=C

$\Gamma(D^*(2010)^-\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{18}/Γ

NODE=S042R20
NODE=S042R20

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
0.0076±0.0018 OUR AVERAGE			Error includes scale factor of 1.4. See the ideogram below.		
0.0063±0.0010±0.0011		49	[84,85] ALAM 94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
0.0134±0.0036±0.0001			[86] BORTOLETTO 92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.0101±0.0041±0.0001		26	[87] ALBRECHT 90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.033 ±0.009 ±0.016		27	[88] ALBRECHT 87C	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
<0.042	90		[89] BEBEK 87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[84] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2010)^+ \rightarrow D^0 \pi^+$) and absolute B($D^0 \rightarrow K^- \pi^+$) and the PDG 1992 B($D^0 \rightarrow K^- \pi^+ \pi^0$)/B($D^0 \rightarrow K^- \pi^+$) and B($D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \rightarrow K^- \pi^+$). NODE=S042R20;LINKAGE=EF

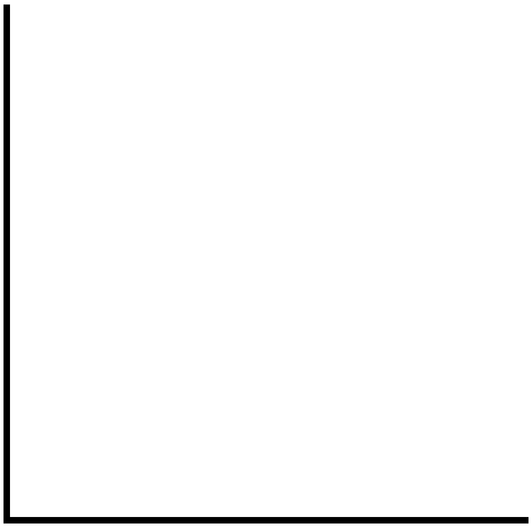
[85] The three pion mass is required to be between 1.0 and 1.6 GeV consistent with an a_1 meson. (If this channel is dominated by a_1^+, the branching ratio for $\overline{D}^{*-} a_1^+$ is twice that for $\overline{D}^{*-} \pi^+ \pi^+ \pi^-$.) NODE=S042R20;LINKAGE=M

[86] BORTOLETTO 92 reports $0.0159 \pm 0.0028 \pm 0.0037$ for B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = 0.57 ± 0.06. We rescale to our best value B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = $(67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R20;LINKAGE=B9

[87] ALBRECHT 90J reports $0.012 \pm 0.003 \pm 0.004$ for B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = 0.57 ± 0.06. We rescale to our best value B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = $(67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R20;LINKAGE=9B

[88] ALBRECHT 87C use PDG 86 branching ratios for D and $D^*(2010)$ and assume B($\Upsilon(4S) \rightarrow B^+ B^-$) = 55% and B($\Upsilon(4S) \rightarrow B^0 \overline{B}^0$) = 45%. Superseded by ALBRECHT 90J. NODE=S042R20;LINKAGE=A

[89] BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92. NODE=S042R20;LINKAGE=B



$\Gamma\left(D^*(2010)^- \pi^+ \pi^+ \pi^-\right)/\Gamma_{total}$

$\Gamma\left(\left(D^*(2010)^- \pi^+ \pi^+ \pi^-\right) \text{nonresonant}\right)/\Gamma_{total}$ Γ_{19}/Γ

NODE=S042R90
NODE=S042R90

VALUE	DOCUMENT ID	TECN	COMMENT
0.0000±0.0019±0.0016	[90] BORTOLETTO92	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$

[90] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$. NODE=S042R90;LINKAGE=B9

$\Gamma\left(D^*(2010)^- \pi^+ \rho^0\right)/\Gamma_{total}$ Γ_{20}/Γ

NODE=S042R92
NODE=S042R92

VALUE	DOCUMENT ID	TECN	COMMENT
0.00573±0.00317±0.00004	[91] BORTOLETTO92	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$

[91] BORTOLETTO 92 reports $0.0068 \pm 0.0032 \pm 0.0021$ for B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = 0.57 ± 0.06. We rescale to our best value B($D^*(2010)^+ \rightarrow D^0 \pi^+$) = $(67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R92;LINKAGE=B9

$\Gamma(D^*(2010)^- a_1(1260)^+)/\Gamma_{total}$ — Γ_{21}/Γ

NODE=S042R87
NODE=S042R87

VALUE	DOCUMENT ID	TECN	COMMENT
0.0130±0.0027 OUR AVERAGE			
0.0126±0.0020±0.0022	[92,93] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.0152±0.0070±0.0001	[94] BORTOLETTO92	CLEO	$e^+ e^- \to \Upsilon(4S)$

[92] ALAM 94 value is twice their $\Gamma(D^*(2010)^- \pi^+ \pi^+ \pi^-)/\Gamma_{total}$ value based on their observation that the three pions are dominantly in the $a_1(1260)$ mass range 1.0 to 1.6 GeV. NODE=S042R87;LINKAGE=A9

[93] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2010)^+ \to D^0 \pi^+$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042R87;LINKAGE=EF

[94] BORTOLETTO 92 reports $0.018 \pm 0.006 \pm 0.006$ for B($D^*(2010)^+ \to D^0 \pi^+$) = 0.57 ± 0.06. We rescale to our best value B($D^*(2010)^+ \to D^0 \pi^+$) = $(67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R87;LINKAGE=B9

$\Gamma(D^*(2010)^- \pi^+ \pi^+ \pi^- \pi^0)/\Gamma_{total}$ — Γ_{22}/Γ

NODE=S042R65
NODE=S042R65

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0345±0.0181±0.0003	28	[95] ALBRECHT 90J	ARG	$e^+ e^- \to \Upsilon(4S)$

[95] ALBRECHT 90J reports $0.041 \pm 0.015 \pm 0.016$ for B($D^*(2010)^+ \to D^0 \pi^+$) = 0.57 ± 0.06. We rescale to our best value B($D^*(2010)^+ \to D^0 \pi^+$) = $(67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R65;LINKAGE=B9

$\Gamma(\overline{D}{}_2^*(2460)^- \pi^+)/\Gamma_{total}$ — Γ_{23}/Γ

NODE=S042S22
NODE=S042S22

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0022	90	[96] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$

[96] ALAM 94 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \to K^- \pi^+$) and B($D_2^*(2460)^+ \to D^0 \pi^+$) = 30%. NODE=S042S22;LINKAGE=A

$\Gamma(\overline{D}{}_2^*(2460)^- \rho^+)/\Gamma_{total}$ — Γ_{24}/Γ

NODE=S042S23
NODE=S042S23

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0049	90	[97] ALAM 94	CLE2	$e^+ e^- \to \Upsilon(4S)$

[97] ALAM 94 assumesequal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \to K^- \pi^+$) and B($D_2^*(2460)^+ \to D^0 \pi^+$) = 30%. NODE=S042S23;LINKAGE=A

$\Gamma(D^- D^+)/\Gamma_{total}$ — Γ_{25}/Γ

NODE=S042S83
NODE=S042S83

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<5.9 \times 10^{-3}$	90	BARATE 98Q	ALEP	$e^+ e^- \to Z$

$\Gamma(D^- D_s^+)/\Gamma_{total}$ — Γ_{26}/Γ

NODE=S042R48
NODE=S042R48

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0080±0.0030 OUR AVERAGE				
$0.0084 \pm 0.0030 ^{+0.0020}_{-0.0021}$		[98] GIBAUT 96	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.013 ±0.011 ±0.003		[99] ALBRECHT 92G	ARG	$e^+ e^- \to \Upsilon(4S)$
0.007 ±0.004 ±0.002		[100] BORTOLETTO92	CLEO	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.012 ±0.007	3	[101] BORTOLETTO90	CLEO	$e^+ e^- \to \Upsilon(4S)$

[98] GIBAUT 96 reports $0.0087 \pm 0.0024 \pm 0.0020$ for B($D_s^+ \to \phi \pi^+$) = 0.035. We rescale to our best value B($D_s^+ \to \phi \pi^+$) = $(3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R48;LINKAGE=Z9

[99] ALBRECHT 92G reports $0.017 \pm 0.013 \pm 0.006$ for B($D_s^+ \to \phi \pi^+$) = 0.027. We rescale to our best value B($D_s^+ \to \phi \pi^+$) = $(3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^+ branching ratios, e.g., B($D^+ \to K^- \pi^+ \pi^+$) = 7.7 ± 1.0%. NODE=S042R48;LINKAGE=CA

[100] BORTOLETTO 92 reports $0.0080 \pm 0.0045 \pm 0.0030$ for B($D_s^+ \to \phi \pi^+$) = 0.030 ± 0.011. We rescale to our best value B($D_s^+ \to \phi \pi^+$) = $(3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R48;LINKAGE=B9

[101] BORTOLETTO 90 assume B($D_s \to \phi \pi^+$) = 2%. Superseded by BORTOLETTO 92. NODE=S042R48;LINKAGE=A

$\Gamma(D^*(2010)^- D_s^+)/\Gamma_{\text{total}}$ Γ_{27}/Γ

NODE=S042R47
NODE=S042R47

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0096±0.0034 OUR AVERAGE				
0.0090±0.0027±0.0022		[102] GIBAUT 96	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.010 ±0.008 ±0.003		[103] ALBRECHT 92G	ARG	$e^+ e^- \to \Upsilon(4S)$
0.013 ±0.008 ±0.003		[104] BORTOLETTO92	CLEO	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.024 ±0.014	3	[105] BORTOLETTO90	CLEO	$e^+ e^- \to \Upsilon(4S)$

[102] GIBAUT 96 reports $0.0093 \pm 0.0023 \pm 0.0016$ for $B(D_s^+ \to \phi\pi^+) = 0.035$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R47;LINKAGE=Z9

[103] ALBRECHT 92G reports $0.014 \pm 0.010 \pm 0.003$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^+ and $D^*(2010)^+$ branching ratios, e.g., $B(D^0 \to K^-\pi^+) = 3.71 \pm 0.25\%$, $B(D^+ \to K^-\pi^+\pi^+) = 7.1 \pm 1.0\%$, and $B(D^*(2010)^+ \to D^0\pi^+) = 55 \pm 4\%$. NODE=S042R47;LINKAGE=CA

[104] BORTOLETTO 92 reports $0.016 \pm 0.009 \pm 0.006$ for $B(D_s^+ \to \phi\pi^+) = 0.030 \pm 0.011$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$. NODE=S042R47;LINKAGE=B9

[105] BORTOLETTO 90 assume $B(D_s \to \phi\pi^+) = 2\%$. Superseded by BORTOLETTO 92. NODE=S042R47;LINKAGE=A

$\Gamma(D^- D_s^{*+})/\Gamma_{\text{total}}$ Γ_{28}/Γ

NODE=S042R98
NODE=S042R98

VALUE	DOCUMENT ID	TECN	COMMENT
0.010±0.005 OUR AVERAGE			
0.010±0.004±0.002	[106] GIBAUT 96	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.020±0.014±0.005	[107] ALBRECHT 92G	ARG	$e^+ e^- \to \Upsilon(4S)$

[106] GIBAUT 96 reports $0.0100 \pm 0.0035 \pm 0.0022$ for $B(D_s^+ \to \phi\pi^+) = 0.035$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R98;LINKAGE=Z9

[107] ALBRECHT 92G reports $0.027 \pm 0.017 \pm 0.009$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^+ branching ratios, e.g., $B(D^+ \to K^-\pi^+\pi^+) = 7.7 \pm 1.0\%$. NODE=S042R98;LINKAGE=CA

$[\Gamma(D^*(2010)^- D_s^+) + \Gamma(D^*(2010)^- D_s^{*+})]/\Gamma_{\text{total}}$ $(\Gamma_{27}+\Gamma_{29})/\Gamma$

NODE=S042R64
NODE=S042R64

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
$\mathbf{4.15 \pm 1.11^{+0.99}_{-1.02}}$	22	[108] BORTOLETTO90	CLEO	$e^+ e^- \to \Upsilon(4S)$

[108] BORTOLETTO 90 reports 7.5 ± 2.0 for $B(D_s^+ \to \phi\pi^+) = 0.02$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R64;LINKAGE=A

$\Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{\text{total}}$ Γ_{29}/Γ

NODE=S042R00
NODE=S042R00

VALUE	DOCUMENT ID	TECN	COMMENT
0.020±0.007 OUR AVERAGE			
0.020±0.006±0.005	[109] GIBAUT 96	CLE2	$e^+ e^- \to \Upsilon(4S)$
0.019±0.011±0.005	[110] ALBRECHT 92G	ARG	$e^+ e^- \to \Upsilon(4S)$

[109] GIBAUT 96 reports $0.0203 \pm 0.0050 \pm 0.0036$ for $B(D_s^+ \to \phi\pi^+) = 0.035$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R00;LINKAGE=Z9

[110] ALBRECHT 92G reports $0.026 \pm 0.014 \pm 0.006$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = (3.6 \pm 0.9) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^+ and $D^*(2010)^+$ branching ratios, e.g., $B(D^0 \to K^-\pi^+) = 3.71 \pm 0.25\%$, $B(D^+ \to K^-\pi^+\pi^+) = 7.1 \pm 1.0\%$, and $B(D^*(2010)^+ \to D^0\pi^+) = 55 \pm 4\%$. NODE=S042R00;LINKAGE=CA

$\Gamma(D_s^+\pi^-)/\Gamma_{total}$ Γ_{30}/Γ

NODE=S042R49
NODE=S042R49

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.00028	90	[111] ALEXANDER 93B	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0013	90	[112] BORTOLETTO90	CLEO	$e^+e^- \to \Upsilon(4S)$

[111] ALEXANDER 93B reports $< 2.7 \times 10^{-4}$ for $B(D_s^+ \to \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042R49;LINKAGE=XB

[112] BORTOLETTO 90 assume $B(D_s \to \phi\pi^+) = 2\%$.
NODE=S042R49;LINKAGE=A

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

NODE=S042S17
NODE=S042S17

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0005	90	[113] ALEXANDER 93B	CLE2	$e^+e^- \to \Upsilon(4S)$

[113] ALEXANDER 93B reports $< 4.4 \times 10^{-4}$ for $B(D_s^+ \to \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S17;LINKAGE=XB

$\left[\Gamma(D_s^+\pi^-)+\Gamma(D_s^-K^+)\right]/\Gamma_{total}$ $(\Gamma_{30}+\Gamma_{36})/\Gamma$

NODE=S042S4
NODE=S042S4

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0013	90	[114] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[114] ALBRECHT 93E reports $< 1.7 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S4;LINKAGE=CA

$\left[\Gamma(D_s^{*+}\pi^-)+\Gamma(D_s^{*-}K^+)\right]/\Gamma_{total}$ $(\Gamma_{31}+\Gamma_{37})/\Gamma$

NODE=S042S6
NODE=S042S6

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0009	90	[115] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[115] ALBRECHT 93E reports $< 1.2 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S6;LINKAGE=CA

$\Gamma(D_s^+\rho^-)/\Gamma_{total}$ Γ_{32}/Γ

NODE=S042S7
NODE=S042S7

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0007	90	[116] ALEXANDER 93B	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0016	90	[117] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[116] ALEXANDER 93B reports $< 6.6 \times 10^{-4}$ for $B(D_s^+ \to \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S7;LINKAGE=XB

[117] ALBRECHT 93E reports $< 2.2 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S7;LINKAGE=CA

$\Gamma(D_s^{*+}\rho^-)/\Gamma_{total}$ Γ_{33}/Γ

NODE=S042S8
NODE=S042S8

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0008	90	[118] ALEXANDER 93B	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0019	90	[119] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[118] ALEXANDER 93B reports $< 7.4 \times 10^{-4}$ for $B(D_s^+ \to \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S8;LINKAGE=XB

[119] ALBRECHT 93E reports $< 2.5 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S8;LINKAGE=CA

$\Gamma(D_s^+a_1(1260)^-)/\Gamma_{total}$ Γ_{34}/Γ

NODE=S042S9
NODE=S042S9

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0026	90	[120] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[120] ALBRECHT 93E reports $< 3.5 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S9;LINKAGE=CA

$\Gamma(D_s^{*+}a_1(1260)^-)/\Gamma_{total}$ Γ_{35}/Γ

NODE=S042S10
NODE=S042S10

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0022	90	[121] ALBRECHT 93E	ARG	$e^+e^- \to \Upsilon(4S)$

[121] ALBRECHT 93E reports $< 2.9 \times 10^{-3}$ for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.036$.
NODE=S042S10;LINKAGE=CA

$\Gamma(D_s^- K^+)/\Gamma_{total}$ Γ_{36}/Γ

NODE=S042R50
NODE=S042R50

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.00024	90	[122] ALEXANDER 93B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0013	90	[123] BORTOLETTO90	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[122] ALEXANDER 93B reports $< 2.3 \times 10^{-4}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042R50;LINKAGE=XB

[123] BORTOLETTO 90 assume $B(D_s \rightarrow \phi\pi^+) = 2\%$. NODE=S042R50;LINKAGE=A

$\Gamma(D_s^{*-} K^+)/\Gamma_{total}$ Γ_{37}/Γ

NODE=S042S18
NODE=S042S18

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.00017	90	[124] ALEXANDER 93B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

[124] ALEXANDER 93B reports $< 1.7 \times 10^{-4}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S18;LINKAGE=XB

$\Gamma(D_s^- K^*(892)^+)/\Gamma_{total}$ Γ_{38}/Γ

NODE=S042S11
NODE=S042S11

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0010	90	[125] ALEXANDER 93B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0034	90	[126] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[125] ALEXANDER 93B reports $< 9.7 \times 10^{-4}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S11;LINKAGE=XB

[126] ALBRECHT 93E reports $< 4.6 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S11;LINKAGE=CA

$\Gamma(D_s^{*-} K^*(892)^+)/\Gamma_{total}$ Γ_{39}/Γ

NODE=S042S12
NODE=S042S12

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0011	90	[127] ALEXANDER 93B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.004	90	[128] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[127] ALEXANDER 93B reports $< 11.0 \times 10^{-4}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S12;LINKAGE=XB

[128] ALBRECHT 93E reports $< 5.8 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S12;LINKAGE=CA

$\Gamma(D_s^- \pi^+ K^0)/\Gamma_{total}$ Γ_{40}/Γ

NODE=S042S13
NODE=S042S13

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.005	90	[129] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[129] ALBRECHT 93E reports $< 7.3 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S13;LINKAGE=CA

$\Gamma(D_s^{*-} \pi^+ K^0)/\Gamma_{total}$ Γ_{41}/Γ

NODE=S042S14
NODE=S042S14

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0031	90	[130] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[130] ALBRECHT 93E reports $< 4.2 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S14;LINKAGE=CA

$\Gamma(D_s^- \pi^+ K^*(892)^0)/\Gamma_{total}$ Γ_{42}/Γ

NODE=S042S15
NODE=S042S15

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.004	90	[131] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[131] ALBRECHT 93E reports $< 5.0 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S15;LINKAGE=CA

$\Gamma(D_s^{*-} \pi^+ K^*(892)^0)/\Gamma_{total}$ Γ_{43}/Γ

NODE=S042S16
NODE=S042S16

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.0020	90	[132] ALBRECHT 93E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[132] ALBRECHT 93E reports $< 2.7 \times 10^{-3}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.036$. NODE=S042S16;LINKAGE=CA

$\Gamma(\overline{D}^0\pi^0)/\Gamma_{total}$ Γ_{44}/Γ

NODE=S042S26
NODE=S042S26

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00012	90	[133] NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00048	90	[134] ALAM	94	CLE2	Repl. by NEMATI 98

[133] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S26;LINKAGE=NM

[134] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^0$)/B($D^0 \rightarrow K^-\pi^+$) and B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). NODE=S042S26;LINKAGE=E

$\Gamma(\overline{D}^0\rho^0)/\Gamma_{total}$ Γ_{45}/Γ

NODE=S042R34
NODE=S042R34

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.00039	90		[135] NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.00055	90		[136] ALAM	94	CLE2	Repl. by NEMATI 98
<0.0006	90		[137] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<0.0027	90	4	[138] ALBRECHT	88K	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[135] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042R34;LINKAGE=NM

[136] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^0$)/B($D^0 \rightarrow K^-\pi^+$) and B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). NODE=S042R34;LINKAGE=E

[137] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D. NODE=S042R34;LINKAGE=B9

[138] ALBRECHT 88K reports < 0.003 assuming $B^0\overline{B}^0$:B^+B^- production ratio is 45:55. We rescale to 50%. NODE=S042R34;LINKAGE=A

$\Gamma(\overline{D}^0\eta)/\Gamma_{total}$ Γ_{46}/Γ

NODE=S042S27
NODE=S042S27

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00013	90	[139] NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00068	90	[140] ALAM	94	CLE2	Repl. by NEMATI 98

[139] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S27;LINKAGE=NM

[140] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^0$)/B($D^0 \rightarrow K^-\pi^+$) and B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). NODE=S042S27;LINKAGE=E

$\Gamma(\overline{D}^0\eta')/\Gamma_{total}$ Γ_{47}/Γ

NODE=S042S28
NODE=S042S28

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00094	90	[141] NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00086	90	[142] ALAM	94	CLE2	Repl. by NEMATI 98

[141] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S28;LINKAGE=NM

[142] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^0$)/B($D^0 \rightarrow K^-\pi^+$) and B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). NODE=S042S28;LINKAGE=E

$\Gamma(\overline{D}^0\omega)/\Gamma_{total}$ Γ_{48}/Γ

NODE=S042S29
NODE=S042S29

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00051	90	[143] NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00063	90	[144] ALAM	94	CLE2	Repl. by NEMATI 98

[143] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S29;LINKAGE=NM

[144] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute B($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^0$)/B($D^0 \rightarrow K^-\pi^+$) and B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). NODE=S042S29;LINKAGE=E

$\Gamma(\overline{D}^*(2007)^0 \pi^0)/\Gamma_{total}$ Γ_{49}/Γ

NODE=S042S30

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00044	90	[145] NEMATI	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00097	90	[146] ALAM	94	CLE2	Repl. by NEMATI 98

[145] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S30;LINKAGE=NM

[146] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2007)^0 \to D^0 \pi^0$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042S30;LINKAGE=EB

$\Gamma(\overline{D}^*(2007)^0 \rho^0)/\Gamma_{total}$ Γ_{50}/Γ

NODE=S042S31

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00056	90	[147] NEMATI	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00117	90	[148] ALAM	94	CLE2	Repl. by NEMATI 98

[147] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S31;LINKAGE=NM

[148] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2007)^0 \to D^0 \pi^0$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042S31;LINKAGE=EB

$\Gamma(\overline{D}^*(2007)^0 \eta)/\Gamma_{total}$ Γ_{51}/Γ

NODE=S042S32

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00026	90	[149] NEMATI	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00069	90	[150] ALAM	94	CLE2	Repl. by NEMATI 98

[149] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S32;LINKAGE=NM

[150] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2007)^0 \to D^0 \pi^0$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042S32;LINKAGE=EB

$\Gamma(\overline{D}^*(2007)^0 \eta')/\Gamma_{total}$ Γ_{52}/Γ

NODE=S042S33

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0014	90	BRANDENB...	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0019	90	[151] NEMATI	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
<0.0027	90	[152] ALAM	94	CLE2	Repl. by NEMATI 98

[151] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S33;LINKAGE=NM

[152] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2007)^0 \to D^0 \pi^0$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042S33;LINKAGE=EB

$\Gamma(\overline{D}^*(2007)^0 \omega)/\Gamma_{total}$ Γ_{53}/Γ

NODE=S042S34

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00074	90	[153] NEMATI	98	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0021	90	[154] ALAM	94	CLE2	Repl. by NEMATI 98

[153] NEMATI 98 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the PDG 96 values for D^0, D^{*0}, η, η', and ω branching fractions. NODE=S042S34;LINKAGE=NM

[154] ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II B($D^*(2007)^0 \to D^0 \pi^0$) and absolute B($D^0 \to K^- \pi^+$) and the PDG 1992 B($D^0 \to K^- \pi^+ \pi^0$)/B($D^0 \to K^- \pi^+$) and B($D^0 \to K^- \pi^+ \pi^+ \pi^-$)/B($D^0 \to K^- \pi^+$). NODE=S042S34;LINKAGE=EB

$\Gamma(D^*(2010)^+ D^*(2010)^-)/\Gamma_{total}$ Γ_{54}/Γ

NODE=S042S52

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.2 × 10^{-3}	90	[155] ASNER	97	CLE2	$e^+ e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6.1 × 10^{-3}	90	[156] BARATE	98Q	ALEP	$e^+ e^- \to Z$

[155] ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011. This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. NODE=S042S52;LINKAGE=A

[156] BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of $(2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}$. NODE=S042S52;LINKAGE=AB

$\Gamma(D^*(2010)^+ D^-)/\Gamma_{total}$ Γ_{55}/Γ

NODE=S042S53

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-3}	90	ASNER	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

$\Gamma(D^+ D^*(2010)^-)/\Gamma_{total}$ Γ_{56}/Γ

NODE=S042S54

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-3}	90	ASNER	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

$[\Gamma(D^*(2010)^+ D^-) + \Gamma(D^+ D^*(2010)^-)]/\Gamma_{total}$ $(\Gamma_{55}+\Gamma_{56})/\Gamma$

NODE=S042S82

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.6 \times 10^{-3}$	90	BARATE	98Q	ALEP	$e^+e^- \rightarrow Z$

$\Gamma(D^{(*)0}\overline{D}^{(*)0})/\Gamma_{total}$ Γ_{57}/Γ

NODE=S042S84

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.027	90	BARATE	98Q	ALEP	$e^+e^- \rightarrow Z$

$\Gamma(J/\psi(1S) K^0)/\Gamma_{total}$ Γ_{58}/Γ

NODE=S042R23

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
8.9±1.2 OUR AVERAGE						
$8.5^{+1.4}_{-1.2}\pm0.6$			[157] JESSOP	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
11.5±2.3±1.7			[158] ABE	96H	CDF	$p\overline{p}$ at 1.8 TeV
7.0±4.1±0.1			[159] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
9.3±7.3±0.2		2	[160] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
7.5±2.4±0.8		10	[159] ALAM	94	CLE2	Sup. by JESSOP 97
<50	90		ALAM	86	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[157] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R23;LINKAGE=JJ

[158] ABE 96H assumes that B($B^+ \rightarrow J/\psi K^+$) = $(1.02 \pm 0.14) \times 10^{-3}$. NODE=S042R23;LINKAGE=AH

[159] BORTOLETTO 92 reports $6 \pm 3 \pm 2$ for B($J/\psi(1S) \rightarrow e^+e^-$) = 0.069 ± 0.009. We rescale to our best value B($J/\psi(1S) \rightarrow e^+e^-$) = $(5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R23;LINKAGE=B9

[160] ALBRECHT 90J reports $8 \pm 6 \pm 2$ for B($J/\psi(1S) \rightarrow e^+e^-$) = 0.069 ± 0.009. We rescale to our best value B($J/\psi(1S) \rightarrow e^+e^-$) = $(5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R23;LINKAGE=9B

$\Gamma(J/\psi(1S) K^+ \pi^-)/\Gamma_{total}$ Γ_{59}/Γ

NODE=S042R4

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.00116±0.00056±0.00002			[161] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.0013	90		[162] ALBRECHT	87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
<0.0063	90	2	GILES	84	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[161] BORTOLETTO 92 reports $0.0010 \pm 0.0004 \pm 0.0003$ for B($J/\psi(1S) \rightarrow e^+e^-$) = 0.069 ± 0.009. We rescale to our best value B($J/\psi(1S) \rightarrow e^+e^-$) = $(5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R4;LINKAGE=B9

[162] ALBRECHT 87D assume $B^+B^-/B^0\overline{B}^0$ ratio is 55/45. $K\pi$ system is specifically selected as nonresonant. NODE=S042R4;LINKAGE=C

$\Gamma(J/\psi(1S) K^*(892)^0)/\Gamma_{total}$ Γ_{60}/Γ

NODE=S042R22

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.00150±0.00017 OUR AVERAGE					
0.00174±0.00020±0.00018		[163] ABE	98O	CDF	$p\overline{p}$ 1.8 TeV
0.00132±0.00017±0.00017		[164] JESSOP	97	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
0.00128±0.00066±0.00002		[165] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.00128±0.00060±0.00002	6	[166] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.0041 ±0.0018 ±0.0001	5	[167] BEBEK	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

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

0.00136±0.00027±0.00022		[168] ABE	96H	CDF	Sup. by ABE 98O
0.00169±0.00031±0.00018	29	[169] ALAM	94	CLE2	Sup. by JESSOP 97
		[170] ALBRECHT	94G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$
0.0040 ±0.0030		[171] ALBAJAR	91E	UA1	$E^{p\overline{p}}_{\rm cm}$= 630 GeV
0.0033 ±0.0018	5	[172] ALBRECHT	87D	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$
0.0041 ±0.0018	5	[173] ALAM	86	CLEO	Repl. by BEBEK 87

[163] ABE 98O reports $[B(B^0 \rightarrow J/\psi(1S)K^*(892)^0)]/[B(B^+ \rightarrow J/\psi(1S)K^+)] = 1.76 \pm 0.14 \pm 0.15$. We multiply by our best value $B(B^+ \rightarrow J/\psi(1S)K^+) = (9.9 \pm 1.0) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=S042R22;LINKAGE=ME

[164] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R22;LINKAGE=JJ

[165] BORTOLETTO 92 reports $0.0011 \pm 0.0005 \pm 0.0003$ for $B(J/\psi(1S) \rightarrow e^+ e^-) = 0.069 \pm 0.009$. We rescale to our best value $B(J/\psi(1S) \rightarrow e^+ e^-) = (5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R22;LINKAGE=B9

[166] ALBRECHT 90J reports $0.0011 \pm 0.0005 \pm 0.0002$ for $B(J/\psi(1S) \rightarrow e^+ e^-) = 0.069 \pm 0.009$. We rescale to our best value $B(J/\psi(1S) \rightarrow e^+ e^-) = (5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R22;LINKAGE=9B

[167] BEBEK 87 reports $0.0035 \pm 0.0016 \pm 0.0003$ for $B(J/\psi(1S) \rightarrow e^+ e^-) = 0.069 \pm 0.009$. We rescale to our best value $B(J/\psi(1S) \rightarrow e^+ e^-) = (5.93 \pm 0.10) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Updated in BORTOLETTO 92 to use the same assumptions. NODE=S042R22;LINKAGE=B

[168] ABE 96H assumes that $B(B^+ \rightarrow J/\psi K^+) = (1.02 \pm 0.14) \times 10^{-3}$. NODE=S042R22;LINKAGE=AH

[169] The neutral and charged B events together are predominantly longitudinally polarized, $\Gamma_L/\Gamma = 0.080 \pm 0.08 \pm 0.05$. This can be compared with a prediction using HQET, 0.73 (KRAMER 92). This polarization indicates that the $B \rightarrow \psi K^*$ decay is dominated by the $CP = -1$ CP eigenstate. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R22;LINKAGE=I

[170] ALBRECHT 94G measures the polarization in the vector-vector decay to be predominantly longitudinal, $\Gamma_T/\Gamma = 0.03 \pm 0.16 \pm 0.15$ making the neutral decay a CP eigenstate when the K^{*0} decays through $K^0_S \pi^0$. NODE=S042R22;LINKAGE=AA

[171] ALBAJAR 91E assumes B^0_d production fraction of 36%. NODE=S042R22;LINKAGE=D

[172] ALBRECHT 87D assume $B^+ B^- / B^0 \overline{B}^0$ ratio is 55/45. Superseded by ALBRECHT 90J. NODE=S042R22;LINKAGE=C

[173] ALAM 86 assumes $B^{\pm}/B^0$ ratio is 60/40. The observation of the decay $B^+ \rightarrow J/\psi K^*(892)^+$ (HAAS 85) has been retracted in this paper. NODE=S042R22;LINKAGE=A

$\Gamma(J/\psi(1S)K^*(892)^0)/\Gamma(J/\psi(1S)K^0)$ Γ_{60}/Γ_{58}

NODE=S042S45
NODE=S042S45

VALUE	DOCUMENT ID		TECN	COMMENT
1.39±0.36±0.10	ABE	96Q	CDF	$p\overline{p}$

$\Gamma(J/\psi(1S)\pi^0)/\Gamma_{\rm total}$ Γ_{61}/Γ

NODE=S042S35
NODE=S042S35

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<5.8 × 10^{-5}	90		BISHAI	96	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<3.2 \times 10^{-4}$	90		[174] ACCIARRI	97C	L3	
$<6.9 \times 10^{-3}$	90	1	[175] ALEXANDER	95	CLE2	Sup. by BISHAI 96

[174] ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). NODE=S042S35;LINKAGE=CQ

[175] Assumes equal production of $B^+ B^-$ and $B^0 \overline{B}^0$ on $\Upsilon(4S)$. NODE=S042S35;LINKAGE=A

$\Gamma(J/\psi(1S)\eta)/\Gamma_{\rm total}$ Γ_{62}/Γ

NODE=S042S51
NODE=S042S51

VALUE	CL%	DOCUMENT ID		TECN
<1.2 × 10^{-3}	90	[176] ACCIARRI	97C	L3

[176] ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). NODE=S042S51;LINKAGE=CQ

$\Gamma(J/\psi(1S)\rho^0)/\Gamma_{\rm total}$ Γ_{63}/Γ

NODE=S042S46
NODE=S042S46

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.5 × 10^{-4}	90	BISHAI	96	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(J/\psi(1S)\omega)/\Gamma_{\rm total}$ Γ_{64}/Γ

NODE=S042S47
NODE=S042S47

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.7 × 10^{-4}	90	BISHAI	96	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(\psi(2S)K^0)/\Gamma_{total}$ Γ_{65}/Γ

NODE=S042R66
NODE=S042R66

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0008	90	[177] ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0015	90	[177] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<0.0028	90	[177] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[177] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S042R66;LINKAGE=B9

$\Gamma(\psi(2S)K^+\pi^-)/\Gamma_{total}$ Γ_{66}/Γ

NODE=S042R68
NODE=S042R68

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.001	90	[178] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[178] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S042R68;LINKAGE=B9

$\Gamma(\psi(2S)K^*(892)^0)/\Gamma_{total}$ Γ_{67}/Γ

NODE=S042R67
NODE=S042R67

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
(9.3 ±2.3) × 10^{-4} OUR AVERAGE					
0.00090±0.00022±0.00009		[179] ABE	98O	CDF	$p\overline{p}$ 1.8 TeV
0.0014 ±0.0008 ±0.0004		[180] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.0019	90	[180] ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
< 0.0023	90	[180] ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[179] ABE 98O reports $[B(B^0 \rightarrow \psi(2S)K^*(892)^0)]/[B(B^+ \rightarrow J/\psi(1S)K^+)] = 0.908 \pm 0.194 \pm 0.10$. We multiply by our best value $B(B^+ \rightarrow J/\psi(1S)K^+) = (9.9 \pm 1.0) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S042R67;LINKAGE=ME

[180] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S042R67;LINKAGE=B9

$\Gamma(\chi_{c1}(1P)K^0)/\Gamma_{total}$ Γ_{68}/Γ

NODE=S042S24
NODE=S042S24

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0027	90	[181] ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

[181] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S042S24;LINKAGE=B9

$\Gamma(\chi_{c1}(1P)K^*(892)^0)/\Gamma_{total}$ Γ_{69}/Γ

NODE=S042S25
NODE=S042S25

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0021	90	[182] ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

[182] BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S042S25;LINKAGE=B9

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

NODE=S042R10
NODE=S042R10

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.5^{+0.5}_{-0.4} \pm 0.14}$		GODANG	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$2.4^{+1.7}_{-1.1} \pm 0.2$		[183] ADAM	96D	DLPH	$e^+e^- \rightarrow Z$
< 1.7	90	ASNER	96	CLE2	Sup. by ADAM 96D
< 3.0	90	[184] BUSKULIC	96V	ALEP	$e^+e^- \rightarrow Z$
< 9	90	[185] ABREU	95N	DLPH	Sup. by ADAM 96D
< 8.1	90	[186] AKERS	94L	OPAL	$e^+e^- \rightarrow Z$
< 2.6	90	[187] BATTLE	93	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
<18	90	ALBRECHT	91B	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
< 9	90	[188] AVERY	89B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<32	90	AVERY	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[183] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. Contributions from B^0 and B_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons.

NODE=S042R10;LINKAGE=DQ

[184] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons.

NODE=S042R10;LINKAGE=BV

[185] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. Contributions from B^0 and B^0_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons.

NODE=S042R10;LINKAGE=SR

[186] Assumes $B(Z \rightarrow b\overline{b}) = 0.217$ and B^0_d (B^0_s) fraction 39.5% (12%).

NODE=S042R10;LINKAGE=C

[187] BATTLE 93 assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$.

NODE=S042R10;LINKAGE=B

[188] Assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$.

NODE=S042R10;LINKAGE=A1

$\Gamma(K^0\pi^0)/\Gamma_{total}$ — Γ_{71}/Γ

NODE=S042S41

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.1 × 10^{-5}	90	GODANG	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.0\times10^{-5}$	90	ASNER	96	CLE2	Rep. by GODANG 98

$\Gamma(\eta' K^0)/\Gamma_{total}$ — Γ_{72}/Γ

NODE=S042S61

VALUE	DOCUMENT ID		TECN	COMMENT
$(4.7^{+2.7}_{-2.0}\pm0.9)\times10^{-5}$	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta' K^*(892)^0)/\Gamma_{total}$ — Γ_{73}/Γ

NODE=S042S62

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta K^*(892)^0)/\Gamma_{total}$ — Γ_{74}/Γ

NODE=S042S63

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta K^0)/\Gamma_{total}$ — Γ_{75}/Γ

NODE=S042S64

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.3 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\omega K^0)/\Gamma_{total}$ — Γ_{76}/Γ

NODE=S042S71

VALUE	CL%	DOCUMENT ID		TECN
<5.7 × 10^{-5}	90	[189] BERGFELD	98	CLE2

[189] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S71;LINKAGE=EQ

$\Gamma(\omega K^*(892)^0)/\Gamma_{total}$ — Γ_{77}/Γ

NODE=S042S72

VALUE	CL%	DOCUMENT ID		TECN
<2.3 × 10^{-5}	90	[190] BERGFELD	98	CLE2

[190] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S72;LINKAGE=EQ

$[\Gamma(K^+\pi^-)+\Gamma(\pi^+\pi^-)]/\Gamma_{total}$ — $(\Gamma_{70}+\Gamma_{108})/\Gamma$

NODE=S042S2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
(1.9±0.6) × 10^{-5} OUR AVERAGE					
$(2.8^{+1.5}_{-1.0}\pm2.0)\times10^{-5}$		[191] ADAM	96D	DLPH	$e^+e^- \to Z$
$(1.8^{+0.6+0.3}_{-0.5-0.4})\times10^{-5}$	17.2	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$(2.4^{+0.8}_{-0.7}\pm0.2)\times10^{-5}$		[192] BATTLE	93	CLE2	$e^+e^- \to \Upsilon(4S)$

[191] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. Contributions from B^0 and B_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S2;LINKAGE=DQ

[192] BATTLE 93 assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042S2;LINKAGE=B

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{78}/Γ

NODE=S042S1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.3 × 10^{-6}	90	GODANG	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.6\times10^{-5}$		[193] ADAM	96D	DLPH	$e^+e^- \to Z$
$<0.4\times10^{-5}$	90	ASNER	96	CLE2	Repl. by GODANG 98
$<1.8\times10^{-5}$	90	[194] BUSKULIC	96V	ALEP	$e^+e^- \to Z$
$<1.2\times10^{-4}$	90	[195] ABREU	95N	DLPH	Sup. by ADAM 96D
$<0.7\times10^{-5}$	90	[196] BATTLE	93	CLE2	$e^+e^- \to \Upsilon(4S)$

[193] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. Contributions from B^0 and B_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S1;LINKAGE=DQ

[194] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S042S1;LINKAGE=BV

[195] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. Contributions from B^0 and B^0_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S1;LINKAGE=SR

[196] BATTLE 93 assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042S1;LINKAGE=B

$\Gamma(K^0\overline{K}^0)/\Gamma_{total}$ — Γ_{79}/Γ

NODE=S042S60

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.7 × 10^−5	90	GODANG	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^+\rho^-)/\Gamma_{total}$ — Γ_{80}/Γ

NODE=S042S42

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.5 × 10^−5	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^0\pi^+\pi^-)/\Gamma_{total}$ — Γ_{81}/Γ

NODE=S042R80

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.4 × 10^−4	90	ALBRECHT	91E	ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^0\rho^0)/\Gamma_{total}$ — Γ_{82}/Γ

NODE=S042R12

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^−5	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.2 × 10^−4	90	ALBRECHT	91B	ARG	$e^+e^- \to \Upsilon(4S)$
<5.0 × 10^−4	90	[197] AVERY	89B	CLEO	$e^+e^- \to \Upsilon(4S)$
<0.064	90	[198] AVERY	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[197] AVERY 89B reports $< 5.8 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R12;LINKAGE=A1

[198] AVERY 87 reports < 0.08 assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R12;LINKAGE=AV

$\Gamma(K^0 f_0(980))/\Gamma_{total}$ — Γ_{83}/Γ

NODE=S042R42

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.6 × 10^−4	90	[199] AVERY	89B	CLEO	$e^+e^- \to \Upsilon(4S)$

[199] AVERY 89B reports $< 4.2 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R42;LINKAGE=A1

$\Gamma(K^*(892)^+\pi^-)/\Gamma_{total}$ — Γ_{84}/Γ

NODE=S042R11
NODE=S042R11;CHECK LIMITS

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.2 × 10^−5	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
<3.8 × 10^−4	90	[200] AVERY	89B	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6.2 × 10^−4	90	ALBRECHT	91B	ARG	$e^+e^- \to \Upsilon(4S)$
<5.6 × 10^−4	90	[201] AVERY	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[200] AVERY 89B reports $< 4.4 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R11;LINKAGE=A1

[201] AVERY 87 reports $< 7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R11;LINKAGE=AV

$\Gamma(K^*(892)^0\pi^0)/\Gamma_{total}$ — Γ_{85}/Γ

NODE=S042S43

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.8 × 10^−5	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K_2^*(1430)^+\pi^-)/\Gamma_{total}$ — Γ_{86}/Γ

NODE=S042R72

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.6 × 10^−3	90	ALBRECHT	91B	ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^0K^+K^-)/\Gamma_{total}$ — Γ_{87}/Γ

NODE=S042R81

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.3 × 10^−3	90	ALBRECHT	91E	ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^0\phi)/\Gamma_{total}$ — Γ_{88}/Γ

NODE=S042R13

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.1 × 10^−5	90	[202] BERGFELD	98	CLE2	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<8.8 × 10^−5	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
<7.2 × 10^−4	90	ALBRECHT	91B	ARG	$e^+e^- \to \Upsilon(4S)$
<4.2 × 10^−4	90	[203] AVERY	89B	CLEO	$e^+e^- \to \Upsilon(4S)$
<1.0 × 10^−3	90	[204] AVERY	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[202] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R13;LINKAGE=EQ

[203] AVERY 89B reports $< 4.9 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R13;LINKAGE=A1

[204] AVERY 87 reports $< 1.3 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R13;LINKAGE=AV

$\Gamma(K^-\pi^+\pi^+\pi^-)/\Gamma_{total}$ — Γ_{89}/Γ

NODE=S042S40

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2.3 × 10⁻⁴	90	[205] ADAM	96D DLPH	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<2.1 \times 10^{-4}$	90	[206] ABREU	95N DLPH	Sup. by ADAM 96D

[205] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. Contributions from B^0 and B_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S40;LINKAGE=DQ

[206] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. Contributions from B^0 and B^0_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S40;LINKAGE=SR

$\Gamma(K^*(892)^0\pi^+\pi^-)/\Gamma_{total}$ — Γ_{90}/Γ

NODE=S042R84

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.4 × 10⁻³	90	ALBRECHT	91E ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^*(892)^0\rho^0)/\Gamma_{total}$ — Γ_{91}/Γ

NODE=S042R15

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<4.6 × 10⁻⁴	90	ALBRECHT	91B ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<5.8 \times 10^{-4}$	90	[207] AVERY	89B CLEO	$e^+e^- \to \Upsilon(4S)$
$<9.6 \times 10^{-4}$	90	[208] AVERY	87 CLEO	$e^+e^- \to \Upsilon(4S)$

[207] AVERY 89B reports $< 6.7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R15;LINKAGE=A1

[208] AVERY 87 reports $< 1.2 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R15;LINKAGE=AV

$\Gamma(K^*(892)^0 f_0(980))/\Gamma_{total}$ — Γ_{92}/Γ

NODE=S042R43

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.7 × 10⁻⁴	90	[209] AVERY	89B CLEO	$e^+e^- \to \Upsilon(4S)$

[209] AVERY 89B reports $< 2.0 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R43;LINKAGE=A1

$\Gamma(K_1(1400)^+\pi^-)/\Gamma_{total}$ — Γ_{93}/Γ

NODE=S042R71

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.1 × 10⁻³	90	ALBRECHT	91B ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^- a_1(1260)^+)/\Gamma_{total}$ — Γ_{94}/Γ

NODE=S042S39

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2.3 × 10⁻⁴	90	[210] ADAM	96D DLPH	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<3.9 \times 10^{-4}$	90	[211] ABREU	95N DLPH	Sup. by ADAM 96D

[210] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. Contributions from B^0 and B_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S39;LINKAGE=DQ

[211] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. Contributions from B^0 and B^0_s decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons. NODE=S042S39;LINKAGE=SR

$\Gamma(K^*(892)^0 K^+K^-)/\Gamma_{total}$ — Γ_{95}/Γ

NODE=S042R85

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<6.1 × 10⁻⁴	90	ALBRECHT	91E ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(K^*(892)^0\phi)/\Gamma_{total}$ — Γ_{96}/Γ

NODE=S042R14

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2.1 × 10⁻⁵	90	[212] BERGFELD	98 CLE2	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<4.3 \times 10^{-5}$	90	ASNER	96 CLE2	$e^+e^- \to \Upsilon(4S)$
$<3.2 \times 10^{-4}$	90	ALBRECHT	91B ARG	$e^+e^- \to \Upsilon(4S)$
$<3.8 \times 10^{-4}$	90	[213] AVERY	89B CLEO	$e^+e^- \to \Upsilon(4S)$
$<3.8 \times 10^{-4}$	90	[214] AVERY	87 CLEO	$e^+e^- \to \Upsilon(4S)$

[212] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R14;LINKAGE=EQ

[213] AVERY 89B reports $< 4.4 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R14;LINKAGE=A1

[214] AVERY 87 reports $< 4.7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R14;LINKAGE=AV

$\Gamma(K_1(1400)^0 \rho^0)/\Gamma_{total}$ — Γ_{97}/Γ

NODE=S042R73

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-3}	90	ALBRECHT	91B	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(K_1(1400)^0 \phi)/\Gamma_{total}$ — Γ_{98}/Γ

NODE=S042R75

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.0 × 10^{-3}	90	ALBRECHT	91B	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(K_2^*(1430)^0 \rho^0)/\Gamma_{total}$ — Γ_{99}/Γ

NODE=S042R74

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-3}	90	ALBRECHT	91B	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(K_2^*(1430)^0 \phi)/\Gamma_{total}$ — Γ_{100}/Γ

NODE=S042R76

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.4 × 10^{-3}	90	ALBRECHT	91B	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(K^*(892)^0 \gamma)/\Gamma_{total}$ — Γ_{101}/Γ

NODE=S042R16

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±1.7±0.8		8	[215] AMMAR	93	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 21	90		[216] ADAM	96D	DLPH	$e^+ e^- \rightarrow Z$
< 42	90		ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$
< 24	90		[217] AVERY	89B	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$
<210	90		AVERY	87	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$

[215] AMMAR 93 observed 6.6 ± 2.8 events above background. NODE=S042R16;LINKAGE=B

[216] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. NODE=S042R16;LINKAGE=DQ

[217] AVERY 89B reports $< 2.8 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R16;LINKAGE=A1

$\Gamma(K_1(1270)^0 \gamma)/\Gamma_{total}$ — Γ_{102}/Γ

NODE=S042R36

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0070	90	[218] ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[218] ALBRECHT 89G reports < 0.0078 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R36;LINKAGE=A2

$\Gamma(K_1(1400)^0 \gamma)/\Gamma_{total}$ — Γ_{103}/Γ

NODE=S042R37

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0043	90	[219] ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[219] ALBRECHT 89G reports < 0.0048 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R37;LINKAGE=A2

$\Gamma(K_2^*(1430)^0 \gamma)/\Gamma_{total}$ — Γ_{104}/Γ

NODE=S042R38

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.0 × 10^{-4}	90	[220] ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[220] ALBRECHT 89G reports $< 4.4 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R38;LINKAGE=A2

$\Gamma(K^*(1680)^0 \gamma)/\Gamma_{total}$ — Γ_{105}/Γ

NODE=S042R39

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0020	90	[221] ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[221] ALBRECHT 89G reports < 0.0022 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R39;LINKAGE=A2

$\Gamma(K_3^*(1780)^0 \gamma)/\Gamma_{total}$ — Γ_{106}/Γ

NODE=S042R40

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.010	90	[222] ALBRECHT	89G	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[222] ALBRECHT 89G reports < 0.011 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%. NODE=S042R40;LINKAGE=A2

$\Gamma(K_4^*(2045)^0\gamma)/\Gamma_{total}$ Γ_{107}/Γ

NODE=S042R41
NODE=S042R41

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0043	90	[223] ALBRECHT	89G	ARG	$e^+e^- \to \Upsilon(4S)$

[223] ALBRECHT 89G reports $<$ 0.0048 assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%.

NODE=S042R41;LINKAGE=A2

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ Γ_{108}/Γ

NODE=S042R5
NODE=S042R5

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.5 × 10^{-5}	90		GODANG	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<4.5 \times 10^{-5}$	90		[224] ADAM	96D	DLPH	$e^+e^- \to Z$
$<2.0 \times 10^{-5}$	90		ASNER	96	CLE2	Repl. by GODANG 98
$<4.1 \times 10^{-5}$	90		[225] BUSKULIC	96V	ALEP	$e^+e^- \to Z$
$<5.5 \times 10^{-5}$	90		[226] ABREU	95N	DLPH	Sup. by ADAM 96D
$<4.7 \times 10^{-5}$	90		[227] AKERS	94L	OPAL	$e^+e^- \to Z$
$<2.9 \times 10^{-5}$	90		[228] BATTLE	93	CLE2	$e^+e^- \to \Upsilon(4S)$
$<1.3 \times 10^{-4}$	90		[228] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$
$<7.7 \times 10^{-5}$	90		[229] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$
$<2.6 \times 10^{-4}$	90		[229] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$
$<5 \times 10^{-4}$	90	4	GILES	84	CLEO	$e^+e^- \to \Upsilon(4S)$

[224] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. NODE=S042R5;LINKAGE=DQ

[225] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S042R5;LINKAGE=BV

[226] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. NODE=S042R5;LINKAGE=SR

[227] Assumes B($Z \to b\overline{b}$) = 0.217 and B_d^0 (B_s^0) fraction 39.5% (12%). NODE=S042R5;LINKAGE=C

[228] Assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R5;LINKAGE=B

[229] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R5;LINKAGE=A

$\Gamma(\pi^0\pi^0)/\Gamma_{total}$ Γ_{109}/Γ

NODE=S042S37
NODE=S042S37

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<9.3 × 10^{-6}	90	GODANG	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<0.91 \times 10^{-5}$	90	ASNER	96	CLE2	Repl. by GODANG 98
$<6.0 \times 10^{-5}$	90	[230] ACCIARRI	95H	L3	$e^+e^- \to Z$

[230] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$.

NODE=S042S37;LINKAGE=A

$\Gamma(\eta\pi^0)/\Gamma_{total}$ Γ_{110}/Γ

NODE=S042R58
NODE=S042R58

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8 × 10^{-6}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.5 \times 10^{-4}$	90	[231] ACCIARRI	95H	L3	$e^+e^- \to Z$
$<1.8 \times 10^{-3}$	90	[232] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$

[231] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. NODE=S042R58;LINKAGE=A

[232] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R58;LINKAGE=Q

$\Gamma(\eta\eta)/\Gamma_{total}$ Γ_{111}/Γ

NODE=S042S38
NODE=S042S38

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.1 \times 10^{-4}$	90	[233] ACCIARRI	95H	L3	$e^+e^- \to Z$

[233] ACCIARRI 95H assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$.

NODE=S042S38;LINKAGE=A

$\Gamma(\eta'\pi^0)/\Gamma_{total}$ Γ_{112}/Γ

NODE=S042S65
NODE=S042S65

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta'\eta')/\Gamma_{total}$ Γ_{113}/Γ

NODE=S042S66
NODE=S042S66

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.7 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta'\eta)/\Gamma_{total}$ Γ_{114}/Γ

NODE=S042S67
NODE=S042S67

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.7 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta' \rho^0)/\Gamma_{total}$ Γ_{115}/Γ

NODE=S042S68

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.3 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta \rho^0)/\Gamma_{total}$ Γ_{116}/Γ

NODE=S042S69

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.3 × 10^{-5}	90	BEHRENS	98	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\omega \eta)/\Gamma_{total}$ Γ_{117}/Γ

NODE=S042S73

VALUE	CL%	DOCUMENT ID		TECN
<1.2 × 10^{-5}	90	[234] BERGFELD	98	CLE2

[234] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S73;LINKAGE=EQ

$\Gamma(\omega \eta')/\Gamma_{total}$ Γ_{118}/Γ

NODE=S042S74

VALUE	CL%	DOCUMENT ID		TECN
<6.0 × 10^{-5}	90	[235] BERGFELD	98	CLE2

[235] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S74;LINKAGE=EQ

$\Gamma(\omega \rho^0)/\Gamma_{total}$ Γ_{119}/Γ

NODE=S042S75

VALUE	CL%	DOCUMENT ID		TECN
<1.1 × 10^{-5}	90	[236] BERGFELD	98	CLE2

[236] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S75;LINKAGE=EQ

$\Gamma(\omega \omega)/\Gamma_{total}$ Γ_{120}/Γ

NODE=S042S76

VALUE	CL%	DOCUMENT ID		TECN
<1.9 × 10^{-5}	90	[237] BERGFELD	98	CLE2

[237] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S76;LINKAGE=EQ

$\Gamma(\phi \pi^0)/\Gamma_{total}$ Γ_{121}/Γ

NODE=S042S77

VALUE	CL%	DOCUMENT ID		TECN
<0.5 × 10^{-5}	90	[238] BERGFELD	98	CLE2

[238] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S77;LINKAGE=EQ

$\Gamma(\phi \eta)/\Gamma_{total}$ Γ_{122}/Γ

NODE=S042S78

VALUE	CL%	DOCUMENT ID		TECN
<0.9 × 10^{-5}	90	[239] BERGFELD	98	CLE2

[239] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S78;LINKAGE=EQ

$\Gamma(\phi \eta')/\Gamma_{total}$ Γ_{123}/Γ

NODE=S042S79

VALUE	CL%	DOCUMENT ID		TECN
<3.1 × 10^{-5}	90	[240] BERGFELD	98	CLE2

[240] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S79;LINKAGE=EQ

$\Gamma(\phi \rho^0)/\Gamma_{total}$ Γ_{124}/Γ

NODE=S042S80

VALUE	CL%	DOCUMENT ID		TECN
<1.3 × 10^{-5}	90	[241] BERGFELD	98	CLE2

[241] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S80;LINKAGE=EQ

$\Gamma(\phi \omega)/\Gamma_{total}$ Γ_{125}/Γ

NODE=S042S81

VALUE	CL%	DOCUMENT ID		TECN
<2.1 × 10^{-5}	90	[242] BERGFELD	98	CLE2

[242] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S81;LINKAGE=EQ

$\Gamma(\phi \phi)/\Gamma_{total}$ Γ_{126}/Γ

NODE=S042S44

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-5}	90	[243] BERGFELD	98	CLE2	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.9 × 10^{-5}	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$

[243] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042S44;LINKAGE=EQ

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{127}/Γ

NODE=S042R51

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.2 × 10⁻⁴	90	[244] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$

[244] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R51;LINKAGE=Q

$\Gamma(\rho^0\pi^0)/\Gamma_{total}$ Γ_{128}/Γ

NODE=S042R52

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.4 × 10⁻⁵	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.0 \times 10^{-4}$	90	[245] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$

[245] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R52;LINKAGE=Q

$\Gamma(\rho^\mp\pi^\pm)/\Gamma_{total}$ Γ_{129}/Γ

NODE=S042R24

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.8 × 10⁻⁵	90	ASNER	96	CLE2	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.2 \times 10^{-4}$	90	[246] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$
$<5.2 \times 10^{-3}$	90	[247] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[246] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R24;LINKAGE=Q

[247] BEBEK 87 reports $< 6.1 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R24;LINKAGE=A

$\Gamma(\pi^+\pi^-\pi^+\pi^-)/\Gamma_{total}$ Γ_{130}/Γ

NODE=S042R53

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.3 × 10⁻⁴	90	[248] ADAM	96D	DLPH	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.8 \times 10^{-4}$	90	[249] ABREU	95N	DLPH	Sup. by ADAM 96D
$<6.7 \times 10^{-4}$	90	[250] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$

[248] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. NODE=S042R53;LINKAGE=DQ

[249] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. NODE=S042R53;LINKAGE=SR

[250] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R53;LINKAGE=Q

$\Gamma(\rho^0\rho^0)/\Gamma_{total}$ Γ_{131}/Γ

NODE=S042R26

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.8 × 10⁻⁴	90	[251] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.9 \times 10^{-4}$	90	[252] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$
$<4.3 \times 10^{-4}$	90	[252] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[251] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R26;LINKAGE=Q

[252] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R26;LINKAGE=A1

$\Gamma(a_1(1260)^\mp\pi^\pm)/\Gamma_{total}$ Γ_{132}/Γ

NODE=S042R27

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.9 × 10⁻⁴	90	[253] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<6.3 \times 10^{-4}$	90	[254] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$
$<1.0 \times 10^{-3}$	90	[253] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[253] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R27;LINKAGE=A1

[254] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R27;LINKAGE=Q

$\Gamma(a_2(1320)^\mp\pi^\pm)/\Gamma_{total}$ Γ_{133}/Γ

NODE=S042R28

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10⁻⁴	90	[255] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.4 \times 10^{-3}$	90	[255] BEBEK	87	CLEO	$e^+e^- \to \Upsilon(4S)$

[255] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R28;LINKAGE=A1

$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}$ Γ_{134}/Γ

NODE=S042R54

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.1 × 10⁻³	90	[256] ALBRECHT	90B	ARG	$e^+e^- \to \Upsilon(4S)$

[256] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R54;LINKAGE=Q

$\Gamma(\rho^+\rho^-)/\Gamma_{total}$ Γ_{135}/Γ

NODE=S042R55
NODE=S042R55

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.2\times10^{-3}$	90	[257] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[257] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R55;LINKAGE=Q

$\Gamma(a_1(1260)^0\pi^0)/\Gamma_{total}$ Γ_{136}/Γ

NODE=S042R56
NODE=S042R56

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.1\times10^{-3}$	90	[258] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[258] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R56;LINKAGE=Q

$\Gamma(\omega\pi^0)/\Gamma_{total}$ Γ_{137}/Γ

NODE=S042R57
NODE=S042R57

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.4\times10^{-5}$	90	[259] BERGFELD 98	CLE2	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<4.6\times10^{-4}$	90	[260] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[259] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. NODE=S042R57;LINKAGE=EQ
[260] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R57;LINKAGE=Q

$\Gamma(\pi^+\pi^+\pi^-\pi^-\pi^0)/\Gamma_{total}$ Γ_{138}/Γ

NODE=S042R59
NODE=S042R59

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<9.0\times10^{-3}$	90	[261] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[261] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R59;LINKAGE=Q

$\Gamma(a_1(1260)^+\rho^-)/\Gamma_{total}$ Γ_{139}/Γ

NODE=S042R60
NODE=S042R60

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<3.4\times10^{-3}$	90	[262] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[262] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R60;LINKAGE=Q

$\Gamma(a_1(1260)^0\rho^0)/\Gamma_{total}$ Γ_{140}/Γ

NODE=S042R61
NODE=S042R61

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.4\times10^{-3}$	90	[263] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[263] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R61;LINKAGE=Q

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-)/\Gamma_{total}$ Γ_{141}/Γ

NODE=S042R62
NODE=S042R62

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<3.0\times10^{-3}$	90	[264] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[264] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R62;LINKAGE=Q

$\Gamma(a_1(1260)^+a_1(1260)^-)/\Gamma_{total}$ Γ_{142}/Γ

NODE=S042R44
NODE=S042R44

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.8\times10^{-3}$	90	[265] BORTOLETTO 89	CLEO	$e^+e^-\to\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<6.0\times10^{-3}$	90	[266] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[265] BORTOLETTO 89 reports $<3.2\times10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R44;LINKAGE=A1
[266] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R44;LINKAGE=Q

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^0)/\Gamma_{total}$ Γ_{143}/Γ

NODE=S042R63
NODE=S042R63

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.1\times10^{-2}$	90	[267] ALBRECHT 90B	ARG	$e^+e^-\to\Upsilon(4S)$

[267] ALBRECHT 90B limit assumes equal production of $B^0\overline{B}^0$ and B^+B^- at $\Upsilon(4S)$. NODE=S042R63;LINKAGE=Q

$\Gamma(p\overline{p})/\Gamma_{total}$ Γ_{144}/Γ

NODE=S042R29
NODE=S042R29

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.8\times10^{-5}$	90	[268] BUSKULIC 96V	ALEP	$e^+e^-\to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<3.5\times10^{-4}$	90	[269] ABREU 95N	DLPH	Sup. by ADAM 96D
$<3.4\times10^{-5}$	90	[270] BORTOLETTO 89	CLEO	$e^+e^-\to\Upsilon(4S)$
$<1.2\times10^{-4}$	90	[271] ALBRECHT 88F	ARG	$e^+e^-\to\Upsilon(4S)$
$<1.7\times10^{-4}$	90	[270] BEBEK 87	CLEO	$e^+e^-\to\Upsilon(4S)$

[268] BUSKULIC 96V assumes PDG 96 production fractions for B^0, B^+, B_s, b baryons. NODE=S042R29;LINKAGE=BV
[269] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. NODE=S042R29;LINKAGE=SR
[270] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R29;LINKAGE=A1
[271] ALBRECHT 88F reports $<1.3\times10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R29;LINKAGE=B

$\Gamma(p\overline{p}\pi^+\pi^-)/\Gamma_{total}$ — Γ_{145}/Γ

NODE=S042R31
NODE=S042R31

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.5	90	[272] BEBEK	89	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<9.5	90	[273] ABREU	95N	DLPH	Sup. by ADAM 96D
5.4±1.8±2.0		[274] ALBRECHT	88F	ARG	$e^+e^- \to \Upsilon(4S)$

[272] BEBEK 89 reports $< 2.9 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R31;LINKAGE=A1

[273] Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12. NODE=S042R31;LINKAGE=SR

[274] ALBRECHT 88F reports 6.0 ± 2.0 ± 2.2 assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R31;LINKAGE=B

$\Gamma(p\overline{\Lambda}\pi^-)/\Gamma_{total}$ — Γ_{146}/Γ

NODE=S042R32
NODE=S042R32

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.8 \times 10^{-4}$	90	[275] ALBRECHT	88F	ARG	$e^+e^- \to \Upsilon(4S)$

[275] ALBRECHT 88F reports $< 2.0 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R32;LINKAGE=B

$\Gamma(\Delta^0\overline{\Delta}^0)/\Gamma_{total}$ — Γ_{147}/Γ

NODE=S042R45
NODE=S042R45

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0015	90	[276] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$

[276] BORTOLETTO 89 reports < 0.0018 assuming $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R45;LINKAGE=A1

$\Gamma(\Delta^{++}\Delta^{--})/\Gamma_{total}$ — Γ_{148}/Γ

NODE=S042R46
NODE=S042R46

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-4}$	90	[277] BORTOLETTO	89	CLEO	$e^+e^- \to \Upsilon(4S)$

[277] BORTOLETTO 89 reports $< 1.3 \times 10^{-4}$ assuming $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R46;LINKAGE=A1

$\Gamma(\overline{\Sigma}_c^{--}\Delta^{++})/\Gamma_{total}$ — Γ_{149}/Γ

NODE=S042S21
NODE=S042S21

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0010	90	[278] PROCARIO	94	CLE2	$e^+e^- \to \Upsilon(4S)$

[278] PROCARIO 94 reports < 0.0012 for $B(\Lambda_c^+ \to pK^-\pi^+) = 0.043$. We rescale to our best value $B(\Lambda_c^+ \to pK^-\pi^+) = 0.050$. NODE=S042S21;LINKAGE=A

$\Gamma(\Lambda_c^- p\pi^+\pi^-)/\Gamma_{total}$ — Γ_{150}/Γ

NODE=S042S59
NODE=S042S59

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$1.33^{+0.46}_{-0.42}\pm0.37$	[279] FU	97	CLE2	$e^+e^- \to \Upsilon(4S)$

[279] FU 97 uses PDG 96 values of Λ_c branching fraction. NODE=S042S59;LINKAGE=A

$\Gamma(\Lambda_c^- p)/\Gamma_{total}$ — Γ_{151}/Γ

NODE=S042S55
NODE=S042S55

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.1 \times 10^{-4}$	90	[280] FU	97	CLE2	$e^+e^- \to \Upsilon(4S)$

[280] FU 97 uses PDG 96 values of Λ_c branching ratio. NODE=S042S55;LINKAGE=A

$\Gamma(\Lambda_c^- p\pi^0)/\Gamma_{total}$ — Γ_{152}/Γ

NODE=S042S56
NODE=S042S56

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.9 \times 10^{-4}$	90	[281] FU	97	CLE2	$e^+e^- \to \Upsilon(4S)$

[281] FU 97 uses PDG 96 values of Λ_c branching ratio. NODE=S042S56;LINKAGE=A

$\Gamma(\Lambda_c^- p\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{153}/Γ

NODE=S042S57
NODE=S042S57

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.07 \times 10^{-3}$	90	[282] FU	97	CLE2	$e^+e^- \to \Upsilon(4S)$

[282] FU 97 uses PDG 96 values of Λ_c branching ratio. NODE=S042S57;LINKAGE=A

$\Gamma(\Lambda_c^- p\pi^+\pi^-\pi^+\pi^-)/\Gamma_{total}$ — Γ_{154}/Γ

NODE=S042S58
NODE=S042S58

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.74 \times 10^{-3}$	90	[283] FU	97	CLE2	$e^+e^- \to \Upsilon(4S)$

[283] FU 97 uses PDG 96 values of Λ_c branching ratio. NODE=S042S58;LINKAGE=A

$\Gamma(\gamma\gamma)/\Gamma_{total}$ — Γ_{155}/Γ

NODE=S042S36

Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<3.9 × 10^{-5}	90	[284] ACCIARRI 95I	L3	$e^+e^- \rightarrow Z$

[284] ACCIARRI 95I assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$.

NODE=S042S36;LINKAGE=A

$\Gamma(e^+e^-)/\Gamma_{total}$ — Γ_{156}/Γ

NODE=S042R6

Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<5.9 × 10^{-6}	90	AMMAR 94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<1.4 \times 10^{-5}$	90	[285] ACCIARRI 97B	L3	$e^+e^- \rightarrow Z$
$<2.6 \times 10^{-5}$	90	[286] AVERY 89B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$<7.6 \times 10^{-5}$	90	[287] ALBRECHT 87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$<6.4 \times 10^{-5}$	90	[288] AVERY 87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$<3 \times 10^{-4}$	90	GILES 84	CLEO	Repl. by AVERY 87

[285] ACCIARRI 97B assume PDG 96 production fractions for B^+, B^0, B_s, and Λ_b. NODE=S042R6;LINKAGE=BQ

[286] AVERY 89B reports $< 3 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R6;LINKAGE=A1

[287] ALBRECHT 87D reports $< 8.5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R6;LINKAGE=W

[288] AVERY 87 reports $< 8 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R6;LINKAGE=Y

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$ — Γ_{157}/Γ

NODE=S042R7

Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<6.8 × 10^{-7}	90	[289] ABE 98	CDF	$p\overline{p}$ at 1.8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<4.0 \times 10^{-5}$	90	ABBOTT 98B	D0	$p\overline{p}$ 1.8 TeV
$<1.0 \times 10^{-5}$	90	[290] ACCIARRI 97B	L3	$e^+e^- \rightarrow Z$
$<1.6 \times 10^{-6}$	90	[291] ABE 96L	CDF	Repl. by ABE 98
$<5.9 \times 10^{-6}$	90	AMMAR 94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$<8.3 \times 10^{-6}$	90	[292] ALBAJAR 91C	UA1	$E_{cm}^{p\overline{p}}$= 630 GeV
$<1.2 \times 10^{-5}$	90	[293] ALBAJAR 91C	UA1	$E_{cm}^{p\overline{p}}$= 630 GeV
$<4.3 \times 10^{-5}$	90	[294] AVERY 89B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$<4.5 \times 10^{-5}$	90	[295] ALBRECHT 87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$<7.7 \times 10^{-5}$	90	[296] AVERY 87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$<2 \times 10^{-4}$	90	GILES 84	CLEO	Repl. by AVERY 87

OCCUR=2

[289] ABE 98 assumes production of $\sigma(B^0) = \sigma(B^+)$ and $\sigma(B_s)/\sigma(B^0) = 1/3$. They normalize to their measured $\sigma(B^0, p_T(B) > 6, |y| < 1.0) = 2.39 \pm 0.32 \pm 0.44\ \mu$b. NODE=S042R7;LINKAGE=C

[290] ACCIARRI 97B assume PDG 96 production fractions for B^+, B^0, B_s, and Λ_b. NODE=S042R7;LINKAGE=BQ

[291] ABE 96L assumes equal B^0 and B^+ production. They normalize to their measured $\sigma(B^+,\ p_T(B) > 6\ \mathrm{GeV}/c,\ |y| < 1) = 2.39 \pm 0.54\ \mu$b. NODE=S042R7;LINKAGE=PA

[292] B^0 and B^0_s are not separated. NODE=S042R7;LINKAGE=A

[293] Obtained from unseparated B^0 and B^0_s measurement by assuming a B^0:B^0_s ratio 2:1. NODE=S042R7;LINKAGE=B

[294] AVERY 89B reports $< 5 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R7;LINKAGE=A1

[295] ALBRECHT 87D reports $< 5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R7;LINKAGE=W

[296] AVERY 87 reports $< 9 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R7;LINKAGE=Y

$\Gamma(K^0e^+e^-)/\Gamma_{total}$ — Γ_{158}/Γ

NODE=S042R18

Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<3.0 × 10^{-4}	90	ALBRECHT 91E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<5.2 \times 10^{-4}$	90	[297] AVERY 87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[297] AVERY 87 reports $< 6.5 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}^0$. We rescale to 50%. NODE=S042R18;LINKAGE=A3

NODE=S042R17

$\Gamma(K^0 \mu^+ \mu^-)/\Gamma_{total}$ Γ_{159}/Γ

NODE=S042R17

Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

NODE=S042R17

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<3.6 × 10^{-4}	90	[298] AVERY 87	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<5.2 \times 10^{-4}$	90	ALBRECHT 91E	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[298] AVERY 87 reports $< 4.5 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale to 50%.

NODE=S042R17;LINKAGE=A3

$\Gamma(K^*(892)^0 e^+ e^-)/\Gamma_{total}$ Γ_{160}/Γ

NODE=S042R82

Test for $\Delta B = 1$ weak neutral current.

NODE=S042R82
NODE=S042R82

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2.9 × 10^{-4}	90	ALBRECHT 91E	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(K^*(892)^0 \mu^+ \mu^-)/\Gamma_{total}$ Γ_{161}/Γ

NODE=S042R69

Test for $\Delta B = 1$ weak neutral current.

NODE=S042R69
NODE=S042R69

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2.3 × 10^{-5}	90	[299] ALBAJAR 91C	UA1	$E_{cm}^{p\overline{p}}$= 630 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<2.5 \times 10^{-5}$	90	[300] ABE 96L	CDF	$p\overline{p}$ at 1.8 TeV
$<3.4 \times 10^{-4}$	90	ALBRECHT 91E	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$

[299] ALBAJAR 91C assumes 36% of $\overline{b}$ quarks give B^0 mesons.

NODE=S042R69;LINKAGE=A

[300] ABE 96L measured relative to $B^0 \rightarrow J/\psi(1S) K^*(892)^0$ using PDG 94 branching ratios.

NODE=S042R69;LINKAGE=PB

$\Gamma(K^*(892)^0 \nu\overline{\nu})/\Gamma_{total}$ Γ_{162}/Γ

NODE=S042S50

Test for $\Delta B = 1$ weak neutral current.

NODE=S042S50
NODE=S042S50

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.0 × 10^{-3}	90	[301] ADAM 96D	DLPH	$e^+ e^- \rightarrow Z$

[301] ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.

NODE=S042S50;LINKAGE=DQ

$\Gamma(e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{163}/Γ

NODE=S042R8

Test of lepton family number conservation.

NODE=S042R8
NODE=S042R8

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<5.9 × 10^{-6}	90	AMMAR 94	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<1.6 \times 10^{-5}$	90	[302] ACCIARRI 97B	L3	$e^+ e^- \rightarrow Z$
$<3.4 \times 10^{-5}$	90	[303] AVERY 89B	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$
$<4.5 \times 10^{-5}$	90	[304] ALBRECHT 87D	ARG	$e^+ e^- \rightarrow \Upsilon(4S)$
$<7.7 \times 10^{-5}$	90	[305] AVERY 87	CLEO	$e^+ e^- \rightarrow \Upsilon(4S)$
$<3 \times 10^{-4}$	90	GILES 84	CLEO	Repl. by AVERY 87

[302] ACCIARRI 97B assume PDG 96 production fractions for B^+, B^0, B_s, and Λ_b.

NODE=S042R8;LINKAGE=BQ

[303] Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%.

NODE=S042R8;LINKAGE=A1

[304] ALBRECHT 87D reports $< 5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%.

NODE=S042R8;LINKAGE=W

[305] AVERY 87 reports $< 9 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale to 50%.

NODE=S042R8;LINKAGE=Y

$\Gamma(e^\pm \tau^\mp)/\Gamma_{total}$ Γ_{164}/Γ

NODE=S042S19

Test of lepton family number conservation.

NODE=S042S19
NODE=S042S19

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<5.3 × 10^{-4}	90	AMMAR 94	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$

$\Gamma(\mu^\pm \tau^\mp)/\Gamma_{total}$ Γ_{165}/Γ

NODE=S042S20

Test of lepton family number conservation.

NODE=S042S20
NODE=S042S20

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<8.3 × 10^{-4}	90	AMMAR 94	CLE2	$e^+ e^- \rightarrow \Upsilon(4S)$

POLARIZATION IN B^0 DECAY

NODE=S042223

Γ_L/Γ in $B^0 \to J/\psi(1S)K^*(892)^0$

NODE=S042P1

Γ_L/Γ = 1[0] would indicate that $B^0 \to J/\psi(1S)K^*(892)^0$ followed by $K^*(892)^0 \to K^0_S\pi^0$ is a pure CP eigenstate with $CP = -1[+1]$.

NODE=S042P1

NODE=S042P1

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.60±0.09 OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.				
0.52±0.07±0.04		[306] JESSOP	97	CLE2	$e^+e^- \to \Upsilon(4S)$
0.65±0.10±0.04	65	ABE	95Z	CDF	$p\overline{p}$ at 1.8 TeV
0.97±0.16±0.15	13	[307] ALBRECHT	94G	ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.80±0.08±0.05	42	[307] ALAM	94	CLE2	Sup. by JESSOP 97

[306] JESSOP 97 is the average over a mixture of B^0 and B^+ decays. The P-wave fraction is found to be 0.16 ± 0.08 ± 0.04.

NODE=S042P1;LINKAGE=JJ

[307] Averaged over an admixture of B^0 and B^+ decays.

NODE=S042P1;LINKAGE=A

Γ_L/Γ in $B^0 \to J/\psi(1S)K^*(892)^0$

Γ_L/Γ in $B^0 \to D^{*-}\rho^+$

NODE=S042P2

NODE=S042P2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.93±0.05±0.05	76	ALAM	94	CLE2	$e^+e^- \to \Upsilon(4S)$

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NODE=S042224

B^0-$\overline{B}^0$ MIXING PARAMETERS

NODE=S042225

For a discussion of B^0-$\overline{B}^0$ mixing see the note on "B^0-$\overline{B}^0$ Mixing" in the B^0 Particle Listings above.

NODE=S042225

χ_d is a measure of the time-integrated B^0-$\overline{B}^0$ mixing probability that a produced $B^0(\overline{B}^0)$ decays as a $\overline{B}^0(B^0)$. Mixing violates $\Delta B \neq 2$ rule.

$$\chi_d = \frac{x_d^2}{2(1+x_d^2)}$$

$$x_d = \frac{\Delta m_{B^0}}{\Gamma_{B^0}} = (m_{B^0_H} - m_{B^0_L})\,\tau_{B^0} \,,$$

where H, L stand for heavy and light states of two B^0 CP eigenstates and $\tau_{B^0} = \frac{1}{0.5(\Gamma_{B^0_H}+\Gamma_{B^0_L})}$.

NODE=S042CHD

χ_d

NODE=S042CHD

This B^0-$\overline{B}^0$ mixing parameter is the the probability (integrated over time) that a produced B^0 (or $\overline{B}^0$) decays as a $\overline{B}^0$ (or B^0), e.g. for inclusive lepton decays

$$\chi_d = \Gamma(B^0 \to \ell^- X \text{ (via } \overline{B}^0))/\Gamma(B^0 \to \ell^\pm X)$$
$$= \Gamma(\overline{B}^0 \to \ell^+ X \text{ (via } B^0))/\Gamma(\overline{B}^0 \to \ell^\pm X)$$

Where experiments have measured the parameter $r = \chi/(1-\chi)$, we have converted to χ. Mixing violates the $\Delta B \neq 2$ rule.

Note that the measurement of χ at energies higher than the $\Upsilon(4S)$ have not separated χ_d from χ_s where the subscripts indicate $B^0(\overline{b}d)$ or $B^0_s(\overline{b}s)$. They are listed in the B^0_s-$\overline{B}^0_s$ MIXING section.

The experiments at $\Upsilon(4S)$ make an assumption about the $B^0\overline{B}^0$ fraction and about the ratio of the $B^\pm$ and B^0 semileptonic branching ratios (usually that it equals one).

OUR EVALUATION, provided by the LEP B Oscillation Working Group, includes χ_d calculated from Δm_{B^0} and τ_{B^0}.

NODE=S042CHD

→ NOT CHECKED ←

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.172±0.010 OUR EVALUATION					
0.156±0.024 OUR AVERAGE					
0.16 ±0.04 ±0.04		[308] ALBRECHT	94	ARG	$e^+e^- \to \Upsilon(4S)$
0.149±0.023±0.022		[309] BARTELT	93	CLE2	$e^+e^- \to \Upsilon(4S)$
0.171±0.048		[310] ALBRECHT	92L	ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.20 ±0.13 ±0.12		[311] ALBRECHT	96D	ARG	$e^+e^- \to \Upsilon(4S)$
0.19 ±0.07 ±0.09		[312] ALBRECHT	96D	ARG	$e^+e^- \to \Upsilon(4S)$
0.24 ±0.12		[313] ELSEN	90	JADE	e^+e^- 35–44 GeV
$0.158^{+0.052}_{-0.059}$		ARTUSO	89	CLEO	$e^+e^- \to \Upsilon(4S)$
0.17 ±0.05		[314] ALBRECHT	87I	ARG	$e^+e^- \to \Upsilon(4S)$
<0.19	90	[315] BEAN	87B	CLEO	$e^+e^- \to \Upsilon(4S)$
<0.27	90	[316] AVERY	84	CLEO	$e^+e^- \to \Upsilon(4S)$

OCCUR=2

[308] ALBRECHT 94 reports r=0.194 ± 0.062 ± 0.054. We convert to χ for comparison. Uses tagged events (lepton + pion from D^*). NODE=S042CHD;LINKAGE=B

[309] BARTELT 93 analysis performed using tagged events (lepton+pion from D^*). Using dilepton events they obtain $0.157 \pm 0.016^{+0.033}_{-0.028}$. NODE=S042CHD;LINKAGE=C

[310] ALBRECHT 92L is a combined measurement employing several lepton-based techniques. It uses all previous ARGUS data in addition to new data and therefore supersedes ALBRECHT 87I. A value of $r = 20.6 \pm 7.0\%$ is directly measured. The value can be used to measure $x = \Delta M/\Gamma = 0.72 \pm 0.15$ for the B_d meson. Assumes $f_{+-}/f_0 = 1.0 \pm 0.05$ and uses $\tau_{B^\pm}/\tau_{B^0} = (0.95 \pm 0.14)\ (f_{+-}/f_0)$. NODE=S042CHD;LINKAGE=L

[311] Uses $D^{*+} K^\pm$ correlations. NODE=S042CHD;LINKAGE=F

[312] Uses $(D^{*+} \ell^-)\ K^\pm$ correlations. NODE=S042CHD;LINKAGE=G

[313] These experiments see a combination of B_s and B_d mesons. NODE=S042CHD;LINKAGE=E1

[314] ALBRECHT 87I is inclusive measurement with like-sign dileptons, with tagged B decays plus leptons, and one fully reconstructed event. Measures r=0.21 ± 0.08. We convert to χ for comparison. Superseded by ALBRECHT 92L. NODE=S042CHD;LINKAGE=X

[315] BEAN 87B measured $r <$ 0.24; we converted to χ. NODE=S042CHD;LINKAGE=A1

[316] Same-sign dilepton events. Limit assumes semileptonic BR for B^+ and B^0 equal. If $B^0/B^\pm$ ratio <0.58, no limit exists. The limit was corrected in BEAN 87B from $r <$ 0.30 to $r <$ 0.37. We converted this limit to χ. NODE=S042CHD;LINKAGE=A

$\Delta m_{B^0} = m_{B^0_H} - m_{B^0_L}$

NODE=S042D

$\Delta m_{B^0_s}$ is a measure of 2π times the B^0-$\overline{B}^0$ oscillation frequency in time-dependent mixing experiments.

NODE=S042D

The second "OUR EVALUATION" (0.470 ± 0.019) is an average of the data listed below performed by the LEP B Oscillation Working Group as described in our review "Production and Decays of B-flavored Hadrons" in the $B^\pm$ Section of these Listings. The averaging procedure takes into account correlations between the measurements.

The first "OUR EVALUATION" (0.464 ± 0.018), also provided by the LEP B Oscillation Working Group, includes Δm_d calculated from χ_d measured at $\Upsilon(4S)$.

NODE=S042D

→ NOT CHECKED ←

→ NOT CHECKED ←

OCCUR=2

VALUE (10^{12} $\hbar$ s^{-1})	EVTS	DOCUMENT ID		TECN	COMMENT
0.464±0.018 OUR EVALUATION					
0.470±0.019 OUR EVALUATION					
$0.471^{+0.078+0.033}_{-0.068-0.034}$		[317] ABE	98C	CDF	$p\overline{p}$ at 1.8 TeV
0.458±0.046±0.032		[318] ACCIARRI	98D	L3	$e^+e^- \to Z$

$0.437 \pm 0.043 \pm 0.044$		[319] ACCIARRI	98D	L3	$e^+e^- \to Z$	OCCUR=2
$0.472 \pm 0.049 \pm 0.053$		[320] ACCIARRI	98D	L3	$e^+e^- \to Z$	OCCUR=3
$0.523 \pm 0.072 \pm 0.043$		[321] ABREU	97N	DLPH	$e^+e^- \to Z$	OCCUR=2
$0.493 \pm 0.042 \pm 0.027$		[319] ABREU	97N	DLPH	$e^+e^- \to Z$	OCCUR=3
$0.499 \pm 0.053 \pm 0.015$		[322] ABREU	97N	DLPH	$e^+e^- \to Z$	OCCUR=4
$0.480 \pm 0.040 \pm 0.051$		[318] ABREU	97N	DLPH	$e^+e^- \to Z$	OCCUR=5
$0.444 \pm 0.029 ^{+0.020}_{-0.017}$		[319] ACKERSTAFF	97U	OPAL	$e^+e^- \to Z$	OCCUR=2
$0.430 \pm 0.043 ^{+0.028}_{-0.030}$		[318] ACKERSTAFF	97V	OPAL	$e^+e^- \to Z$	OCCUR=2
$0.482 \pm 0.044 \pm 0.024$		[323] BUSKULIC	97D	ALEP	$e^+e^- \to Z$	OCCUR=2
$0.404 \pm 0.045 \pm 0.027$		[319] BUSKULIC	97D	ALEP	$e^+e^- \to Z$	OCCUR=3
$0.452 \pm 0.039 \pm 0.044$		[318] BUSKULIC	97D	ALEP	$e^+e^- \to Z$	OCCUR=4
$0.539 \pm 0.060 \pm 0.024$		[324] ALEXANDER	96V	OPAL	$e^+e^- \to Z$	OCCUR=2
$0.567 \pm 0.089 ^{+0.029}_{-0.023}$		[325] ALEXANDER	96V	OPAL	$e^+e^- \to Z$	OCCUR=3
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$0.444 \pm 0.028 \pm 0.028$		[326] ACCIARRI	98D	L3	$e^+e^- \to Z$	OCCUR=4
0.497 ± 0.035		[327] ABREU	97N	DLPH	$e^+e^- \to Z$	OCCUR=6
$0.467 \pm 0.022 ^{+0.017}_{-0.015}$		[328] ACKERSTAFF	97V	OPAL	$e^+e^- \to Z$	OCCUR=3
0.446 ± 0.032		[329] BUSKULIC	97D	ALEP	$e^+e^- \to Z$	OCCUR=5
$0.531 ^{+0.050}_{-0.046} \pm 0.078$		[330] ABREU	96Q	DLPH	Sup. by ABREU 97N	
$0.496 ^{+0.055}_{-0.051} \pm 0.043$		[318] ACCIARRI	96E	L3	Repl. by ACCIARRI 98D	
$0.548 \pm 0.050 ^{+0.023}_{-0.019}$		[331] ALEXANDER	96V	OPAL	$e^+e^- \to Z$	OCCUR=4
0.496 ± 0.046		[332] AKERS	95J	OPAL	Repl. by ACKERSTAFF 97V	
$0.462 ^{+0.040}_{-0.053} {}^{+0.052}_{-0.035}$		[318] AKERS	95J	OPAL	Repl. by ACKERSTAFF 97V	OCCUR=2
$0.50 \pm 0.12 \pm 0.06$		[321] ABREU	94M	DLPH	Sup. by ABREU 97N	
$0.508 \pm 0.075 \pm 0.025$		[324] AKERS	94C	OPAL	Repl. by ALEXANDER 96V	
$0.57 \pm 0.11 \pm 0.02$	153	[325] AKERS	94H	OPAL	Repl. by ALEXANDER 96V	
$0.50 ^{+0.07}_{-0.06} {}^{+0.11}_{-0.10}$		[318] BUSKULIC	94B	ALEP	Sup. by BUSKULIC 97D	
$0.52 ^{+0.10}_{-0.11} {}^{+0.04}_{-0.03}$		[325] BUSKULIC	93K	ALEP	Sup. by BUSKULIC 97D	

[317] Uses π-B in the same side. NODE=S042D;LINKAGE=C1
[318] Uses ℓ-ℓ. NODE=S042D;LINKAGE=A1
[319] Uses ℓ-Q_{hem}. NODE=S042D;LINKAGE=A2
[320] Uses ℓ-ℓ with impact parameters. NODE=S042D;LINKAGE=A3
[321] Uses $D^{*\pm}$-Q_{hem}. NODE=S042D;LINKAGE=C
[322] Uses $\pi_s^{\pm}$ ℓ-Q_{hem}. NODE=S042D;LINKAGE=A9
[323] Uses $D^{*\pm}$-ℓ/Q_{hem}. NODE=S042D;LINKAGE=B6
[324] Uses $D^{*\pm}$ ℓ-Q_{hem}. NODE=S042D;LINKAGE=A6
[325] Uses $D^{*\pm}$-ℓ. NODE=S042D;LINKAGE=A7
[326] ACCIARRI 98D combines results from ℓ-ℓ, ℓ-Q_{hem}, and ℓ-ℓ with impact parameters. NODE=S042D;LINKAGE=A4
[327] ABREU 97N combines results from $D^{*\pm}$-Q_{hem}, ℓ-Q_{hem}, $\pi_s^{\pm}$ ℓ-Q_{hem}, and ℓ-ℓ. NODE=S042D;LINKAGE=B9
[328] ACKERSTAFF 97V combines results from ℓ-ℓ, ℓ-Q_{hem}, D^*-ℓ, and $D^{*\pm}$-Q_{hem}. NODE=S042D;LINKAGE=A5
[329] BUSKULIC 97D combines results from $D^{*\pm}$-ℓ/Q_{hem}, ℓ-Q_{hem}, and ℓ-ℓ. NODE=S042D;LINKAGE=A8
[330] ABREU 96Q analysis performed using lepton, kaon, and jet-charge tags. NODE=S042D;LINKAGE=LK
[331] ALEXANDER 96V combines results from $D^{*\pm}$-ℓ and $D^{*\pm}$ ℓ-Q_{hem}. NODE=S042D;LINKAGE=B3
[332] AKERS 95J combines results fromt charge measurement, $D^{*\pm}$ ℓ-Q_{hem} and ℓ-ℓ. NODE=S042D;LINKAGE=F

$x_d = \Delta m_{B^0}/\Gamma_{B^0}$

NODE=S042DG

NODE=S042DG

The second "OUR EVALUATION" (0.734 ± 0.035) is an average of the data listed in Δm_{B^0} section performed by the LEP B Oscillation Working Group as described in our review "Production and Decays of B-flavored Hadrons" in the $B^{\pm}$ Section of these Listings. The averaging procedure takes into account correlations between the measurements.

The first "OUR EVALUATION" (0.723 ± 0.032), also provided by the LEP B Oscillation Working Group, includes χ_d measured at $\Upsilon(4S)$.

VALUE	*DOCUMENT ID*	
		NODE=S042DG
0.723±0.032 OUR EVALUATION		→ NOT CHECKED ←
0.734±0.035 OUR EVALUATION		→ NOT CHECKED ←

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NODE=S042228

CP VIOLATION PARAMETERS

NODE=S042229

$|\mathrm{Re}(\epsilon_{B^0})|$

NODE=S042EPS

CP Impurity in B^0_d system. It is obtained from either $a_{\ell\ell}$, the charge asymmetry in like-sign dilepton events or a_{cp}, the time-dependent asymmetry of inclusive B^0 and $\overline{B}^0$ decays.

NODE=S042EPS

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.002±0.007 OUR AVERAGE				
0.001±0.014±0.003	[333] ABBIENDI	99J	OPAL	$e^+e^- \rightarrow Z$
0.002±0.007±0.003	[334] ACKERSTAFF	97U	OPAL	$e^+e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.045	[335] BARTELT	93	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

NODE=S042EPS

[333] Data analyzed using the time-dependent asymmetry of inclusive B^0 decay. The production flavor of B^0 mesons is determined using both the jet charge and the charge of secondary vertex in the opposite hemisphere.

NODE=S042EPS;LINKAGE=C

[334] ACKERSTAFF 97U assumes *CPT* and is based on measuring the charge asymmetry in a sample of B^0 decays defined by lepton and Q_{hem} tags. If *CPT* is not invoked, $\mathrm{Re}(\epsilon_B) = -0.006 \pm 0.010 \pm 0.006$ is found. The indirect *CPT* violation parameter is determined to $\mathrm{Im}(\delta B) = -0.020 \pm 0.016 \pm 0.006$.

NODE=S042EPS;LINKAGE=B

[335] BARTELT 93 finds $a_{\ell\ell} = 0.031 \pm 0.096 \pm 0.032$ which corresponds to $|a_{\ell\ell}| < 0.18$, which yields the above $\mathrm{Re}(\epsilon_{B^0})$.

NODE=S042EPS;LINKAGE=A

$\sin(2\beta)$

NODE=S042BET

For a discussion of *CP* violation, see the note on "*CP* Violation in *B* Decay Standard Model Predictions" in the B^0 Particle Listings above. $\sin(2\beta)$ is a measure of the *CP*-violating amplitude in the $B^0_d \rightarrow J/\psi(1S)K^0_S$.

NODE=S042BET

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{3.2^{+1.8}_{-2.0}\pm0.5}$	[336] ACKERSTAFF	98Z	OPAL	$e^+e^- \rightarrow Z$

NODE=S042BET

[336] ACKERSTAFF 98Z uses 24 candidates for $B^0_d \rightarrow J/\psi(1S)K^0_S$ decay. A combination of jet-charge and vertex-charge techniques were used to tag the B^0_d production flavor.

NODE=S042BET;LINKAGE=A

$B^0 \rightarrow D^{*-}\ell^+\nu_\ell$ FORM FACTORS

NODE=S042250

R_1 (form factor ratio $\sim V/A_1$)

NODE=S042RV
NODE=S042RV

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
1.18±0.30±0.12	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

R_2 (form factor ratio $\sim A_2/A_1$)

NODE=S042RA
NODE=S042RA

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.71±0.22±0.07	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

$\rho^2_{A_1}$ (form factor slope)

NODE=S042RH
NODE=S042RH

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.91±0.15±0.06	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

B^0 REFERENCES

NODE=S042

ABBIENDI	99J	hep-ex/9901017	G. Abbiendi+	(OPAL Collab.)	REFID=46738
CERN-EP/98-195, EPJ C (to be publ.)					
ABBOTT	98B	PL B423 419	B. Abbott+	(D0 Collab.)	REFID=45868
ABE	98	PR D57 R3811	F. Abe+	(CDF Collab.)	REFID=45879
ABE	98B	PR D57 5382	F. Abe+	(CDF Collab.)	REFID=45880
ABE	98C	PRL 80 2057	F. Abe+	(CDF Collab.)	REFID=45884
ABE	98O	PR D58 072001	F. Abe+	(CDF Collab.)	REFID=46156
ABE	98Q	PR D58 092002	F. Abe+	(CDF Collab.)	REFID=46475
ACCIARRI	98D	EPJ C5 195	M. Acciarri+	(L3 Collab.)	REFID=45947
ACCIARRI	98S	PL B438 417	M. Acciarri+	(L3 Collab.)	REFID=46503
ACKERSTAFF	98Z	EPJ C5 379	K. Ackerstaff+	(OPAL Collab.)	REFID=46262
BARATE	98Q	EPJ C4 387	R. Barate+	(ALEPH Collab.)	REFID=46146
BEHRENS	98	PRL 80 3710	B.H. Behrens+	(CLEO Collab.)	REFID=45936
BERGFELD	98	PRL 81 272	T. Bergfeld+	(CLEO Collab.)	REFID=46091
BRANDENB...	98	PRL 80 2762	G. Brandenbrug+	(CLEO Collab.)	REFID=45874
GODANG	98	PRL 80 3456	R. Godang+	(CLEO Collab.)	REFID=45935
NEMATI	98	PR D57 5363	B. Nemati+	(CLEO Collab.)	REFID=45871
ABE	97J	PRL 79 590	+Abe, Akagi, Allen+	(SLD Collab.)	REFID=45413
ABREU	97F	ZPHY C74 19	+Adam, Adye, Agasi+	(DELPHI Collab.)	REFID=45412
Also	97K	ZPHY C75 579 erratum			REFID=45614
ABREU	97N	ZPHY C76 579	P. Abreu+	(DELPHI Collab.)	REFID=45789
ACCIARRI	97B	PL B391 474	M. Acciarri+	(L3 Collab.)	REFID=45248
ACCIARRI	97C	PL B391 481	M. Acciarri+	(L3 Collab.)	REFID=45249
ACKERSTAFF	97G	PL B395 128	K. Ackerstaff+	(OPAL Collab.)	REFID=45260
ACKERSTAFF	97U	ZPHY C76 401	K. Ackerstaff+	(OPAL Collab.)	REFID=45786
ACKERSTAFF	97V	ZPHY C76 417	K. Ackerstaff+	(OPAL Collab.)	REFID=45787
ARTUSO	97	PL B399 321	M. Artuso+	(CLEO Collab.)	REFID=45327
ASNER	97	PRL 79 799	D. Asner+	(CLEO Collab.)	REFID=45441
ATHANAS	97	PRL 79 2208	M. Athanas+	(CLEO Collab.)	REFID=45598
BUSKULIC	97	PL B395 373	D. Buskulic+	(ALEPH Collab.)	REFID=45291

BUSKULIC	97D	ZPHY C75 397	D. Buskulic+	(ALEPH Collab.)	REFID=45611
FU	97	PRL 79 3125	X. Fu+	(CLEO Collab.)	REFID=45625
JESSOP	97	PRL 79 4533	C.P. Jessop+	(CLEO Collab.)	REFID=45744
ABE	96B	PR D53 3496	+Albrow, Amendolia, Amidei+	(CDF Collab.)	REFID=44688
ABE	96C	PRL 76 4462	+Akimoto, Akopian, Albrow+	(CDF Collab.)	REFID=44700
ABE	96H	PRL 76 2015	+Albrow, Amendolia, Amidei+	(CDF Collab.)	REFID=44798
ABE	96L	PRL 76 4675	+Akimoto, Akopian, Albrow+	(CDF Collab.)	REFID=44807
ABE	96Q	PR D54 6596	+Akimoto, Akopian, Albrow+	(CDF Collab.)	REFID=44974
ABREU	96P	ZPHY C71 539	+Adam, Adye, Agasi+	(DELPHI Collab.)	REFID=44932
ABREU	96Q	ZPHY C72 17	+Adam, Adye, Agasi+	(DELPHI Collab.)	REFID=44934
ACCIARRI	96E	PL B383 487	+Adriani, Aguilar-Benitez, Ahlen+	(L3 Collab.)	REFID=44857
ADAM	96D	ZPHY C72 207	W. Adam+	(DELPHI Collab.)	REFID=45276
ALBRECHT	96D	PL B374 256	+Hamacher, Hofmann, Kirchhoff+	(ARGUS Collab.)	REFID=44891
ALEXANDER	96T	PRL 77 5000	+Bebek, Berger, Berkelman+	(CLEO Collab.)	REFID=44972
ALEXANDER	96V	ZPHY C72 377	G. Alexander+	(OPAL Collab.)	REFID=45279
ASNER	96	PR D53 1039	+Athanas, Bliss, Brower+	(CLEO Collab.)	REFID=44734
BARISH	96B	PRL 76 1570	+Chadha, Chan, Eigen+	(CLEO Collab.)	REFID=44693
BISHAI	96	PL B369 186	+Fast, Gerndt, Hinson+	(CLEO Collab.)	REFID=44832
BUSKULIC	96J	ZPHY C71 31	+De Bonis, Decamp, Ghez+	(ALEPH Collab.)	REFID=44824
BUSKULIC	96V	PL B384 471	+De Bonis, Decamp, Ghez+	(ALEPH Collab.)	REFID=44909
DUBOSCQ	96	PRL 76 3898	+Fulton, Fujino, Gan+	(CLEO Collab.)	REFID=44803
GIBAUT	96	PR D53 4734	+Kinoshita, Pomianowski, Barish+	(CLEO Collab.)	REFID=44784
PDG	96	PR D54 1			REFID=44495
ABE	95Z	PRL 75 3068	+Albrow, Amendolia, Amidei+	(CDF Collab.)	REFID=44490
ABREU	95N	PL B357 255	+Adam, Adye, Agasi+	(DELPHI Collab.)	REFID=44417
ABREU	95Q	ZPHY C68 13	+Adam, Adye, Agasi+	(DELPHI Collab.)	REFID=44460
ACCIARRI	95H	PL B363 127	+Adam, Adriani, Aguilar-Benitez+	(L3 Collab.)	REFID=44544
ACCIARRI	95I	PL B363 137	+Adam, Adriani, Aguilar-Benitez+	(L3 Collab.)	REFID=44545
ADAM	95	ZPHY C68 363	+Adye, Agasi, Ajinenko+	(DELPHI Collab.)	REFID=44465
AKERS	95J	ZPHY C66 555	+Alexander, Allison, Ametewee+	(OPAL Collab.)	REFID=44289
AKERS	95T	ZPHY C67 379	+Alexander, Allison, Ametewee+	(OPAL Collab.)	REFID=44379
ALEXANDER	95	PL B341 435	+Bebek, Berkelman, Bloom+	(CLEO Collab.)	REFID=44113
Also	95C	PL B347 469 (erratum)	Alexander, Bebek, Berkelman, Bloom+	(CLEO Collab.)	REFID=44211
BARISH	95	PR D51 1014	+Chadha, Chan, Cowen+	(CLEO Collab.)	REFID=44139
BUSKULIC	95N	PL B359 236	+Casper, De Bonis, Decamp+	(ALEPH Collab.)	REFID=44475
ABE	94D	PRL 72 3456	+Albrow, Amidei, Anway-Wiese, Apollinari	(CDF Collab.)	REFID=43761
ABREU	94M	PL B338 409	+Adam, Adye, Agasi, Ajinenko+	(DELPHI Collab.)	REFID=44022
AKERS	94C	PL B327 411	+Alexander, Allison, Anderson, Arcelli+	(OPAL Collab.)	REFID=43762
AKERS	94H	PL B336 585	+Alexander, Allison, Anderson, Arcelli+	(OPAL Collab.)	REFID=43968
AKERS	94J	PL B337 196	+Alexander, Allison, Anderson, Arcelli+	(OPAL Collab.)	REFID=44014
AKERS	94L	PL B337 393	+Alexander, Allison, Anderson, Arcelli+	(OPAL Collab.)	REFID=44018
ALAM	94	PR D50 43	+Kim, Nemati, O'Neill, Severini+	(CLEO Collab.)	REFID=43738
ALBRECHT	94	PL B324 249	+Ehrlichmann, Hamacher+	(ARGUS Collab.)	REFID=43782
ALBRECHT	94G	PL B340 217	+Hamacher, Hofmann, Kirchhoff, Mankel+	(ARGUS Collab.)	REFID=44045
AMMAR	94	PR D49 5701	+Ball, Baringer, Bean, Besson, Coppage+	(CLEO Collab.)	REFID=43736
ATHANAS	94	PRL 73 3503	+Brower, Masek, Paar, Gronberg+	(CLEO Collab.)	REFID=44064
Also	95	PRL 74 3090 (erratum)	Athanas, Brower, Masek, Paar+	(CLEO Collab.)	REFID=44196
BUSKULIC	94B	PL B322 441	+De Bonis, Decamp, Ghez, Goy, Lees+	(ALEPH Collab.)	REFID=43741
PDG	94	PR D50 1173	Montanet+	(CERN, LBL, BOST, IFIC+)	REFID=43653
PROCARIO	94	PRL 73 1306	+Balest, Cho, Daoudi, Ford+	(CLEO Collab.)	REFID=43735
STONE	94	HEPSY 93-11			REFID=43737
ABREU	93D	ZPHY C57 181	+Adam, Adye, Agasi, Alekseev+	(DELPHI Collab.)	REFID=43267
ABREU	93G	PL B312 253	+Adam, Adye, Agasi, Ajinenko+	(DELPHI Collab.)	REFID=43443
ACTON	93C	PL B307 247	+Alexander, Allison, Allport, Anderson+	(OPAL Collab.)	REFID=43352
ALBRECHT	93	ZPHY C57 533	+Ehrlichmann, Hamacher, Hofmann+	(ARGUS Collab.)	REFID=43269
ALBRECHT	93E	ZPHY C60 11	+Ehrlichmann, Hamacher, Hofmann+	(ARGUS Collab.)	REFID=43514
ALEXANDER	93B	PL B319 365	+Bebek, Berkelman, Bloom, Browder+	(CLEO Collab.)	REFID=43725
AMMAR	93	PRL 71 674	+Ball, Baringer, Coppage, Copty+	(CLEO Collab.)	REFID=43452
BARTELT	93	PRL 71 1680	+Csorna, Egyed, Jain, Sheldon+	(CLEO Collab.)	REFID=43507
BATTLE	93	PRL 71 3922	+Ernst, Kroha, Kwon, Roberts+	(CLEO Collab.)	REFID=43640
BEAN	93B	PRL 70 2681	+Gronberg, Kutschke, Menary, Morrison+	(CLEO Collab.)	REFID=43356
BUSKULIC	93D	PL B307 194	+Decamp, Goy, Lees, Minard+	(ALEPH Collab.)	REFID=43349
Also	94H	PL B325 537 (errata)			REFID=43945
BUSKULIC	93K	PL B313 498	+De Bonis, Decamp, Ghez, Goy+	(ALEPH Collab.)	REFID=43523
SANGHERA	93	PR D47 791	+Skwarnicki, Stroynowski, Artuso, Goldberg+	(CLEO Collab.)	REFID=43098
ALBRECHT	92C	PL B275 195	+Ehrlichmann, Hamacher, Krueger, Nau+	(ARGUS Collab.)	REFID=41928
ALBRECHT	92G	ZPHY C54 1	+Ehrlichmann, Hamacher, Krueger, Nau+	(ARGUS Collab.)	REFID=42037
ALBRECHT	92L	ZPHY C55 357	+Ehrlichmann, Hamacher, Krueger, Nau+	(ARGUS Collab.)	REFID=42201
BORTOLETTO	92	PR D45 21	+Brown, Dominick, McIlwain+	(CLEO Collab.)	REFID=41920
HENDERSON	92	PR D45 2212	+Kinoshita, Pipkin, Procario+	(CLEO Collab.)	REFID=42014
KRAMER	92	PL B279 181	+Palmer	(HAMB, OSU)	REFID=43834
ALBAJAR	91C	PL B262 163	+Albrow, Allkofer, Ankoviak, Apsimon+	(UA1 Collab.)	REFID=41551
ALBAJAR	91E	PL B273 540	+Albrow, Allkofer, Ankoviak+	(UA1 Collab.)	REFID=41642
ALBRECHT	91B	PL B254 288	+Glaeser, Harder, Krueger, Nippe+	(ARGUS Collab.)	REFID=41451
ALBRECHT	91C	PL B255 297	+Ehrlichmann, Glaeser, Harder, Krueger+	(ARGUS Collab.)	REFID=41454
ALBRECHT	91E	PL B262 148	+Glaeser, Harder, Krueger, Nippe+	(ARGUS Collab.)	REFID=41549
BERKELMAN	91	ARNPS 41 1	+Stone	(CORN, SYRA)	REFID=41929
"Decays of B Mesons"					
FULTON	91	PR D43 651	+Jensen, Johnson, Kagan, Kass+	(CLEO Collab.)	REFID=41391
ALBRECHT	90B	PL B241 278	+Glaeser, Harder, Krueger, Nilsson+	(ARGUS Collab.)	REFID=41216
ALBRECHT	90J	ZPHY C48 543	+Ehrlichmann, Harder, Krueger+	(ARGUS Collab.)	REFID=41437
ANTREASYAN	90B	ZPHY C48 553	+Bartels, Bieler, Bienlein, Bizzeti+	(Crystal Ball Collab.)	REFID=41438
BORTOLETTO	90	PRL 64 2117	+Goldberg, Horwitz, Jain, Mestayer+	(CLEO Collab.)	REFID=41178
ELSEN	90	ZPHY C46 349	+Allison, Ambrus, Barlow, Bartel+	(JADE Collab.)	REFID=41049
ROSNER	90	PR D42 3732			REFID=41464
WAGNER	90	PRL 64 1095	+Hinshaw, Ong, Snyder+	(Mark II Collab.)	REFID=41096
ALBRECHT	89C	PL B219 121	+Boeckmannn, Glaeser, Harder+	(ARGUS Collab.)	REFID=40809
ALBRECHT	89G	PL B229 304	+Glaeser, Harder, Krueger+	(ARGUS Collab.)	REFID=40942
ALBRECHT	89J	PL B229 175	+Glaeser, Harder+	(ARGUS Collab.)	REFID=41099
ALBRECHT	89L	PL B232 554	+Glaeser, Harder, Krueger, Nippe, Oest+	(ARGUS Collab.)	REFID=41275
ARTUSO	89	PRL 62 2233	+Bebek, Berkelman, Blucher+	(CLEO Collab.)	REFID=40785
AVERILL	89	PR D39 123	+Blockus, Brabson+	(HRS Collab.)	REFID=40691
AVERY	89B	PL B223 470	+Besson, Garren, Yelton+	(CLEO Collab.)	REFID=40820
BEBEK	89	PRL 62 8	+Berkelman, Blucher+	(CLEO Collab.)	REFID=40626
BORTOLETTO	89	PRL 62 2436	+Goldberg, Horwitz, Mestayer+	(CLEO Collab.)	REFID=40787
BORTOLETTO	89B	PRL 63 1667	+Goldberg, Horwitz, Mestayer+	(CLEO Collab.)	REFID=40800
ALBRECHT	88F	PL B209 119	+Boeckmann, Glaeser+	(ARGUS Collab.)	REFID=40649
ALBRECHT	88K	PL B215 424	+Boeckmann, Glaeser+	(ARGUS Collab.)	REFID=40662
ALBRECHT	87C	PL B185 218	+Binder, Boeckmann, Glaser+	(ARGUS Collab.)	REFID=40323
ALBRECHT	87D	PL B199 451	+Andam, Binder, Boeckmann+	(ARGUS Collab.)	REFID=40325
ALBRECHT	87I	PL B192 245	+Andam, Binder, Boeckmann+	(ARGUS Collab.)	REFID=40389
ALBRECHT	87J	PL B197 452	+Andam, Binder, Boeckmann+	(ARGUS Collab.)	REFID=40391
AVERY	87	PL B183 429	+Besson, Bowcock, Giles+	(CLEO Collab.)	REFID=40387
BEAN	87B	PRL 58 183	+Bobbink, Brock, Engler+	(CLEO Collab.)	REFID=40384
BEBEK	87	PR D36 1289	+Berkelman, Blucher, Cassel+	(CLEO Collab.)	REFID=40270
ALAM	86	PR D34 3279	+Katayama, Kim, Sun+	(CLEO Collab.)	REFID=40324
ALBRECHT	86F	PL B182 95	+Binder, Boeckmann, Glaser+	(ARGUS Collab.)	REFID=40388
PDG	86	PL 170B	Aguilar-Benitez, Porter+	(CERN, CIT+)	REFID=40122
CHEN	85	PR D31 2386	+Goldberg, Horwitz, Jawahery+	(CLEO Collab.)	REFID=11574
HAAS	85	PRL 55 1248	+Hempstead, Jensen, Kagan+	(CLEO Collab.)	REFID=11611
AVERY	84	PRL 53 1309	+Bebek, Berkelman, Cassel+	(CLEO Collab.)	REFID=11572
GILES	84	PR D30 2279	+Hassard, Hempstead, Kinoshita+	(CLEO Collab.)	REFID=11570
BEHRENDS	83	PRL 50 881	+Chadwick, Chauveau, Ganci+	(CLEO Collab.)	REFID=11569