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

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

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

See the Note "Production and Decay of *b*-flavored Hadrons" 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.

B⁰ MASS

The fit uses m_{B^+} , $(m_{B^0}-m_{B^+}),$ and m_{B^0} to determine $m_{B^+},\ m_{B^0},$ and the mass difference.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
5279.4±0.5 OUR FIT				
5279.3±0.7 OUR AVE	RAGE			
$5279.1 {\pm} 0.7 {\pm} 0.3$	135	¹ CSORNA	00 CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
$5281.3 \pm 2.2 \pm 1.4$	51	ABE	96b CDF	<i>р р</i> at 1.8 ТеV
$\bullet \bullet \bullet$ We do not use the	e followir	ng data for average	s, fits, limits,	etc. ● ● ●
$5279.2\!\pm\!0.54\!\pm\!2.0$	340	ALAM	94 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$5278.0 \pm 0.4 \pm 2.0$		BORTOLETT	O92 CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$
$5279.6 \pm 0.7 \pm 2.0$	40	² ALBRECHT	90J ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$5278.2 \pm 1.0 \pm 3.0$	40	ALBRECHT	87c ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$5279.5 \pm 1.6 \pm 3.0$	7	³ ALBRECHT	87d ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$5280.6 \!\pm\! 0.8 \ \pm 2.0$		BEBEK	87 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
1		0	(1)	

¹CSORNA 00 uses fully reconstructed 135 $B^0 \rightarrow J/\psi^{(')} K^0_S$ events and invariant masses without beam constraint. $^2\rm ALBRECHT$ 90J assumes 10580 for $\Upsilon(4S)$ mass. Supersedes ALBRECHT 87C and

ALBRECHT 87D.

³Found using fully reconstructed decays with J/ψ . ALBRECHT 87D assume $m \gamma_{(4S)} =$ 10577 MeV.

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT		
0.33±0.28 OUR FIT Error	includes scale factor of 1.2	1.			
0.34 ± 0.32 OUR AVERAGE	0.34±0.32 OUR AVERAGE Error includes scale factor of 1.2.				
$0.41\!\pm\!0.25\!\pm\!0.19$	ALAM 94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$		
$-0.4 \ \pm 0.6 \ \pm 0.5$	BORTOLETTO92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$		
$-0.9 \ \pm 1.2 \ \pm 0.5$	ALBRECHT 90J	ARG	$e^+e^- ightarrow ~\Upsilon(4S)$		
$2.0 \ \pm 1.1 \ \pm 0.3$	⁴ BEBEK 87	CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$		
⁴ BEBEK 87 actually measure the difference between half of $E_{\rm cm}$ 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.					

$$m_{B_H^0} - m_{B_L^0}$$

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

B⁰ MEAN LIFE

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.

"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 bflavored Hadrons" in the B^{\pm} Section of the Listings. The averaging procedure takes into account correlations between the measurements and asymmetric lifetime errors.

VALUE (10^{-12} s)	EVTS	DOCUMENT ID	TECN	COMMENT
1.540 ± 0.024 OUR EV	ALUATION	N _		
$1.541\!\pm\!0.028\!\pm\!0.023$		⁵ ABBIENDI,G	00b OPAL	$e^+e^- \rightarrow Z$
$1.518\!\pm\!0.053\!\pm\!0.034$		⁶ BARATE	00r ALEP	$e^+e^- \rightarrow Z$
$1.523\!\pm\!0.057\!\pm\!0.053$		⁷ ABBIENDI	99j OPAL	$e^+e^- \rightarrow Z$
$1.58\ \pm 0.09\ \pm 0.02$		⁸ ABE	98b CDF	<i>р<mark>р</mark> at 1.8 Те</i> V
$1.474 \!\pm\! 0.039 \!+\! 0.052 \\ -0.051$		⁶ ABE	98Q CDF	p p at 1.8 TeV
$1.52\ \pm 0.06\ \pm 0.04$		⁷ ACCIARRI	98s L3	$e^+e^- \rightarrow Z$
$1.64\ \pm 0.08\ \pm 0.08$		⁽ ABE	97j SLD	$e^+e^- \rightarrow Z$
$1.532\!\pm\!0.041\!\pm\!0.040$		⁹ ABREU	97f DLPH	$e^+e^- \rightarrow Z$
$1.25 \begin{array}{c} +0.15 \\ -0.13 \end{array} \pm 0.05$	121	⁸ BUSKULIC	96J ALEP	$e^+e^- \rightarrow Z$
$\begin{array}{rrrr} 1.49 & +0.17 & +0.08 \\ -0.15 & -0.06 \end{array}$		¹⁰ BUSKULIC	96J ALEP	$e^+e^- \rightarrow Z$
$1.61 \begin{array}{c} +0.14 \\ -0.13 \end{array} \pm 0.08$	6	^{5,11} ABREU	95Q DLPH	$e^+e^- \rightarrow Z$
$1.63\ \pm 0.14\ \pm 0.13$		¹² ADAM	95 DLPH	$e^+e^- \rightarrow Z$
$1.53\ \pm 0.12\ \pm 0.08$	6	^{5,13} AKERS	95T OPAL	$e^+e^- \rightarrow Z$
• • • We do not use t	ne followin	g data for averages	s, fits, limits,	etc. • • •
$1.54\ \pm 0.08\ \pm 0.06$		⁶ ABE	96c CDF	Repl. by ABE 98Q
$1.55 \ \pm 0.06 \ \pm 0.03$		¹⁴ BUSKULIC	96J ALEP	$e^+e^- \rightarrow Z$
$1.61\ \pm 0.07\ \pm 0.04$		⁶ BUSKULIC	96J ALEP	Repl. by BARATE 00R
1.62 ± 0.12		¹⁵ ADAM	95 DLPH	$e^+e^- \rightarrow Z$
$1.57\ \pm 0.18\ \pm 0.08$	121	⁸ ABE	94d CDF	Repl. by ABE 98B
$1.17 \begin{array}{c} +0.29 \\ -0.23 \end{array} \pm 0.16$	96	⁶ ABREU	93D DLPH	Sup. by ABREU 95Q
$1.55\ \pm 0.25\ \pm 0.18$	76	¹² ABREU	93G DLPH	Sup. by ADAM 95
$1.51 \begin{array}{c} +0.24 \\ -0.23 \end{array} \begin{array}{c} +0.12 \\ -0.14 \end{array}$	78	⁶ ACTON	93c OPAL	Sup. by AKERS 95T
$1.52 \begin{array}{c} +0.20 \\ -0.18 \end{array} \begin{array}{c} +0.07 \\ -0.13 \end{array}$	77	⁶ BUSKULIC	93D ALEP	Sup. by BUSKULIC 96J
$1.20 \begin{array}{c} +0.52 \\ -0.36 \end{array} \begin{array}{c} +0.16 \\ -0.14 \end{array}$	15	¹⁶ WAGNER	90 MRK2	$E_{\rm cm}^{ee}$ = 29 GeV
$0.82 \begin{array}{c} +0.57 \\ -0.37 \end{array} \pm 0.27$		¹⁷ AVERILL	89 HRS	$E_{\rm cm}^{ee}$ = 29 GeV
⁵ Data analyzed using	g partially	reconsturcted \overline{B}^0 -	$\rightarrow D^{*+}\ell^{-}\overline{\nu}$, decays.

⁵ Data analyzed using partially reconsturcted $\overline{B}^0 \rightarrow D^{*+} \ell^- \overline{\nu}$ decays.

⁶Data analyzed using $D/D^*\ell X$ event vertices.

⁷ Data analyzed using charge of secondary vertex.

⁸Measured mean life using fully reconstructed decays.

- ⁹ Data analyzed using inclusive $D/D^* \ell X$.
- ¹⁰ Measured mean life using partially reconstructed $D^{*-}\pi^+X$ vertices.

¹¹ABREU 95Q assumes $B(B^0 \rightarrow D^{**-} \ell^+ \nu_{\ell}) = 3.2 \pm 1.7\%$.

- 12 Data analyzed using vertex-charge technique to tag B charge.
- ¹³AKERS 95T assumes $B(B^0 \rightarrow D_s^{(*)}D^{0(*)}) = 5.0 \pm 0.9\%$ to find B^+/B^0 yield.
- ¹⁴ Combined result of $D/D^* \ell x$ analysis, fully reconstructed *B* analysis, and partially reconstructed $D^{*-} \pi^+ X$ analysis.
- ¹⁵ Combined ABREU 95Q and ADAM 95 result.
- 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 $\pi^-\overline{D}^0$.
- ¹⁷ AVERILL 89 is an estimate of the B^0 mean lifetime assuming that $B^0 \rightarrow D^{*+} + X$ always.

MEAN LIFE RATIO τ_{B^+}/τ_{B^0}

 $\begin{array}{c} \tau_{B^+}/\tau_{B^0} \text{ (average of direct and inferred)} \\ \hline \underline{VALUE} & \underline{DOCUMENT \ ID} \\ \hline \textbf{1.073 \pm 0.027 \ OUR \ AVERAGE} & Includes \ data \ from \ the 2 \ datablocks \ that \ follow \ this \ one. \end{array}$

τ_{B^+}/τ_{B^0} (direct measurements)

"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 bflavored Hadrons" in the B[±] Section of the Listings. The averaging procedure takes into account correlations between the measurements and asymmetric lifetime errors. <u>VALUE</u> <u>EVTS</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

The data in this block is included in the average printed for a previous datablock.

1.074 ± 0.028 OUR EVALUATION

$1.085 \!\pm\! 0.059 \!\pm\! 0.018$	¹⁸ BARATE	00r ALEP	$e^+ e^- ightarrow Z$
$1.079\!\pm\!0.064\!\pm\!0.041$	¹⁹ ABBIENDI	99J OPAL	$e^+e^- \rightarrow Z$
$1.06 \pm 0.07 \pm 0.02$	²⁰ ABE	98b CDF	<i>р р</i> ат 1.8 ТеV
$1.110 \!\pm\! 0.056 \!+\! 0.033 \\ -\! 0.030$	¹⁸ ABE	98Q CDF	<i>р</i> р at 1.8 ТеV
$1.09 \ \pm 0.07 \ \pm 0.03$	¹⁹ ACCIARRI	98s L3	$e^+e^- \rightarrow Z$
$1.01\ \pm 0.07\ \pm 0.06$	¹⁹ ABE	97J SLD	$e^+e^- \rightarrow Z$
$1.27 \begin{array}{r} +0.23 \\ -0.19 \end{array} \begin{array}{r} +0.03 \\ -0.02 \end{array}$	²⁰ BUSKULIC	96J ALEP	$e^+e^- \rightarrow Z$
$1.00 \begin{array}{c} +0.17 \\ -0.15 \end{array} \pm 0.10$	^{18,21} ABREU	95Q DLPH	$e^+e^- \rightarrow Z$
$1.06 \begin{array}{c} +0.13 \\ -0.10 \end{array} \pm 0.10$	²² ADAM	95 DLPH	$e^+e^- \rightarrow Z$
$0.99 \ \pm 0.14 \ \begin{array}{c} + \ 0.05 \\ - \ 0.04 \end{array}$	^{18,23} AKERS	95⊤ OPAL	$e^+e^- \rightarrow Z$

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

1.01	± 0.11	± 0.02		¹⁸ ABE	96c CDF	Repl. by ABE 98Q
1.03	± 0.08	± 0.02		²⁴ BUSKULIC	96J ALEP	$e^+e^- \rightarrow Z$
0.98	± 0.08	± 0.03		¹⁸ BUSKULIC	96J ALEP	Repl. by BARATE 00R
1.02	± 0.16	± 0.05	269	²⁰ ABE	94d CDF	Repl. by ABE 98B
1.11	$^{\mathrm{+0.51}}_{\mathrm{-0.39}}$	± 0.11	188	¹⁸ ABREU	93D DLPH	Sup. by ABREU 95Q
1.01	$^{\rm +0.29}_{\rm -0.22}$	± 0.12	253	²² ABREU	93G DLPH	Sup. by ADAM 95
1.0	$^{\rm +0.33}_{\rm -0.25}$	± 0.08	130	ACTON	93c OPAL	Sup. by AKERS 95⊤
0.96	$^{+0.19}_{-0.15}$	$^{+0.18}_{-0.12}$	154	¹⁸ BUSKULIC	93d ALEP	Sup. by BUSKULIC 96J

¹⁸ Data analyzed using $D/D^* \ell X$ vertices.

¹⁹Data analyzed using charge of secondary vertex.

²⁰ Measured using fully reconstructed decays.

²¹ABREU 95Q assumes $B(B^0 \rightarrow D^{**-} \ell^+ \nu_{\ell}) = 3.2 \pm 1.7\%$.

 22 Data analyzed using vertex-charge technique to tag B charge.

²³AKERS 95T assumes $B(B^0 \rightarrow D_s^{(*)}D^{0(*)}) = 5.0 \pm 0.9\%$ to find B^+/B^0 yield.

²⁴ Combined result of $D/D^* \ell X$ analysis and fully reconstructed B analysis.

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

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.

VALUECL%EVTSDOCUMENT IDTECNCOMMENTThe data in this block is included in the average printed for a previous datablock.

$0.95^{+0.117}_{-0.080} \pm 0.091$	²⁵ ARTUSO	97 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
\bullet \bullet \bullet We do not use the followin	ng data for averages, fits	, limits, etc.	• • •
$1.15 \pm 0.17 \ \pm 0.06$	²⁶ JESSOP	97 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$0.93 {\pm} 0.18 \ {\pm} 0.12$	²⁷ ATHANAS	94 CLE2	Sup. by AR-
$\begin{array}{cccc} 0.91 {\pm} 0.27 \ {\pm} 0.21 \\ 1.0 \ {\pm} 0.4 \\ 0.89 {\pm} 0.19 \ {\pm} 0.13 \end{array}$	²⁸ ALBRECHT 29 ^{28,29} ALBRECHT ²⁸ FULTON	92C ARG 92G ARG 91 CLEO	$ \begin{array}{c} \text{TUSO 97} \\ e^+e^- \rightarrow & \Upsilon(4S) \\ e^+e^- \rightarrow & \Upsilon(4S) \\ e^+e^- \rightarrow & \Upsilon(4S) \end{array} $
$1.00 \pm 0.23 \pm 0.14$	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			•

²⁵ ARTUSO 97 uses partial reconstruction of $B \rightarrow D^* \ell \nu_{\ell}$ and independent of B^0 and B^+ production fraction.

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

²⁷ ATHANAS 94 uses events tagged by fully reconstructed B^- decays and partially or fully reconstructed B^0 decays.

²⁸ Assumes equal production of B^0 and B^+ .

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.

³⁰ BEAN 87B assume the fraction of $B^0 \overline{B}{}^0$ events at the $\Upsilon(4S)$ is 0.41.

 $\big| \Delta \Gamma_{B^0_d} \big| / \Gamma_{B^0_d}$

 $\Gamma_{B_d^0}$ and $|\Delta\Gamma_{B_d^0}|$ are the decay rate average and difference between two B_d^0 CP eigenstates.

VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<0.40	95	31,32 BEHRENS 00B	CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$	
31 BEHRENS 00B uses high-momentum lepton tags and partially reconstructed \overline{B}^0 $ ightarrow$					
$D^{*+}\pi^-$, $ ho^-$ decays to determine the flavor of the B meson.					
32 Assumes Δ_{md} =0.47	8 ± 0	.018 ps $^{-1}$ and $ au_{B^0}{=}1.548$	3 ± 0.03	2 ps.	

B⁰ DECAY MODES

 \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 Γ ₂ Γ ₃ Γ ₄ Γ ₅	$\ell^+ u_\ell$ anything $D^- \ell^+ u_\ell$ $D^* (2010)^- \ell^+ u_\ell$ $ ho^- \ell^+ u_\ell$ $\pi^- \ell^+ u_\ell$	$ \begin{array}{ll} [a] & (10.5 \pm 0.8 \) \% \\ [a] & (\ 2.10 \pm 0.19 \) \% \\ [a] & (\ 4.68 \pm 0.22 \) \% \\ [a] & (\ 2.6 \ -0.7 \) \times 10 \\ & (\ 1.8 \ \pm 0.6 \) \times 10 \end{array} $	—4 —4
Г ₆ Г ₇	$\begin{array}{l} {\rm Inclusive} \\ \pi^-\mu^+\nu_\mu \\ {\rm K}^+{\rm anything} \end{array}$	modes (78 ±8)%	

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 $D, D^*, \text{ or } D_s \text{ modes}$

Г ₈	$D^-\pi^+$	(3.0 ±0.	4) $ imes$ 10 $^{-3}$	
Γ ₉	$D^- \rho^+$	($7.9 \pm 1.$	4) $ imes$ 10 $^{-3}$	
Γ ₁₀	$\overline{D}{}^{0}\pi^{+}\pi^{-}$	< 1.6	imes 10 ⁻³	CL=90%
Γ_{11}	$D^*(2010)^- \pi^+$	$(2.76\pm0.)$	21) $\times 10^{-3}$	
Γ_{12}	$D^{-}\pi^{+}\pi^{+}\pi^{-}$	($8.0 \pm 2.$	5) $ imes 10^{-3}$	
Γ ₁₃	$(D^{-}\pi^{+}\pi^{+}\pi^{-})$ nonresonant	(3.9 ± 1 .	9) $ imes 10^{-3}$	
Г ₁₄	$D^-\pi^+ ho^0$	($1.1 \pm 1.$	0) $\times 10^{-3}$	
Γ ₁₅	$D^-a_1(1260)^+$	$(6.0 \pm 3.)$	3) $\times 10^{-3}$	
Γ ₁₆	$D^*(2010)^-\pi^+\pi^0$	$(1.5 \pm 0.)$	5)%	
I 17	$D^{*}(2010)^{-}\rho^{+}$	$(7.3 \pm 1.)$	5) × 10 ⁻³	
I ₁₈	$D^*(2010)^-\pi^+\pi^+\pi^-$	$(7.6 \pm 1.)$	8) × 10 ⁻³	S=1.4
l ₁₉	$(D^*(2010)^-\pi^+\pi^+\pi^-)$ non-	$(0.0 \pm 2.)$	5) $\times 10^{-3}$	
Гаа	resonant $D^*(2010) = \pi + a^0$	(57 ⊥2	$2 > 10^{-3}$	
г <u>20</u> Гол	$D^{*}(2010) = 2 (1260)^{+}$	$(5.7 \pm 3.)$	2) × 10 27) %	
	$D^{*}(2010)^{-}\pi^{+}\pi^{+}\pi^{-}\pi^{0}$	$(1.50\pm0.)$	8)%	
Г <u>22</u>	$\overline{D}^{*}(2460)^{-}\pi^{+}$	< 22	× 10 ⁻³	CI =90%
· 23	$\frac{D}{D^{*}}(2460) - a^{+}$	< 4.9	$\times 10^{-3}$	CI 90%
' 24 Гаг	$D^{-}D^{+}$	< 9.4	$\times 10^{-4}$	CL = 0.0%
1 25 Гос	$D^{-}D^{+}$	(80 +3	$^{\times 10}_{0}$	CL—9070
^г 26 Г.–	$D^{*}(2010)^{-}D^{+}$	$(0.0 \pm 3.)$	$(0) \times 10$	
г 27 Г	$D^{-} D^{*+}$	$(1.05\pm0.)$	54) /0 F) 0/	
г <u>28</u> Г	$D D_{s}$	$(1.0 \pm 0.)$	5)%	
I 29	$D^{+}(2010) D_{s}^{+}$	$(1.9 \pm 0.)$	6)%	
I 30	$D_{s}^{\prime}\pi$	< 2.8	$\times 10^{-4}$	CL=90%
I ₃₁	$D_{s}^{*+}\pi^{-}$	< 5	$\times 10^{-4}$	CL=90%
Г ₃₂	$D_s^+ \rho^-$	< 7	imes 10 ⁻⁴	CL=90%
Г ₃₃	$D_s^{*+}\rho^-$	< 8	imes 10 ⁻⁴	CL=90%
Г ₃₄	$D_s^+ a_1(1260)^-$	< 2.6	imes 10 ⁻³	CL=90%
Γ ₃₅	$D_{s}^{*+}a_{1}(1260)^{-}$	< 2.2	imes 10 ⁻³	CL=90%
Г ₃₆	$D_{\epsilon}^{-}K^{+}$	< 2.4	imes 10 ⁻⁴	CL=90%
Γ ₃₇	$D_{c}^{*-}K^{+}$	< 1.7	imes 10 ⁻⁴	CL=90%
Г ₃₈	$D_{-}^{*}K^{*}(892)^{+}$	< 9.9	imes 10 ⁻⁴	CL=90%
Г20	$D^{s-}K^{s}(892)^{+}$	< 1.1	$\times 10^{-3}$	CL=90%
· 39 Γ4ο	$D^{-}\pi^{+}K^{0}$	<	× 10 ^{−3}	CI 90%
ч40 Г.,	$D^{*-}\pi^+\kappa^0$	< 31	× 10 × 10 ⁻³	CL = 0.0%
'41 Г	$D^{-} \pi^{+} \kappa^{*}(802)^{0}$	< J.I	× 10 ⁻³	CL = 90 / 0
י 42 ר	$D_{s}^{*-} - + \kappa^{*}(902)^{0}$	< 4	× 10 ~	CL = 90%
I 43 F	$\nu_s \pi (\delta 92)^{\circ}$	< 2.0	$\times 10^{-5}$	CL=90%
1 ₄₄	$D^{\circ}\pi^{\circ}$	< 1.2	$\times 10^{-4}$	CL=90%
I 45	$D^{*} \rho^{*}$	< 3.9	$\times 10^{-4}$	CL=90%

Г ₄₆	$\overline{D}^{0}\eta$	<	< 1.3	imes 10 ⁻⁴	CL=90%
Γ ₄₇	$\overline{D}^0 \eta'$	<	< 9.4	$\times 10^{-4}$	CL=90%
Γ ₄₈	$\frac{D^0}{\omega}$	<	< 5.1	$\times 10^{-4}$	CL=90%
Г ₄₉	$\frac{D^{*0}\gamma}{\overline{D}^{*}(2227)} 0$	<	< 5.0	$\times 10^{-5}$	CL=90%
I 50	$\frac{D^{*}(2007)^{0}\pi^{0}}{D^{*}(2007)^{0}\pi^{0}}$	<	< 4.4	$\times 10^{-4}$	CL=90%
۱ ₅₁	$\frac{D^*(2007)^\circ}{D^*(2007)^\circ}$	<	< 5.6	$\times 10^{-4}$	CL=90%
I 52	$\frac{D}{D}(2007)^{\circ}\eta$	<	< 2.6	$\times 10^{-4}$	CL=90%
г ₅₃ Г-	$\frac{D}{D^*}(2007)^{\circ}\eta$	<	< 1.4	× 10 ⁻⁴	CL=90%
- 54	$D(2007) \omega$	<	< 1.4	× 10	CL=90%
I 55	$D^{*}(2010)^{+}D^{*}(2010)^{-}$		(9.9 _	3.5) × 10 ⁻⁴	
Г ₅₆	$D^{*}(2010)^{+}D^{-}$	<	< 6.3	imes 10 ⁻⁴	CL=90%
Γ ₅₇	$D^{(*)0}D^{(*)0}$	<	< 2.7	%	CL=90%
	C	Charmonium mo	des		
Г ₅₈	$\eta_c K^0$		(1.1 +	$(0.6) \times 10^{-3}$	
Γεο	$I/\psi(1.5) K^0$		(96 +)	$(0.9) \times 10^{-4}$	
- 59 Γεο	$J/\psi(1S)K^{+}\pi^{-}$		(1.2 + 0)	$(0.6) \times 10^{-3}$	
Γ ₆₁	$J/\psi(1S) K^*(892)^0$		$(1.50\pm)$	$(0.17) \times 10^{-3}$	
Γερ	$I/\psi(1S)\phi K^0$		(88 + 3)	$(3.7) \times 10^{-5}$	
- 02	$\phi(10)\phi(1)$		(0.0 _;	3.3 / ~ ±0	
I ₆₃	$J/\psi(15)\pi^{0}$		(2.5 +)	$(1.1)_{0.9} \times 10^{-5}$	
Г ₆₄	$J/\psi(1S)\eta$	<	< 1.2	$\times 10^{-3}$	CL=90%
Γ ₆₅	$J/\psi(1S) ho^0$	<	< 2.5	$\times 10^{-4}$	CL=90%
Г ₆₆	$J/\psi(1S)\omega$	<	< 2.7	$\times 10^{-4}$	CL=90%
۱ ₆₇	$\psi(2S)K^{0}$	<	< 8	$\times 10^{-4}$	CL=90%
I 68	$\psi(2S) K + \pi$	<	< 1	$\times 10^{-3}$	CL=90%
Г 69 Г	$\psi(25) \wedge (892)^{\circ}$		(9.3 ±2	2.3×10^{-4}	CL 000/
1 ₇₀	$\chi_{c0}(1F)K$	<	< 5.0	× 10 ·	CL=90%
I 71	$\chi_{c1}(1P)K^{\circ}$		(3.9 _	(1.3) (1.4) (1.4) (1.4) (1.4)	
Γ ₇₂	$\chi_{c1}(1P) K^*(892)^0$	<	< 2.1	$\times 10^{-3}$	CL=90%
		K or K* mode	ès		
Γ ₇₃	$K^+ \pi^-$		$(1.72\pm)$	$(0.27) \times 10^{-5}$	
Γ ₇₄	$K^0 \pi^0$		(1.5 ± 0	0.6) $ imes 10^{-5}$	
Γ ₇₅	$\eta' K^0$		(8.9 ± 2	1.9) $ imes$ 10 $^{-5}$	
Γ ₇₆	$\eta^\prime {\cal K}^*(892)^0$	<	< 2.4	imes 10 ⁻⁵	CL=90%
Γ ₇₇	η K*(892) ⁰		(1.4 + 0)	$^{0.6}_{0.5}$) $ imes$ 10 $^{-5}$	
Г ₇₈	ηK^0	<	< 9.3	imes 10 ⁻⁶	CL=90%
Γ ₇₉	ωK^0	<	< 2.1	imes 10 ⁻⁵	CL=90%
Г ₈₀	$\omega K^{*}(892)^{0}$	<	< 2.3	$\times 10^{-5}$	CL=90%
Γ ₈₁	K^+K^-	<	< 1.9	$\times 10^{-6}$	CL=90%
Г ₈₂	$K^{\circ}K^{\circ}$	<	< 1.7	$\times 10^{-5}$	CL=90%
I ₈₃	$K^+ \rho^-$	<	< 3.2	imes 10 ⁻⁵	CL=90%
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Г ₈₄	$K^0 \pi^+ \pi^-$					
Γ ₈₅	$\kappa^0 \rho^0$		<	3.9	imes 10 ⁻⁵	CL=90%
Г ₈₆	$K^0 f_0(980)$		<	3.6	imes 10 ⁻⁴	CL=90%
Γ ₈₇	$K^{*}(892)^{+}\pi^{-}$		<	7.2	imes 10 ⁻⁵	CL=90%
Γ ₈₈	$K^{*}(892)^{0}\pi^{0}$		<	3.6	imes 10 ⁻⁶	CL=90%
Г ₈₉	${ m K}_2^*(1430)^+\pi^-$		<	2.6	imes 10 ⁻³	CL=90%
Γ ₉₀	$K^0 \overline{K^+} K^-$		<	1.3	imes 10 ⁻³	CL=90%
Γ ₉₁	$\kappa^{0}\phi$		<	3.1	imes 10 ⁻⁵	CL=90%
Γ ₉₂	$\kappa^-\pi^+\pi^+\pi^-$	[<i>b</i>]	<	2.3	imes 10 ⁻⁴	CL=90%
Γ ₉₃	$K^{*}(892)^{0}\pi^{+}\pi^{-}$		<	1.4	imes 10 ⁻³	CL=90%
Г ₉₄	$K^{*}(892)^{0} ho^{0}$		<	2.86	imes 10 ⁻⁴	CL=90%
Γ ₉₅	$K^*(892)^0 f_0(980)$		<	1.7	imes 10 ⁻⁴	CL=90%
Г ₉₆	$\kappa_1(1400)^+\pi^-$		<	1.1	imes 10 ⁻³	CL=90%
Г ₉₇	$K^{-}a_{1}(1260)^{+}$	[<i>b</i>]	<	2.3	imes 10 ⁻⁴	CL=90%
Г ₉₈	$K^{*}(892)^{0}K^{+}K^{-}$		<	6.1	imes 10 ⁻⁴	CL=90%
Γ99	$\kappa^{*}(892)^{0}\phi$		<	2.1	imes 10 ⁻⁵	CL=90%
Γ ₁₀₀	$\overline{K}^{*}(892)^{0} \overline{K}^{*}(892)^{0}$		<	4.69	imes 10 ⁻⁴	CL=90%
Γ ₁₀₁	$K_1(1400)^0 \rho^0$		<	3.0	imes 10 ⁻³	CL=90%
Γ ₁₀₂	$K_1(1400)^0 \phi$		<	5.0	imes 10 ⁻³	CL=90%
Γ_{103}	$K_{2}^{*}(1430)^{0}\rho^{0}$		<	1.1	imes 10 ⁻³	CL=90%
Γ ₁₀₄	$K_{2}^{*}(1430)^{0}\phi$		<	1.4	imes 10 ⁻³	CL=90%
L105	$K^{*}(892)^{0}\gamma$		(4.5 ±0.8)	1×10^{-5}	
Γ_{106}	$K_1(1270)^0 \gamma$		<	7.0	$\times 10^{-3}$	CL=90%
Γ_{107}	$K_1(1400)^0 \gamma$		<	4.3	imes 10 ⁻³	CL=90%
Γ_{108}	$K_{2}^{(1430)0}\gamma$		<	4.0	imes 10 ⁻⁴	CL=90%
Γ100	$K^{2}(1680)^{0}\gamma$		<	2.0	$\times 10^{-3}$	CI = 90%
Γ ₁₁₀	$K_{*}^{*}(1780)^{0}\gamma$		~	1.0	%	CI = 90%
Γ110	$K^{*}(2045)^{0}\gamma$		2	43	× 10 ⁻³	CI 90%
' 111	(4(2013))			4.5	× 10	CL=3070
	Light unflavored	l mes	on	modes	_	
Γ_{112}	$ ho^{0}\gamma$		<	1.7	$\times 10^{-5}$	CL=90%
Γ ₁₁₃	$\omega \gamma$		<	9.2	$\times 10^{-6}$	CL=90%
Γ ₁₁₄	$\phi\gamma$		<	3.3	imes 10 ⁻⁶	CL=90%
Γ_{115}	$\pi^+\pi^-$		($4.3 \begin{array}{c} +1.7 \\ -1.5 \end{array}$)) × 10 ⁻⁶	
Γ ₁₁₆	$\pi^0 \pi^0$		<	9.3	imes 10 ⁻⁶	CL=90%
$\Gamma_{117}^{}$	$\eta \pi^0$		<	2.9	imes 10 ⁻⁶	CL=90%
Γ ₁₁₈	$\eta \eta$		<	1.8	imes 10 ⁻⁵	CL=90%
Γ ₁₁₉	$\eta' \pi^{0}$		<	5.7	imes 10 ⁻⁶	CL=90%
Γ_{120}	$\eta' \eta'$		<	4.7	imes 10 ⁻⁵	CL=90%
Γ_{121}	$\eta'\eta_{\perp}$		<	2.7	imes 10 ⁻⁵	CL=90%
Γ_{122}	$\eta' \rho^0$		<	1.2	imes 10 ⁻⁵	CL=90%
Γ ₁₂₃	$\eta \rho^{U}$		<	1.0	imes 10 ⁻⁵	CL=90%
Γ ₁₂₄	$\omega \eta$		<	1.2	imes 10 ⁻⁵	CL=90%
Γ_{125}	$\omega \eta'$		<	6.0	imes 10 ⁻⁵	CL=90%
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Γ ₁₂₆	$\omega \rho^0$	< 1.1	imes 10 ⁻⁵	CL=90%
Γ ₁₂₇	ωω	< 1.9	imes 10 ⁻⁵	CL=90%
Γ ₁₂₈	$\phi \pi^{0}$	< 5	imes 10 ⁻⁶	CL=90%
Γ ₁₂₉	$\phi\eta$	< 9	imes 10 ⁻⁶	CL=90%
Γ_{130}	$\phi \eta'$	< 3.1	imes 10 ⁻⁵	CL=90%
Γ ₁₃₁	$\phi \rho^0$	< 1.3	imes 10 ⁻⁵	CL=90%
Γ_{132}	$\phi \omega$	< 2.1	imes 10 ⁻⁵	CL=90%
Γ_{133}	$\phi \phi$	< 1.2	imes 10 ⁻⁵	CL=90%
Γ ₁₃₄	$\pi^+\pi^-\pi^0$	< 7.2	imes 10 ⁻⁴	CL=90%
Γ_{135}	$\rho^0 \pi^0$	< 5.5	imes 10 ⁻⁶	CL=90%
Γ ₁₃₆	$\rho^{\mp}\pi^{\pm}$	$[c]$ (2.8 \pm 0.9	$) \times 10^{-5}$	
Γ ₁₃₇	$\pi^+\pi^-\pi^+\pi^-$	< 2.3	$\times 10^{-4}$	CL=90%
Γ ₁₃₈	$\rho^0 \rho^0$	< 1.36	imes 10 ⁻⁴	CL=90%
Γ ₁₃₉	$a_1(1260)^{\mp}\pi^{\pm}$	[c] < 4.9	imes 10 ⁻⁴	CL=90%
Γ ₁₄₀	$a_2(1320)^{\mp}\pi^{\pm}$	[c] < 3.0	imes 10 ⁻⁴	CL=90%
Γ ₁₄₁	$\pi^{+}\pi^{-}\pi^{0}\pi^{0}$	< 3.1	imes 10 ⁻³	CL=90%
Γ ₁₄₂	$ ho^+ ho^-$	< 2.2	imes 10 ⁻³	CL=90%
Γ ₁₄₃	$a_1(1260)^0 \pi^0$	< 1.1	imes 10 ⁻³	CL=90%
Γ ₁₄₄	$\omega \pi^0$	< 5.5	imes 10 ⁻⁶	CL=90%
Γ ₁₄₅	$\pi^+\pi^+\pi^-\pi^-\pi^0$	< 9.0	imes 10 ⁻³	CL=90%
Γ ₁₄₆	$a_1(1260)^+ ho^-$	< 3.4	imes 10 ⁻³	CL=90%
Γ ₁₄₇	$a_1(1260)^0 \rho^0$	< 2.4	imes 10 ⁻³	CL=90%
Γ ₁₄₈	$\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$	< 3.0	imes 10 ⁻³	CL=90%
Γ ₁₄₉	$a_1(1260)^+ a_1(1260)^-$	< 2.8	imes 10 ⁻³	CL=90%
Γ_{150}	$\pi^{+}\pi^{+}\pi^{+}\pi^{-}\pi^{-}\pi^{-}\pi^{0}$	< 1.1	%	CL=90%
	Barvon	modes		
Γ151		< 70	× 10 ⁻⁶	CI =90%
Γ ₁₅₁	$p \overline{p} \pi^+ \pi^-$	< 25	$\times 10^{-4}$	CL = 90%
Γ_{152}	$p \overline{\Lambda} \pi^{-}$	< 1.3	$\times 10^{-5}$	CL=90%
Γ ₁₅₄	$\frac{1}{\Lambda}$	< 3.9	× 10 ⁻⁶	CI = 90%
Γ ₁₅₅	$\Delta^0 \overline{\Delta}^0$	< 1.5	$\times 10^{-3}$	CL=90%
Γ ₁₅₆	$\overline{\Delta}^{++}\Delta^{}$	< 1.1	$\times 10^{-4}$	CL=90%
L150	$\overline{\Sigma}^{} \Delta^{++}$	< 1.0	$\times 10^{-3}$	CL=90%
Γ_{158}	$\overline{\Lambda}^{c}_{-} p \pi^{+} \pi^{-}$	(1.3 ± 0.6) × 10 ⁻³	
L120	$\overline{\Lambda}^{-}\rho$	< 2.1	× 10 ⁻⁴	CL=90%
L129	$\overline{\Lambda}^{c} p \pi^{0}$	< 50	× 10 ⁻⁴	CI =90%
L ¹ C1	$\frac{\Lambda c}{\Lambda} \frac{\rho}{\rho} \frac{\pi}{\pi} + \pi - \pi^0$	< 5.07	× 10 ⁻³	CI -00%
' 161 Гасо	$\frac{\Lambda c}{\Lambda} - \frac{\rho}{\rho} \pi^+ \pi^- \pi^+ \pi^-$	< 2.71	~ 10 × 10 ⁻³	CL - 00%
1 62		~ 2.14	~ 10	CL-90/0

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	$\Delta B = 1$	weak neutral c	urrent (<i>B1</i>) n	nodes	
Γ ₁₆₃	$\gamma \gamma$		< 3.9	imes 10 ⁻⁵	CL=90%
Г ₁₆₄	e ⁺ e ⁻	B1	< 8.3	imes 10 ⁻⁷	CL=90%
Γ ₁₆₅	$\mu^+\mu^-$	B1	< 6.1	imes 10 ⁻⁷	CL=90%
Γ ₁₆₆	$K^{0}e^{+}e^{-}$	B1	< 3.0	imes 10 ⁻⁴	CL=90%
Γ ₁₆₇	$K^0 \mu^+ \mu^-$	B1	< 3.6	imes 10 ⁻⁴	CL=90%
Γ ₁₆₈	$K^*(892)^0 e^+ e^-$	B1	< 2.9	imes 10 ⁻⁴	CL=90%
Γ ₁₆₉	$K^*(892)^0 \mu^+ \mu^-$	B1	< 4.0	imes 10 ⁻⁶	CL=90%
Γ ₁₇₀	$K^{*}(892)^{0} \nu \overline{\nu}$	B1	< 1.0	imes 10 ⁻³	CL=90%
Γ ₁₇₁	$e^{\pm}\mu^{\mp}$	LF	[c] < 1.5	imes 10 ⁻⁶	CL=90%
Γ ₁₇₂	$e^{\pm}\tau^{\mp}$	LF	[c] < 5.3	imes 10 ⁻⁴	CL=90%
Γ ₁₇₃	$\mu^{\pm} \tau^{\mp}$	LF	[c] < 8.3	imes 10 ⁻⁴	CL=90%

Lepton Family number (LF) violating modes, or

- [a] An ℓ indicates an e or a μ mode, not a sum over these modes.
- [b] B^0 and B^0_s contributions not separated. Limit is on weighted average of the two decay rates.
- [c] The value is for the sum of the charge states or particle/antiparticle states indicated.

B⁰ BRANCHING RATIOS

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

$\Gamma(\ell^+ u_\ell$ anything)/ $\Gamma_{ ext{total}}$					Γ_1/Γ
VALUE	DOCUMENT ID		TECN	COMMENT	
0.105 ± 0.008 OUR AVERAGE					
$0.1078 \!\pm\! 0.0060 \!\pm\! 0.0069$	³³ ARTUSO	97	CLE2	$e^+e^- ightarrow$	$\Upsilon(4S)$
$0.093 \ \pm 0.011 \ \pm 0.015$	ALBRECHT	94	ARG	$e^+ e^- ightarrow$	$\Upsilon(4S)$
$0.099 \ \pm 0.030 \ \pm 0.009$	HENDERSON	92	CLEO	$e^+ e^- \rightarrow$	$\Upsilon(4S)$
\bullet \bullet \bullet We do not use the followin	g data for averages	s, fits	, limits,	etc. • • •	
$0.109 \ \pm 0.007 \ \pm 0.011$	ATHANAS	94	CLE2	Sup. by AF	RTUSO 97
³³ ARTUSO 97 uses partial rec branching ratio from BARISH	construction of B 96B (0.1049 \pm 0.0	→ 0017	$D^* \ell u_\ell = \pm 0.004$	and inclusive 3).	e semileptonic
$\Gamma(D^-\ell^+\nu_\ell)/\Gamma_{\text{total}}$	ım				Γ2/Γ
$\frac{\Gamma(D^{-}\ell^{+}\nu_{\ell})}{\ell \text{ denotes } e \text{ or } \mu, \text{ not the su}}$	ım. <u>DOCUMENT ID</u>		TECN	<u>COMMENT</u>	Γ2/Γ
$\frac{\Gamma(D^{-}\ell^{+}\nu_{\ell})}{\ell \text{ denotes } e \text{ or } \mu, \text{ not the su}}$ $\frac{VALUE}{0.0210 \pm 0.0019 \text{ OUR AVERAGE}}$	ım. <u>DOCUMENT ID</u>		<u>TECN</u>	<u>COMMENT</u>	Г ₂ /Г
$\frac{\Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}}}{\ell \text{ denotes } e \text{ or } \mu, \text{ not the su}}$ $\frac{VALUE}{0.0210\pm0.0019 \text{ OUR AVERAGE}}$ $0.0209\pm0.0013\pm0.0018$	um. <u>DOCUMENT ID</u> ³⁴ BARTELT	99	<u>TECN</u> CLE2	$\frac{COMMENT}{e^+e^-} \rightarrow$	Γ₂/Γ <i>Υ</i> (4 <i>S</i>)
$\frac{\Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}}}{\ell \text{ denotes } e \text{ or } \mu, \text{ not the su}}$ $\frac{VALUE}{0.0210\pm0.0019 \text{ OUR AVERAGE}}$ $0.0209\pm0.0013\pm0.0018$ $0.0235\pm0.0020\pm0.0044$	³⁴ BARTELT ³⁵ BUSKULIC	99 97	<u>TECN</u> CLE2 ALEP	$\frac{COMMENT}{e^+e^-} \xrightarrow{\rightarrow} e^+e^- \xrightarrow{\rightarrow}$	Γ₂/Γ ^(4S)
$ \frac{\Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}}}{\ell \text{ denotes } e \text{ or } \mu, \text{ not the su}} $ $ \frac{VALUE}{0.0210 \pm 0.0019 \text{ OUR AVERAGE}} $ $ 0.0209 \pm 0.0013 \pm 0.0018 $ $ 0.0235 \pm 0.0020 \pm 0.0044 $ $ 0.018 \pm 0.006 \pm 0.003 $	³⁴ BARTELT ³⁵ BUSKULIC ³⁶ FULTON	99 97 91	<u>TECN</u> CLE2 ALEP CLEO	$\begin{array}{c} \underline{COMMENT} \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \end{array}$	Γ₂/Γ ^{<i>Υ</i>(45)} ^{<i>Z</i>} <i>Υ</i> (45)
$\Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}}$ ℓ denotes <i>e</i> or μ , not the satisfied of the set of μ of the satisfied of the satisf	³⁴ BARTELT ³⁵ BUSKULIC ³⁶ FULTON ³⁷ ALBRECHT	99 97 91 89J	<u>TECN</u> CLE2 ALEP CLEO ARG	$\begin{array}{c} \underline{COMMENT} \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \end{array}$	Γ₂/Γ <i>Υ</i> (4 <i>S</i>) <i>Z</i> <i>Υ</i> (4 <i>S</i>) <i>Υ</i> (4 <i>S</i>)
$ \Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}} \\ \ell \text{ denotes } e \text{ or } \mu, \text{ not the su} \\ \hline \frac{VALUE}{0.0210 \pm 0.0019 \text{ OUR AVERAGE}} \\ 0.0209 \pm 0.0013 \pm 0.0018 \\ 0.0235 \pm 0.0020 \pm 0.0044 \\ 0.018 \pm 0.006 \pm 0.003 \\ 0.020 \pm 0.007 \pm 0.006 \\ \bullet \bullet \text{ We do not use the followin} \\ \end{array} $	³⁴ BARTELT ³⁵ BUSKULIC ³⁶ FULTON ³⁷ ALBRECHT g data for averages	99 97 91 89J 5, fits	<u>TECN</u> CLE2 ALEP CLEO ARG 5, limits,	$\begin{array}{c} \underline{COMMENT} \\ e^+ e^- \rightarrow \\ e^- e^- \end{array}$	Γ₂/Γ ^{<i>Υ</i>(4<i>S</i>)} ^{<i>Z</i>} <i>Υ</i> (4 <i>S</i>) <i>Υ</i> (4 <i>S</i>)
$\Gamma(D^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}}$ ℓ denotes <i>e</i> or μ , not the supervised of μ , not the supervised of μ , not the supervised of μ of	³⁴ BARTELT ³⁵ BUSKULIC ³⁶ FULTON ³⁷ ALBRECHT g data for averages ³⁸ ATHANAS	99 97 91 89J 5, fits 97	<u>TECN</u> CLE2 ALEP CLEO ARG , limits, CLE2	$\begin{array}{c} \underline{COMMENT} \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^+ e^- \rightarrow \\ e^- e^- \end{array}$ etc. • • •	$Γ_2/Γ$ $\Upsilon(4S)$ Z $\Upsilon(4S)$ $\Upsilon(4S)$ ARTELT 99

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- 35 BUSKULIC 97 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.
- 36 FULTON 91 assumes assuming equal production of B^0 and B^+ at the $\varUpsilon(4S)$ and uses Mark III D and D^* branching ratios.
- 37 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($D^0 \rightarrow K^- \pi^+$).

³⁸ ATHANAS 97 uses missing energy and missing momentum to reconstruct neutrino.

$\Gamma(D^*(2010)^-\ell^+\nu_\ell)/\Gamma_\ell$	total			Г ₃ /Г
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0468 ± 0.0022 OUR AVE	RAGE			
$0.0470 \!\pm\! 0.0013 \!+\! 0.0036 \\ -\! 0.0031$		³⁹ ABREU	01H DLPH	$e^+e^- \rightarrow Z$
$0.0526 \!\pm\! 0.0020 \!\pm\! 0.0046$		⁴⁰ ABBIENDI	00Q OPAL	$e^+e^- \rightarrow Z$
$0.0553 \!\pm\! 0.0026 \!\pm\! 0.0052$		⁴¹ BUSKULIC	97 ALEP	$e^+e^- \rightarrow Z$
$0.0449 \!\pm\! 0.0032 \!\pm\! 0.0039$	376	⁴² BARISH	95 CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.045 \ \pm 0.003 \ \pm 0.004$		⁴³ ALBRECHT	94 ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.047 \ \pm 0.005 \ \pm 0.005$	235	⁴⁴ ALBRECHT	93 ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.040\ \pm 0.004\ \pm 0.006$		⁴⁵ BORTOLETTO	89b CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the feature	ollowing d	ata for averages, fits	, limits, etc.	• • •
$0.0508 \!\pm\! 0.0021 \!\pm\! 0.0066$		⁴⁶ ACKERSTAFF	97g OPAL	Repl. by ABBI- FNDI 000
$0.0552 \!\pm\! 0.0017 \!\pm\! 0.0068$		⁴⁷ ABREU	96p DLPH	Repl. by
$0.0518 \!\pm\! 0.0030 \!\pm\! 0.0062$	410	⁴⁸ BUSKULIC	95N ALEP	ABREU 01H Sup. by BUSKULIC 97
seen	398	⁴⁹ SANGHERA	93 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$0.070 \ \pm 0.018 \ \pm 0.014$		⁵⁰ ANTREASYAN	90b CBAL	$e^+e^- \rightarrow \Upsilon(4S)$
		⁵¹ ALBRECHT	89c ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$0.060\ \pm 0.010\ \pm 0.014$		⁵² ALBRECHT	89J ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$0.070\ \pm 0.012\ \pm 0.019$	47	⁵³ ALBRECHT	87j ARG	$e^+e^- \rightarrow \Upsilon(4S)$

³⁹ABREU 01H measured using about 5000 partial reconstructed D^* sample.

⁴⁰ABBIENDI 00Q assumes the fraction B($b \rightarrow B^0$)= (39.7 $^{+1.8}_{-2.2}$)%. This result is an average of two methods using exclusive and partial D^* reconstruction.

- ⁴¹BUSKULIC 97 assumes fraction (B^+) = fraction (B^0) = (37.8 ± 2.2)% and PDG 96 values for *B* lifetime and D^* and *D* branching fractions.
- ⁴² BARISH 95 use B($D^0 \rightarrow K^- \pi^+$) = (3.91 $\pm 0.08 \pm 0.17$)% and B($D^{*+} \rightarrow D^0 \pi^+$) $= (68.1 \pm 1.0 \pm 1.3)\%.$
- ⁴³ALBRECHT 94 assumes B($D^{*+} \rightarrow D^0 \pi^+$) = 68.1 ± 1.0 ± 1.3%. Uses partial reconstruction of D^{*+} and is independent of D^0 branching ratios.
- 44 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($D^0 \rightarrow K^- \pi^+$). 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.
- 45 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($D^0 \rightarrow K^- \pi^+$). The measurement suggests a D^* polarization parameter value $\alpha = 0.65 \pm 0.66 \pm 0.25$.
- ⁴⁶ 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.

 47 ABREU 96P result is the average of two methods using exclusive and partial D^* reconstruction. ⁴⁸ BUSKULIC 95N assumes fraction (B^+) = fraction (B^0) = 38.2 ± 1.3 ± 2.2% and τ_{B^0}

= 1.58 ± 0.06 ps. $\Gamma(D^{*-}\ell^+\nu_{\ell})/\text{total} = [5.18 - 0.13(\text{fraction}(B^0) - 38.2) - 1.5(\tau_{P0} - 1.5)(\tau_{P0} - 1.5)(\tau_{P0$ 1.58)]%.

- ⁴⁹ 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.
- ⁵⁰ ANTREASYAN 90B is average over B and $\overline{D}^*(2010)$ charge states.
- 51 The measurement of ALBRECHT 89C suggests a D^* polarization γ_I/γ_T of 0.85 \pm 0.45. or $\alpha = 0.7 \pm 0.9$.
- ⁵² ALBRECHT 89J is ALBRECHT 87J value rescaled using $B(D^*(2010)^- \rightarrow D^0 \pi^-) =$ $0.57 \pm 0.04 \pm 0.04.$ Superseded by ALBRECHT 93.
- ⁵³ALBRECHT 87J assume μ -e universality, the B($\Upsilon(4S) \rightarrow B^0 \overline{B}^0$) = 0.45, the B($D^0 \rightarrow B^0 \overline{B}^0$) = 0.45, the B(D^0 \rightarrow B^0 \overline{B}^0) $(K^{-}\pi^{+}) = (0.042 \pm 0.004 \pm 0.004)$, and the B $(D^{*}(2010)^{-} \rightarrow D^{0}\pi^{-}) = 0.49 \pm 0.08$. Superseded by ALBRECHT 89J.

 $\Gamma(\rho^{-}\ell^{+}\nu_{\ell})/\Gamma_{\text{total}} \\ \ell = e \text{ or } \mu, \text{ not sum over } e \text{ and } \mu \text{ modes.}$

Γ_/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
$2.57 \pm 0.29 \substack{+0.53 \\ -0.62}$		⁵⁴ BEHRENS	00	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use t	he followir	ng data for averages	s, fits	, limits,	etc. • • •
$2.69\!\pm\!0.41^{+0.61}_{-0.64}$		⁵⁵ BEHRENS	00	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$2.5 \ \pm 0.4 \ \begin{array}{c} +0.7 \\ -0.9 \end{array}$		⁵⁶ ALEXANDER	96⊤	CLE2	Repl. by BEHRENS 00
<4.1	90	⁵⁷ BEAN	93 B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

⁵⁴ Averaging with ALEXANDER 96T results including experimental and theoretical correlations considered, BEHRENS 00 reports systematic errors $^{+0.33}_{-0.46}\pm$ 0.41, where the second error is theoretical model dependence. We combine these in quadrature. ⁵⁵BEHRENS 00 reports $\substack{+0.35 \\ -0.40} \pm 0.50$, where the second error is the theoretical model

dependence. We combine these in quadrature. B^+ and B^0 decays combined using isospin symmetry: $\Gamma(B^0 \to \rho^- \ell^+ \nu) = 2\Gamma(B^+ \to \rho^0 \ell^+ \nu) \approx 2\Gamma(B^+ \to \omega \ell^+ \nu)$. No evidence for $\omega \ell \nu$ is reported

- 56 ALEXANDER 96T reports $^{+0.5}_{-0.7}$ \pm 0.5 where the second error is the theoretical model dependence. We combine these in quadrature. B^+ and B^0 decays combined using isospin symmetry: $\Gamma(B^0 \to \rho^- \ell^+ \nu) = 2\Gamma(B^+ \to \rho^0 \ell^+ \nu) \approx 2\Gamma(B^+ \to \omega \ell^+ \nu)$. No evidence for $\omega \ell \nu$ is reported.
- ⁵⁷ 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 $B^+ \rightarrow (\omega \text{ or } \rho^0) \ell^+ \nu_{\ell}$. The range corresponds to the ISGW, WSB, and KS models. An upper limit on $|V_{\mu b}/V_{cb}| < 0.08-0.13$ at 90% CL is derived as well.

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

 Γ_5/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
1.8±0.4±0.4	58 ALEXANDER	96⊤ CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

 58 ALEXANDER 96T gives systematic errors $\pm 0.3 \pm 0.2$ where the second error reflects the estimated model dependence. We combine these in quadrature. Assumes isospin symmetry: $\Gamma(B^0 \rightarrow \pi^- \ell^+ \nu) = 2 \times \Gamma(B^+ \rightarrow \pi^0 \ell^+ \nu).$

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$\Gamma(\pi^-\mu^+ u_\mu)/\Gamma_{\rm total}$	Г ₆ /Г
VALUE	DOCUMENT ID TECN
• • • We do not use the follo	owing data for averages, fits, limits, etc. $ullet$ $ullet$
seen	⁵⁹ ALBRECHT 91c ARG
⁵⁹ In ALBRECHT 91C, one e transition.	event is fully reconstructed providing evidence for the $b o u$
$\Gamma(K^+ \text{ anything}) / \Gamma_{\text{total}}$	Γ ₇ /Γ
0.78+0.08	$\frac{60}{\text{ALBRECHT}} \xrightarrow{960} \text{ARG} \xrightarrow{e^+e^-} \Upsilon(45)$
60 Δverage multiplicity	
$\Gamma(D^{-}\pi^{+})/\Gamma_{\text{total}}$	Г ₈ /Г
	<u>EVTS DOCUMENT ID TECN COMMENT</u>
0.0030 ± 0.0004 UUR AVERAU	3 GE 04 (LE2 $a^+a^ \chi(4S)$
$0.0029 \pm 0.0004 \pm 0.0002$	$61 \xrightarrow{62} \text{BORTOLETTO2} (1E0 \xrightarrow{6} x^{-} \rightarrow \chi(4S))$
$0.0027 \pm 0.0000 \pm 0.0003$ $0.0048 \pm 0.0011 \pm 0.0011$	22 63 ALBRECHT 901 ARG $e^+e^- \rightarrow \Upsilon(45)$
$\begin{array}{c} 0.0051 \\ -0.0025 \\ -0.0025 \\ -0.0012 \end{array} \\ \begin{array}{c} 0.0013 \\ -0.0012 \end{array}$	4 ⁶⁴ BEBEK 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the follo	owing data for averages, fits, limits, etc. $ullet$ $ullet$
$0.0031 \pm 0.0013 \pm 0.0010$	7 63 ALBRECHT 88к ARG $e^+e^- ightarrow \varUpsilon(4S)$
⁶¹ ALAM 94 reports [B(B^0 0.000032 ± 0.000023. (9.0 ± 0.6) × 10 ⁻² . Ou is the systematic error from	$D \rightarrow D^{-}\pi^{+}) \times B(D^{+} \rightarrow K^{-}\pi^{+}\pi^{+})] = 0.000265 \pm$ We divide by our best value $B(D^{+} \rightarrow K^{-}\pi^{+}\pi^{+}) =$ our first error is their experiment's error and our second error m using our best value. Assumes equal production of B^{+} and
B^0 at the $\Upsilon(4S)$.	0
⁰² BORTOLETTO 92 assum	nes equal production of B^+ and B^0 at the $\varUpsilon(4S)$ and uses
⁶³ ALBRECHT 88K assumes BRECHT 90J which assum	ns for the <i>D</i> . $B^{0}\overline{B}{}^{0}:B^{+}B^{-}$ production ratio is 45:55. Superseded by AL- mes 50:50.
⁶⁴ BEBEK 87 value has bee noted for BORTOLETTO	en updated in BERKELMAN 91 to use same assumptions as 92.

$\Gamma(D^- \rho^+) / \Gamma_{\text{total}}$					٦/و٦
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0079 ± 0.0014 OUR AV	ERAGE				
$0.0078 \!\pm\! 0.0013 \!\pm\! 0.0005$	79	⁶⁵ ALAM	94	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$0.009 \ \pm 0.005 \ \pm 0.003$	9	⁶⁶ ALBRECHT	90J	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
\bullet \bullet \bullet We do not use the	following d	ata for averages, fi	ts, limi	its, etc.	. • • •
$0.022\ \pm 0.012\ \pm 0.009$	6	66 ALBRECHT	88K .	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
	$(B^0 \rightarrow 0)$. We di Our first	$D^- ho^+)$ $ imes$ B(D^+ vide by our best error is their expe	\rightarrow value riment	$K^{-}\pi^{+}$ B(D^{+} 's error	$[\pi^+\pi^+] = 0.000704 \pm$ $\rightarrow K^-\pi^+\pi^+) =$ π and our second error
is the systematic error \mathcal{P}^{0} at the $\mathcal{T}(4S)$	from using	g our best value. A	ssumes	s equal	production of B^+ and
⁶⁶ ALBRECHT 88K assu BRECHT 90J which a	mes B ⁰ B ⁰ ssumes 50:	$:B^+B^-$ productio 50.	on ratio) is 45:	55. Superseded by AL-

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$\Gamma(\overline{D}^{0}\pi^{+}\pi^{-})/\Gamma$	total				Γ ₁₀ /		
VALUE	<u>CL%</u> EVTS	DOCUMENT ID	TECN	COMMENT			
<0.0016	90	⁶⁷ ALAM 94	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$		
• • • We do not use the following data for averages, fits, limits, etc. • • •							
<0.007	90	68 BORTOLETTO92	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$		
<0.034	90	⁶⁹ BEBEK 87	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$		
0.07 ± 0.05	5	⁷⁰ BEHRENDS 83	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$		
⁶⁷ Assumes equa	l production o	of B^+ and B^0 at the $arphi(4)$	1 <i>S</i>).				
⁶⁸ BORTOLETT	O 92 assume	s equal production of \dot{B}	+ ´and E	3^0 at the γ	(4S) and use		

⁰⁰ BORTOLETTO 92 assumes equal production of B^{+} and B° at the I(45) and uses Mark III branching fractions for the D. The product branching fraction into $D_{0}^{*}(2340)\pi$ followed by $D_{0}^{*}(2340) \rightarrow D^{0}\pi$ is < 0.0001 at 90% CL and into $D_{2}^{*}(2460)$ followed by $D_{2}^{*}(2460) \rightarrow D^{0}\pi$ is < 0.0004 at 90% CL.

⁶⁹ BEBEK 87 assume the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%. B($D^0 \rightarrow K^- \pi^+$) = (4.2 ± 0.4 ± 0.4)% and B($D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-$) = (9.1 ± 0.8 ± 0.8)% were used. 70 Corrected by us using assumptions: B($D^0 \rightarrow K^- \pi^+$) = (0.042 ± 0.006)

⁷⁰ Corrected by us using assumptions: $B(D^0 \rightarrow K^-\pi^+) = (0.042 \pm 0.006)$ and $B(\Upsilon(4S) \rightarrow B^0\overline{B}^0) = 50\%$. The product branching ratio is $B(B^0 \rightarrow \overline{D}^0\pi^+\pi^-)B(\overline{D}^0 \rightarrow K^+\pi^-) = (0.39 \pm 0.26) \times 10^{-2}$.

$(D^{*}(2010)^{-}\pi^{+})/(t_{to})$	tal				₁₁ /
VALUE	<u>EVTS</u>	DOCUMENT ID	TECN	COMMENT	
0.00276±0.00021 OUR A	/ERAGE				
$0.00281 \pm 0.00024 \pm 0.0000$)5	⁷¹ BRANDENB 9	98 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$0.0026 \pm 0.0003 \pm 0.0004$	82	⁷² ALAM	94 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$0.00337 \pm 0.00096 \pm 0.0000$)2	73 BORTOLETTO	92 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$0.00236 \pm 0.00088 \pm 0.0000$	2 12	74 ALBRECHT	90J ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$0.00236^{+0.00150}_{-0.00110}\pm 0.0000$)2 5	75 BEBEK	87 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the f	ollowing d	ata for averages, fits,	limits, etc		
$0.010 \pm 0.004 \pm 0.001$	8	⁷⁶ AKERS	94J OPAL	$e^+e^- \rightarrow$	Ζ
0 0007 1 0 0014 1 0 0010				+ -	$\mathcal{O}(\mathbf{A}\mathbf{C})$

0.0027	± 0.0014	± 0.0010	5	77 ALBRECHT	87c ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
0.0035	± 0.002	± 0.002		⁷⁸ ALBRECHT	86F ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
0.017	± 0.005	± 0.005	41	⁷⁹ GILES	84 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$

⁷¹ 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 $B(D^* \rightarrow D\pi)$.

- ⁷² 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($D^0 \rightarrow K^- \pi^+$).
- ⁷³ BORTOLETTO 92 reports $0.0040 \pm 0.0010 \pm 0.0007$ 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.

⁷⁴ ALBRECHT 90J reports $0.0028 \pm 0.0009 \pm 0.0006$ 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.

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⁷⁵BEBEK 87 reports $0.0028^{+0.0015}_{-0.0012} + 0.0010_{-0.0006}$ 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 ± 0.5) × 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.

⁷⁶ Assumes B($Z \rightarrow b\overline{b}$) = 0.217 and 38% B_d production fraction.

⁷⁷ 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 AL-BRECHT 90J.

⁷⁸ ALBRECHT 86F uses pseudomass that is independent of D^0 and D^+ branching ratios. ⁷⁹ Assumes $B(D^*(2010)^+ \rightarrow D^0 \pi^+) = 0.60^{+0.08}_{-0.15}$. Assumes $B(\Upsilon(4S) \rightarrow B^0 \overline{B}^0) =$ 0.40 ± 0.02 Does not depend on D branching ratios.

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

 Γ_{12}/Γ $\frac{DOCUMENT ID}{80} \frac{TECN}{BORTOLETTO92} CLEO e^+e^- \rightarrow \Upsilon(4S)$

 $0.0080 \pm 0.0021 \pm 0.0014$

⁸⁰BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

$\Gamma((D^{-}\pi^{+}\pi^{+}\pi^{-}) \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{13}/Γ DOCUMENT ID TECN COMMENT VALUE ⁸¹ BORTOLETTO92 CLEO $e^+e^- \rightarrow \Upsilon(4S)$

 $0.0039 \pm 0.0014 \pm 0.0013$

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

$\Gamma(D^-\pi^+ ho^0)/\Gamma_{ m total}$				Γ ₁₄ /Ι
VALUE	DOCUMENT ID	TECN	<u>COMMENT</u>	
0.0011±0.0009±0.0004	82 BORTOLETTO92	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$

⁸²BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

$$\Gamma(D^{-}a_{1}(1260)^{+})/\Gamma_{total}$$

VALUE	DOCUMENT ID TECN COMMENT	NT ID TECN COMMENT
0.0060±0.0022±0.0024	83 BORTOLETTO92 CLEO $e^+e^- \rightarrow \ \Upsilon(4S)$	DLETTO92 CLEO $e^+e^- \rightarrow \Upsilon(4S)$

⁸³BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D.

Г((D*((201	0)-	π^+	π^0)/Г	- total
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VALUE	<u>EVTS</u>	<u>DOCUMENT ID</u>	TECN	COMMENT
0.0152±0.0052±0.0001	51	⁸⁴ ALBRECHT	90j ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the fo	ollowing d	ata for averages, fi	ts, limits, etc.	• • •
$0.015 \ \pm 0.008 \ \pm 0.008$	8	⁸⁵ ALBRECHT	87c ARG	$e^+e^- \rightarrow \Upsilon(4S)$
⁸⁴ ALBRECHT 90J report	s 0.018 \pm	0.004 ± 0.005 for E	$B(D^{*}(2010)^{+})$	$\rightarrow D^0 \pi^+) = 0.57 \pm$

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.

 85 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 AL-BRECHT 90J.

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 Γ_{16}/Γ

 Γ_{15}/Γ

Γ(<i>D</i> *(2010) ⁻ μ	ρ ⁺)/Γ _{total}							Γ ₁₇ /Γ
VALUE		<u>rs</u>	DOCUMENT ID		TECN	COMME	NT	
0.0073 \pm 0.0015 0.0074 \pm 0.0010 0.0160 \pm 0.0113 0.00589 \pm 0.00352 • • • We do not	OUR AVERA ± 0.0014 7 ± 0.0001 2 2 ± 0.00004 1 use the followi 1	GE 76 86,87 88 .9 89 ng data	ALAM BORTOLETT ALBRECHT for averages, f	94 FO92 90J ïts, lin	CLE2 CLEO ARG nits, etc	$e^+ e^-$ $e^+ e^-$ $e^+ e^-$	\rightarrow \rightarrow \rightarrow	$\Upsilon(4S)$ $\Upsilon(4S)$ $\Upsilon(4S)$
0.081 ±0.029	$^{+0.059}_{-0.024}$ 1	.9 90	CHEN	85	CLEO	e ⁺ e ⁻	\rightarrow	$\Upsilon(4S)$
⁸⁶ ALAM 94 ass $B(D^*(2010)^+$ $K^-\pi^+\pi^0)/E$ ⁸⁷ This decay is expected from contribution 0 ⁸⁸ BORTOLETT 0.57 \pm 0.06. 10 ⁻² . Our fi error from usi and uses Mar ⁸⁹ ALBRECHT 9 0.06. We resc Our first error from using ou uses Mark III ⁹⁰ Uses B(D^* – on D branching	tume equal prod $T \rightarrow D^0 \pi^+$) a $3(D^0 \rightarrow K^- \pi)^-$ nearly comple in the factorization under the ρ^+ is FO 92 reports We rescale to compare the factorization We rescale to compare the factorization We rescale to compare the factorization the factorization We rescale to compare the factorization We rescale to compare the factorization the factorization	duction of nd absolution (r^+) and tely long tion hype s less that $0.019 \pm$ our best for the experiment of the experiment fractions of ± 0.000 to the experiment of the experiment of the comparison of the experiment of the	of B^+ and B^0 ute $B(D^0 \rightarrow K^-)$ gitudinally pol- pothesis (ROS n 9% at 90% 0.008 \pm 0.01 value $B(D^*(20))$ ment's error and mes equal pro- for the D . $B^3 \pm 0.003$ for $(D^*(2010)^+)$ error and our equal production the D . and $B(\Upsilon(4S))$	$ b^{0} \text{ at th} K^{-} \pi^{-} \pi^{-} \pi^{+} \pi^{-} \pi^{-} \pi^{+} \pi^{-} \pi^{-$	the $\Upsilon(45)$ +) and t $+\pi^{-})/\Gamma_{L}/\Gamma$ F_{D}/Γ $=$ D^{0} $\rightarrow D^{0}$ $=$ D^{0} $=$ D^{0} =	5) and u the PDG $(B(D^0$ = (93 = he nonre- (93 = he nonre- (93 = (93 =	se the 1992 $\rightarrow K^{-1}$ $\pm 5 \pm$ $\Rightarrow 5 \pm$ $\Rightarrow 67.7$ the s (67.7 + 1) (67.7 +	e CLEO II $B(D^0 \rightarrow \pi^+)$. = 5)%, as nt $\pi^+\pi^0$ $D^0\pi^+) =$ $T \pm 0.5) \times 300$ $T \pm 0.5) \times 300$ $T \pm 0.57 \pm 10^{-2}$. $T \pm 10^{-2}$.
Γ(<i>D</i> *(2010) ⁻ <i>τ</i>	$(\pi^+\pi^+\pi^-)/\Gamma$	total						Г ₁₈ /Г
VALUE		<u>EVTS</u>	<u>DOCUME</u>	<u>NT ID</u>	$\frac{7}{1}$	<u>ECN</u> <u>C</u>	<u>OMMI</u>	ENT
0.0063±0.0010	$)\pm 0.0011$	GE En 49	below. 91,92 ALAM		94 C	CLE2 <i>e</i>	$+ e^{-}$	$eogram \rightarrow AS$
0.0134 ± 0.0036	5 ± 0.0001		⁹³ BORTO	LETT	O92 C	CLEO e	$+ e^{-}$	(\rightarrow)
0.0101 ± 0.0041	± 0.0001	26	⁹⁴ ALBRE	СНТ	90j A	NRG e	$+ e^{-}$ $\gamma(e^{-})$	45) · → 45)
$\bullet \bullet \bullet$ We do not	use the followi	ng data	for averages, f	its, lin	nits, etc	. • • •		
0.033 ± 0.009	± 0.016	27	⁹⁵ ALBRE	СНТ	87C A	NRG e	$+ e^{-}$	\rightarrow 4.5)
<0.042	90		⁹⁶ BEBEK		87 C	CLEO e	$+ e^{-\frac{1}{r}}$	\rightarrow 4S)

⁹¹ 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 $B(D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$. ⁹² The three pion mass is required to be between 1.0 and 1.6 GeV consistent with an a_1

⁹² 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 $\overline{D}^{*-}\pi^+\pi^+\pi^-$.)

that for $\overline{D}^{*-}\pi^{+}\pi^{+}\pi^{-}$.) ⁹³ BORTOLETTO 92 reports 0.0159 ± 0.0028 ± 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 ± 0.5) ×

 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.

- ⁹⁴ ALBRECHT 90J reports $0.012 \pm 0.003 \pm 0.004$ 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.
- ⁹⁵ALBRECHT 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 AL-BRECHT 90J.
- 96 BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92.



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

$\Gamma((D^*(2010)^-\pi^+\pi^+\pi^-))$) nonresonant)/Γ _{total}			Г ₁₉ /Г
VALUE	DOCUMENT ID	TECN	<u>COMMENT</u>	
$0.0000 \pm 0.0019 \pm 0.0016$	97 BORTOLETTO92	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
07			.0	(

⁹⁷BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$.

$$\Gamma(D^*(2010)^- \pi^+ \rho^0)/\Gamma_{total}$$
 Γ_{20}/Γ VALUE $DOCUMENT ID$ $TECN$ $COMMENT$ 0.00573±0.00317±0.000498BORTOLETTO92 $CLEO$ $e^+e^- \rightarrow \Upsilon(4S)$ 98BORTOLETTO 92 reports $0.0068 \pm 0.0032 \pm 0.0021$ 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 systematicHTTP://PDG.LBL.GOVPage 17Created: 7/31/2001 16:04

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.

$\Gamma(D^*(2010)^-a_1(1260)^+$	⁻)/Γ _{total}				Γ ₂₁ /	/Γ
VALUE	DOCUMENT ID		TECN	<u>COMMENT</u>		
0.0130 ± 0.0027 OUR AVER	AGE					
$0.0126 \!\pm\! 0.0020 \!\pm\! 0.0022$	99,100 ALAM	94	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$	
$0.0152 \pm 0.0070 \pm 0.0001$	¹⁰¹ BORTOLETT	D 92	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$	

⁹⁹ ALAM 94 value is twice their $\Gamma(D^*(2010)^-\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ value based on their observation that the three pions are dominantly in the $a_1(1260)$ mass range 1.0 to 1.6 GeV.

¹⁰⁰ 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($D^0 \rightarrow K^- \pi^+$).

¹⁰¹ BORTOLETTO 92 reports $0.018 \pm 0.006 \pm 0.006$ 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.

$\Gamma(D^*(2010)^-\pi^+\pi^+\pi^-$	ˈπ ⁰)/Γ	total		Г ₂₂ /Г
VALUE	<u>EVTS</u>	DOCUMENT ID	TECN	COMMENT
$0.0345 \pm 0.0181 \pm 0.0003$	28	¹⁰² ALBRECHT 90	J ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
¹⁰² ALBRECHT 90J reports	0.041 =	\pm 0.015 \pm 0.016 for B(D^3	*(2010) ⁻	$^{+} \rightarrow D^{0} \pi^{+}) = 0.57 \pm$
0.06. We rescale to our	best va	lue B($D^*(2010)^+ \rightarrow L$	$(0^{0}\pi^{+}) =$	$= (67.7 \pm 0.5) \times 10^{-2}.$
Our first error is their e	experim	ent's error and our seco	nd error	is the systematic error
from using our best valu uses Mark III branching	ie. Assi fraction	mes equal production of s for the <i>D</i> .	f B ⁺ and	d B^0 at the $arLambda(4S)$ and

Γ(<u>D</u> [*] ₂ (2460) ⁻ π ⁺)/Γ _{total}					Г ₂₃ /Г
VALUE	<u>CL%</u>	DOCUMENT IL)	TECN	COMMENT	
<0.0022	90	¹⁰³ ALAM	94	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
¹⁰³ ALAM 94 assum	nes equal pro	oduction of B^+ ar	nd <i>B</i> ⁰	at the 7	f(4S) and us	se the CLEO II

absolute $B(D^0 \to K^- \pi^+)$ and $B(D_2^*(2460)^+ \to D^0 \pi^+) = 30\%$.

$\Gamma(\overline{D}_2^*(2460)^-\rho^+)/\Gamma_1$	total					Г ₂₄ /Г
VALUE	CL%	DOCUMENT ID		TECN	<u>COMMENT</u>	
<0.0049	90	¹⁰⁴ ALAM	94	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$

¹⁰⁴ ALAM 94 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute $B(D^0 \rightarrow K^- \pi^+)$ and $B(D_2^*(2460)^+ \rightarrow D^0 \pi^+) = 30\%$.

$\Gamma(D^-D^+)/\Gamma_{\text{total}}$						Г ₂₅ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<9.4 × 10 ⁻⁴	90	¹⁰⁵ LIPELES	00	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
\bullet \bullet \bullet We do not use the	followi	ng data for averages	s, fits	, limits,	etc. • • •	
${<}5.9 imes10^{-3}$	90	BARATE	98Q	ALEP	$e^+e^- \rightarrow$	Ζ
$< 1.2 \times 10^{-3}$	90	ASNER	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
¹⁰⁵ Assumes equal produ	ction of	FB^+ and B^0 at the	$\Upsilon(4$	·S).		

$\frac{\Gamma(D^{-}D_{s}^{+})}{\Gamma_{total}}$	DOCUMENT ID		<u>TECN</u>	<u>COMMENT</u>	Г ₂₆ /Г
0.0080 ± 0.0030 OUR AVERAGE					
$0.0084 \!\pm\! 0.0030 \!+\! 0.0020 \\ -0.0021$	¹⁰⁶ GIBAUT	96	CLE2	$e^+ e^- \rightarrow$	$\Upsilon(4S)$
0.013 $\pm 0.011 \pm 0.003$ 0.007 $\pm 0.004 \pm 0.002$ • • • We do not use the following of	¹⁰⁷ ALBRECHT ¹⁰⁸ BORTOLETT data for averages, fi	92G 092 ts, lin	ARG CLEO nits, etc.	$ \begin{array}{c} e^+e^- \rightarrow \\ e^+e^- \rightarrow \\ \bullet \bullet \bullet \end{array} $	$\Upsilon(4S)$ $\Upsilon(4S)$
0.012 +0.007 3	109 BORTOLETT	090	CLEO	e+e− →	$\Upsilon(4S)$
106 GIBAUT 96 reports 0.0087 \pm 0.0	0024 ± 0.0020 for B	(D+	$\rightarrow \phi \pi^+$	(-) = 0.035.	We rescale
to our best value ${\sf B}(D_s^+ o q$ experiment's error and our secon 107 ALBRECHT 92G reports 0.017	$(\pm \pi^+) = (3.6 \pm 0.9)$ ad error is the system $\pm 0.013 \pm 0.006$ fr	9) × 1 natic e or B(D^{-2} . error from $D^+_s \rightarrow$	Our first er m using our $\phi\pi^+)=0$	ror is their best value. 0.027. We
rescale to our best value $B(D_s^+)$ experiment's error and our secon Assumes PDG 1990 D^+ branch 108 BORTOLETTO 92 reports 0.00	$\rightarrow \phi \pi^+) = (3.6 \pm 0.00 \text{ error is the system})$ ing ratios, e.g., B(<i>L</i> 80 ± 0.0045 ± 0.000	$\begin{array}{c} 0.9) \\ \text{matic e} \\ 0^+ \rightarrow \end{array}$	× 10^{-2} . error from $K^{-}\pi^{-1}$ r B(D_{s}^{+}	Our first end m using our $(+\pi^+) = 7$. $\rightarrow \phi \pi^+$	rror is their best value. 7 \pm 1.0%. = 0.030 \pm
0.011. We rescale to our best v error is their experiment's error our best value. Assumes equal p branching fractions for the <i>D</i> . ¹⁰⁹ BORTOLETTO 90 assume B(<i>D</i>)	alue $B(D_s^+ \rightarrow \phi \pi^-)$ and our second error roduction of B^+ and $D_s \rightarrow \phi \pi^+) = 2\%$.	⁺) = or is t d <i>B</i> ⁰ Supe	(3.6 ± 0) he syste at the γ erseded l	$0.9) imes 10^{-2}$ matic error $\tilde{c}(4S)$ and us by BORTOL	2. Our first from using ses Mark III .ETTO 92.
$\frac{\Gamma(D^*(2010) - D_s^+)}{\Gamma_{\text{total}}}$	DOCUMENT ID	TEC	N CON	IMENT	Г ₂₇ /Г
0.0105±0.0034 OUR AVERAGE		<u> </u>			
$\begin{array}{cccc} 0.0110 \pm 0.0021 \pm 0.0028 & 110 \\ 0.0090 \pm 0.0027 \pm 0.0022 & 111 \\ 0.010 \ \pm 0.008 \ \pm 0.003 & 112 \\ 0.013 \ \pm 0.008 \ \pm 0.003 & 113 \end{array}$	AHMED00EGIBAUT96ALBRECHT920BORTOLETTO92	CLE CLE ARC CLE	e^{+} e^{+} e^{+} e^{+} e^{+} e^{+} e^{+}	$e^{-} \rightarrow \Upsilon(4)$ $e^{-} \rightarrow \Upsilon(4)$ $e^{-} \rightarrow \Upsilon(4)$ $e^{-} \rightarrow \Upsilon(4)$	IS) IS) IS) IS)
$\bullet \bullet \bullet$ We do not use the following \bullet	data for averages, fi	ts, lin	nits, etc.		
0.024 ±0.014 3 ¹¹⁴	BORTOLETTO90	CLE	0 e ⁺	$e^- ightarrow ~ \Upsilon(4)$	\$S)
¹¹⁰ AHMED 00B reports their expected the first error is statistical, the set the $D_s \rightarrow \phi \pi$ branching fraction	riment's uncertainti second is systematic on. We combine the	es (± :, and first	$0.18 \pm$ the thin two in c	0.11 ± 0.28 rd is the uno juadrature.	3)%, where certainty in
III GIBAUT 96 reports 0.0093 ± 0.0	0023 ± 0.0016 for B	(D_{s}^{+})	$\rightarrow \phi \pi^{+}$	⁻) = 0.035.	We rescale
to our best value $B(D_s^+ \rightarrow q)$ experiment's error and our secon ¹¹² ALBRECHT 92G reports 0.014	$(b\pi^+) = (3.6 \pm 0.9)$ of error is the system $\pm 0.010 \pm 0.003$ for	9) × 1 natic e or B(D^{-2} . error from $D^+_s \rightarrow D^+_s$	Our first er m using our $\phi \pi^+$) = 0	ror is their best value. 0.027. We
rescale to our best value $B(D_s^+)$ experiment's error and our second Assumes PDG 1990 D^+ and D $3.71 \pm 0.25\%$, $B(D^+ \rightarrow K^- \tau)$ $= 55 \pm 4\%$	$\rightarrow \phi \pi^+) = (3.6 \pm 100)$ and error is the system *(2010) ⁺ branching (100) ⁺ branching	0.9) natic e g ratio 0%, a	$\times 10^{-2}$. error fromos, e.g., nd B(D^2	Our first er m using our $B(D^0 \rightarrow T^*$ $*(2010)^+ -$	rror is their best value. $\mathcal{K}^{-}\pi^{+}) =$ $\rightarrow D^{0}\pi^{+})$
¹¹³ BORTOLETTO 92 reports 0.010	$6 \pm 0.009 \pm 0.006$ fo	r B(<i>L</i>	$p^+_{2} \rightarrow d$	$(\pi^+) = 0.03$	$30 \pm 0.011.$
We rescale to our best value Be is their experiment's error and o	$(D_s^+ \rightarrow \phi \pi^+) = ($ our second error is	$(3.6 \pm the s)$	= 0.9) × /stemati	10^{-2} . Out c error from	r first error n using our

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best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$. ¹¹⁴BORTOLETTO 90 assume B($D_s \rightarrow \phi \pi^+$) = 2%. Superseded by BORTOLETTO 92.

$\Gamma(D^-D_e^{*+})/\Gamma_{total}$			Г ₂₁	8/Г
VALUE	DOCUMENT ID	TECN	COMMENT	
0.010 ± 0.005 OUR AVERAGE	115			
$0.010 \pm 0.004 \pm 0.002$	115 GIBAUT	96 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$	
$0.020 \pm 0.014 \pm 0.005$	TTO ALBRECHT	92G ARG	$e^+e^- \rightarrow T(4S)$	
115 GIBAUT 96 reports 0.0100 ±	$\pm 0.0035 \pm 0.0022$ fo	$r B(D^+_{\boldsymbol{s}} \to$	$\phi\pi^+)=$ 0.035. We res	scale
to our best value $B(D_s^+ - experiment's error and our set 116 ALBRECHT 92G reports 0.1 rescale to our best value B(D_s^+ - experiment's error and our set Assumes PDG 1990 D^+ bracket between the set of the$	$\phi \pi^{+} = (3.6 \pm 0.000 \pm 0.0000) \pm (3.6 \pm 0.0000) \pm (3.$	$(0.9) \times 10^{-1}$ the matric error (19) for $B(D_s^+)$ $(6 \pm 0.9) \times 10^{-1}$ the matric error $B(D^+ \rightarrow K)$	² . Our first error is t r from using our best va $\rightarrow \phi \pi^+$) = 0.027. O ⁻² . Our first error is t r from using our best va $(\pi^- \pi^+ \pi^+) = 7.7 \pm 1.0$	their alue. We their alue. 0%.
$\left[\Gamma\left(D^{*}(2010)^{-}D_{s}^{+}\right)+\Gamma\left(D^{*}\right)\right]$	*(2010) ⁻ D _s ^{*+})]/	Γ _{total}	(Γ ₂₇ +Γ ₂₉)/Г
VALUE (units 10^{-2}) EVTS	DOCUMENT ID	TECN	COMMENT	
4.15±1.11^{+0.99} 22	¹¹⁷ BORTOLETT	O90 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	
$^{117}\rm BORTOLETTO$ 90 reports	7.5 \pm 2.0 for B(D_s^+	$\rightarrow \phi \pi^+$)	= 0.02. We rescale to	our
best value $B(D^+_{m{s}} o \phi\pi^+)$ error and our second error is	$=(3.6\pm0.9) imes10^{-2}$ the systematic erro	^{–2} . Our firs r from using	t error is their experime our best value.	ent's
$\Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	Г 2! <i>СОММЕНТ</i>	9/ ۲
$\Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{\text{total}}$ <u>VALUE</u> 0.019 ±0.006 OUR AVERAGE	DOCUMENT ID	<u>TECN</u>	Г <u>2</u> 	۶/ ۲
$\frac{\Gamma(D^{*}(2010)^{-}D_{s}^{*+})/\Gamma_{total}}{0.019 \pm 0.006 \text{ OUR AVERAGE}}$ 0.0182 $\pm 0.0045 \pm 0.0046$	E 118 AHMED	<u>тесл</u> 00в CLE2	$\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$	9/F
$\frac{\Gamma(D^{*}(2010)^{-}D_{s}^{*+})/\Gamma_{total}}{0.019 \pm 0.006 \text{ OUR AVERAGE}}$ 0.0182±0.0045±0.0046 0.020 ±0.006 ±0.005	DOCUMENT ID 118 AHMED 119 GIBAUT	00B CLE2 96 CLE2	$\begin{array}{c} \hline c_{29} \\ \hline c_{OMMENT} \\ e^+ e^- \rightarrow & \Upsilon(4S) \\ e^+ e^- \rightarrow & \Upsilon(4S) \\ \hline e^- e^- \rightarrow & \Upsilon(4S) \\ \hline e^- e^- e^- \rightarrow & \Upsilon(4S) \\ \hline e^- e^- e^- e^- \rightarrow & \Upsilon(4S) \\ \hline e^- e^- e^- e^- e^- e^- e^- e^- e^- e^-$	9/F
$\frac{\Gamma(D^{*}(2010)^{-}D_{s}^{*+})/\Gamma_{total}}{0.019 \pm 0.006 \text{ OUR AVERAGE}}$ $\frac{VALUE}{0.0182\pm 0.0045\pm 0.0046}$ $0.020 \pm 0.006 \pm 0.005$ $0.019 \pm 0.011 \pm 0.005$ 110	DOCUMENT ID 118 AHMED 119 GIBAUT 120 ALBRECHT	<u>тесл</u> 00в CLE2 96 CLE2 926 ARG	$\begin{array}{c} \hline e^+ e^- \rightarrow & \Upsilon(4S) \\ e^+ e^- \rightarrow & \Upsilon(4S) \\ e^+ e^- \rightarrow & \Upsilon(4S) \\ e^+ e^- \rightarrow & \Upsilon(4S) \end{array}$	9/F
$\Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{total}$ <u>VALUE</u> 0.019 ±0.006 OUR AVERAGE 0.0182±0.0045±0.0046 0.020 ±0.006 ±0.005 0.019 ±0.011 ±0.005 ¹¹⁸ AHMED 00B reports their e the first error is statistical, t the $D_s \rightarrow \phi \pi$ branching fractions	DOCUMENT ID 118 AHMED 119 GIBAUT 120 ALBRECHT experiment's uncerta the second is system action. We combine	<u>TECN</u> 00B CLE2 96 CLE2 92G ARG inties (±0.3 atic, and the the first two	$\begin{array}{c} \hline \hline \\ $	9/Γ
$ \frac{\Gamma(D^*(2010)^- D_s^{*+}) / \Gamma_{\text{total}}}{O.019 \pm 0.006 \text{ OUR AVERAGE}} $ 0.0182±0.0045±0.0046 0.020 ±0.006 ±0.005 0.019 ±0.011 ±0.005 118 AHMED 00B reports their ethe first error is statistical, the $D_s \rightarrow \phi \pi$ branching fraction for the first of the points 0.0203 ±0.0000000000	DOCUMENT ID 118 AHMED 119 GIBAUT 120 ALBRECHT experiment's uncerta the second is system action. We combine b 0.0050 ± 0.0036 fo	$\begin{array}{c} \underline{TECN}\\ 00B \ CLE2\\ 96 \ CLE2\\ 92G \ ARG\\ inties (\pm 0.3\\ atic, and the first two r B(D_s^+ \rightarrow$	Γ_{24} $e^+e^- \rightarrow \Upsilon(45)$ $e^+e^- \rightarrow \Upsilon(45)$ $e^+e^- \rightarrow \Upsilon(45)$ $T \pm 0.25 \pm 0.46)\%, which is the uncertainted in quadrature.$ $\phi\pi^+) = 0.035. \text{ We res}$	9/Γ here ty in
$\Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{total}$ <u>VALUE</u> 0.019 ±0.006 OUR AVERAGE 0.0182±0.0045±0.0046 0.020 ±0.006 ±0.005 0.019 ±0.011 ±0.005 118 AHMED 00B reports their et the first error is statistical, t the $D_s \rightarrow \phi \pi$ branching fra 119 GIBAUT 96 reports 0.0203 ± to our best value B($D_s^+ \rightarrow experiment$'s error and our se 120 ALBRECHT 92G reports 0.0203	$\frac{DOCUMENT \ ID}{118}$ $\frac{118}{119} \text{ GIBAUT}$ $\frac{120}{120} \text{ ALBRECHT}$ $\frac{120}{120} \text{ ALBRET}$	$\frac{\text{TECN}}{00\text{B} \text{ CLE2}}$ 96 CLE2 92G ARG inties (± 0.3 atic, and the the first two r B($D_s^+ \rightarrow$ 0.9) × 10 tematic erro 16 for B(D_s^+	Γ_{24} $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ $7 \pm 0.25 \pm 0.46)\%, \text{ where third is the uncertainted in quadrature.}$ $\phi \pi^+) = 0.035. \text{ We ress}$ $\frac{2}{2}. \text{ Our first error is the third output best values}$ $\phi \pi^+) = 0.027.$	9/Γ here ty in scale their alue. We
$ \Gamma(D^*(2010)^- D_s^{*+})/\Gamma_{total} $ <u>VALUE</u> 0.019 ±0.006 OUR AVERAGE 0.0182±0.0045±0.0046 0.020 ±0.006 ±0.005 0.019 ±0.011 ±0.005 ¹¹⁸ AHMED 00B reports their ethe first error is statistical, the $D_s \rightarrow \phi \pi$ branching fraction of the first error and statistical to our best value B(D_s^+ - experiment's error and our set 120 ALBRECHT 92G reports 0.010 rescale to our best value B(D_s^+ - experiment's error and our set 0.020 ALBRECHT 92G reports 0.010 rescale to our best value B(D_s^+ - experiment's error and our set 0.020 ALBRECHT 92G reports 0.010 rescale to 0.010 D ⁺ and 0.011 ± 0.025%, B(D^+ → $M_s = 55 \pm 4\%$.	DOCUMENT ID 118 AHMED 119 GIBAUT 120 ALBRECHT experiment's uncerta the second is system action. We combine $\pm 0.0050 \pm 0.0036$ fo $\Rightarrow \phi \pi^+) = (3.6 \pm$ econd error is the system $026 \pm 0.014 \pm 0.000$ $D_s^+ \Rightarrow \phi \pi^+) = (3.0 \pm 0.000)$ econd error is the system $D_s^+ \Rightarrow \phi \pi^+) = (3.0 \pm 0.000)$ $D_s^+ \Rightarrow \phi \pi^+) = (3.0 \pm 0.000)$ $D_s^- \Rightarrow \Phi \pi^+$	$\frac{TECN}{00B \text{ CLE2}}$ 96 CLE2 92G ARG inties (±0.3) atic, and the the first two r B($D_s^+ \rightarrow$ 0.9) × 10 tematic erro 16 for B(D_s^+ 6 ± 0.9) × 10 tematic erro hing ratios, 1.0%, and	F_{24} $e^+ e^- \rightarrow \Upsilon(4S)$ $e^+ e^- \rightarrow \Upsilon(4S)$ $e^+ e^- \rightarrow \Upsilon(4S)$ $a^+ \pm 0.25 \pm 0.46)\%, \text{ where this is the uncertainty in quadrature.}$ $\phi \pi^+) = 0.035. \text{ We ress}$ $\phi \pi^+) = 0.035. \text{ We ress}$ $\phi \pi^+) = 0.027. \text{ from using our best var}$ $\phi \pi^+) = 0.027. \text{ form using our best var}$ $\phi \pi^+) = 0.027. \text{ form using our best var}$ $\phi \pi^+) = 0.027. \text{ form using our best var}$ $\phi \pi^+) = 0.027. \text{ form using our best var}$ $\phi \pi^+) = 0.027. \text{ form using our best var}$	9/Γ here ty in scale their alue. We their alue. π^+)

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best value B(
$$D_s^+ \rightarrow \phi \pi^+$$
) = 0.036

$\Gamma(D_{s}^{*+} ho^{-})/\Gamma_{total}$		Г ₃₃	3/Г
VALUE	<u>CL%</u>	DOCUMENT ID <u>TECN</u> COMMENT	
<0.0008	90	128 ALEXANDER 93B CLE2 $e^+e^- ightarrow ~\Upsilon(4S)$	
• • • We do not use the	followi	ng data for averages, fits, limits, etc. • • •	
<0.0019	90	¹²⁹ ALBRECHT 93E ARG $e^+e^- \rightarrow \Upsilon(4S)$	
128 ALEXANDER 93B re	ports <	$(7.4 imes 10^{-4} { m for B}(D_{s}^{+} ightarrow \phi \pi^{+}) = 0.037.$ We rescale	e to
our best value $B(D_s^+)$	$\rightarrow \phi$	$(\tau^+) = 0.036.$	
¹²⁹ ALBRECHT 93E repo	orts < 2	$.5 \times 10^{-3}$ for B($D_c^+ \rightarrow \phi \pi^+$) = 0.027. We rescale to	our
best value B($D^+_{m{s}} ightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D_s^+a_1(1260)^-)/\Gamma_t$	otal	Г ₃₄	ı/Г
VALUE	<u>CL%</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
<0.0026	90	¹³⁰ ALBRECHT 93E ARG $e^+e^- \rightarrow T(4S)$	
¹³⁰ ALBRECHT 93E repo	orts < 3	$.5 \times 10^{-3}$ for B($D_s^+ \rightarrow \phi \pi^+$) = 0.027. We rescale to	our
best value $B(D^+_{m{s}} ightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D_s^{*+}a_1(1260)^-)/\Gamma$	total	Г ₃₅	;/Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT	
<0.0022	90	¹³¹ ALBRECHT 93E ARG $e^+e^- \rightarrow \Upsilon(4S)$	
¹³¹ ALBRECHT 93E repo	orts < 2	$.9 imes 10^{-3}$ for B($D_s^+ o \phi \pi^+$) = 0.027. We rescale to	our
best value B($D^+_{m{s}} ightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D_{\epsilon}^{-}K^{+})/\Gamma_{total}$		Гзе	5/Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT	
<0.00024	90	¹³² ALEXANDER 93B CLE2 $e^+e^- ightarrow \Upsilon(4S)$	
• • • We do not use the	followi	ng data for averages, fits, limits, etc. \bullet \bullet	
<0.0013	90	¹³³ BORTOLETTO90 CLEO $e^+e^- \rightarrow \Upsilon(4S)$	
¹³² ALEXANDER 93B re	ports <	$(2.3 imes 10^{-4} { m for B}(D^+_s ightarrow \phi \pi^+) = 0.037.$ We rescale	e to
our best value $B(D_s^+)$	$\rightarrow \phi$	$(\tau^+) = 0.036.$	
¹³³ BORTOLETTO 90 a	ssume	$B(D_{s} \rightarrow \phi \pi^{+}) = 2\%.$	
$\Gamma(D_s^{*-}K^+)/\Gamma_{total}$		Г ₃₇	٦/ ,
VALUE	<u>CL%</u>	$\frac{DOCUMENT ID}{134} \xrightarrow{\text{IECN}} CLE2 \xrightarrow{+} \xrightarrow{-} (AC)$	
	90	ALEAANDER 958 CLE2 $e^+e^- \rightarrow I(45)$	
+ ALEXANDER 93B re	ports <	$(1.7 \times 10^{-4} \text{ for B}(D_s^{\prime} \rightarrow \phi \pi^+) = 0.037.$ We rescale	e to
our best value ${\sf B}(D_s^+)$	$\rightarrow \phi$	$(\tau^+) = 0.036.$	

$\Gamma(D_{s}^{-}K^{*}(892)^{+})/\Gamma_{t}$	otal		Г ₃₈ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN C	COMMENT
<0.0010	90	135 ALEXANDER 93B CLE2 ϵ	$e^+e^- ightarrow ~\Upsilon(4S)$
• • We do not use the	e follow	ng data for averages, fits, limits, et	
< 0.0034	90	130 ALBRECHT 93E ARG e	$e^+ e^- ightarrow ~ \Upsilon(4S)$
¹³⁵ ALEXANDER 93B re	eports <	$< 9.7 imes 10^{-4}$ for B($D_s^+ o \phi \pi^+$)	= 0.037. We rescale to
our best value $B(D_s^+)$	$\rightarrow \phi$	$\pi^+) = 0.036.$	
¹³⁶ ALBRECHT 93E rep	orts < 4	$0.6 imes 10^{-3}$ for B($D_s^+ ightarrow\phi\pi^+)=0$	0.027. We rescale to our
best value B($D^+_{m{s}} ightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D_{c}^{*-}K^{*}(892)^{+})/\Gamma$	total		Г ₃₉ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN	COMMENT
<0.0011	90	137 ALEXANDER 93B CLE2 ϵ	$e^+e^- \rightarrow \Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the	e follow	ng data for averages, fits, limits, et	ic. ● ● ●
<0.004	90	138 Albrecht 93e Arg ϵ	$e^+e^- \rightarrow \Upsilon(4S)$
¹³⁷ ALEXANDER 93B re	eports <	$(11.0 imes 10^{-4} ext{ for B}(D_{s}^{+} o \phi \pi^{+}))$	= 0.037. We rescale to
our best value $B(D_s^+)$	$\rightarrow \phi$	$\pi^+) = 0.036.$	
¹³⁸ ALBRECHT 93E rep	orts < 5	$5.8 imes 10^{-3}$ for B($D_c^+ o \phi \pi^+$) = 0	0.027. We rescale to our
best value $B(D_{s}^{+} ightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D = \pi + K^0) / \Gamma_{}$			Г., /Г
VALUE	CI %		-40/ •
<0.005	90	¹³⁹ ALBRECHT 93E ARG	$e^+e^- \rightarrow \Upsilon(4S)$
139 AL BRECHT 93E rep	orts $< \overline{2}$	$X_3 \times 10^{-3}$ for B(D ⁺ $\rightarrow \phi \pi^+$) – 0	0.027 W/e rescale to our
best value B($D_{-}^{+} \rightarrow$	$\phi \pi^+$)	= 0.036.	
r(n*+ v0)/r	. ,		F /F
$\left(U_{s} \pi' \Lambda^{\circ} \right) / t_{tota}$			I 41/I
<u>VALUE</u>	<u> </u>	140 AL RECHT OF ARC	$\gamma^+ \gamma^- \gamma \gamma(\Lambda S)$
	90	$A = D (D^+) + (z^+)$	$0.007 M_{\rm e} = -1 (+3)$
- ALBRECHT 93E rep	orts < 4	$(D_s^+ \rightarrow \phi \pi^+) = 0$	0.027. We rescale to our
best value $B(D'_{s} \rightarrow s)$	$\phi\pi$ ')	= 0.036.	
$\Gamma(D_{-}^{-}\pi^{+}K^{*}(892)^{0})$	/F _{total}		Γ42/Γ
VALUE	<u>CL%</u>	DOCUMENT ID TECN	COMMENT
<0.004	90	¹⁴¹ ALBRECHT 93E ARG e	$e^+e^- \rightarrow \Upsilon(4S)$
¹⁴¹ ALBRECHT 93E rep	orts < 5	$5.0 imes 10^{-3}$ for B($D_{-}^+ o \phi \pi^+$) = 0	0.027. We rescale to our
best value $B(D_s^+ \rightarrow$	$\phi \pi^+$)	= 0.036.	
$\Gamma(D^{*-} - K^{*})^{0}$	\ / Г		Г., /Г
<0.0020	90	¹⁴² ALBRECHT 93F ARG	$e^+e^- \rightarrow \gamma(4S)$
142 AL BRECHT OZE KOR	orts <	7×10^{-3} for $B(D^+ \times 4\pi^+) = 0$	0.027 We receale to our
best value $B(D^+ \rightarrow$	$\phi \pi^+$	= 0.036.	0.021. WE rescale to Our
			d. 7/21/2001 16:04
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$\Gamma(\overline{D}^0 \pi^0) / \Gamma_{\text{total}}$						Г44/Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<0.00012	90	¹⁴³ NEMATI	98	CLE2	$e^+e^- ightarrow ~\gamma(4S)$	[•])
\bullet \bullet \bullet We do not use the	followi	ing data for average	s, fits,	limits,	etc. • • •	
<0.00048	90	¹⁴⁴ ALAM	94	CLE2	Repl. by NEMAT	TI 98
¹⁴³ NEMATI 98 assumes	equal p	production of B^+ an	d <i>B</i> ⁰ a	at the ´	$\Upsilon(4S)$ and use the	PDG 96
values for D^0 , D^{*0} , T^{*0}	η, η', a ual pro $(\pi \pi^+)a$ $(\pi \pi^+ \pi^+)$	nd ω branching frac duction of B^+ and and the PDG 1992 B $^-)/B(D^0 \rightarrow K^- \pi)$	tions. B ⁰ at (D ⁰ – +).	t the γ $\rightarrow K^{-} \gamma$	$\Gamma(4S)$ and use the $\pi^+\pi^0)/B(D^0 \to D^0)$	CLEO II $K^{-}\pi^{+})$
$\Gamma(\overline{D}{}^{0} ho^{0})/\Gamma_{\text{total}}$						Г ₄₅ /Г
VALUE CL%	<u>EVTS</u>	DOCUMENT ID		TECN	COMMENT	
<0.00039 90		¹⁴⁵ NEMATI	98	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$)
• • • We do not use the	followi	ing data for average	s, fits,	limits,	etc. • • •	
<0.00055 90		¹⁴⁶ ALAM	94	CLE2	Repl. by NEMAT	T 98
< 0.0006 90		¹⁴⁷ BORTOLETT	O92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$)
<0.0027 90	4	¹⁴⁸ ALBRECHT	88K	ARG	$e^+e^- \rightarrow \Upsilon(4S)$	[•])
145 NEMATI 98 assumes values for D^0 , D^{*0} , D^{*	equal p η, η', a ual pro $-\pi^+$) a $+\pi^+\pi^+\pi^+$ assumes actions ports < $\frac{CL\%}{90}$ followi 90 equal p η, η', a ual pro $-\pi^+$) a $+\pi^+\pi^+\pi^+$	production of B^+ and and ω branching fract duction of B^+ and and the PDG 1992 B $^-)/B(D^0 \rightarrow K^- \pi)$ is equal production of for the D . 0.003 assuming B^0 $\frac{DOCUMENT \ ID}{149}$ NEMATI ing data for averages 150 ALAM production of B^+ and and ω branching fract duction of B^+ and and the PDG 1992 B $^-)/B(D^0 \rightarrow K^- \pi)$	d B^0 at tions. B^0 at $(D^0 -$ $(D^0 -$ $(D^0 -$ $(D^0 -$ $(D^0 -$ $(D^0 -$ $(D^0 -$ $(D^0 -$	at the γ t the γ $\rightarrow K^{-}\gamma$ and E B^+B^- TECN CLE2 limits, CLE2 at the γ t the γ γ	T(4S) and use the T(4S) and use the $T(+\pi^0)/B(D^0 \rightarrow D^0)$ T(4S) at the $T(4S)$ and production ratio is $\frac{COMMENT}{e^+e^- \rightarrow T(4S)}$ etc. ••• Repl. by NEMAT T(4S) and use the T(4S) and use the $T(+\pi^0)/B(D^0 \rightarrow D^0)$	PDG 96 CLEO II $K^- \pi^+$) and uses s 45:55. Г46/Г 7) T 98 PDG 96 CLEO II $K^- \pi^+$)
$\Gamma(\overline{D}^0\eta')/\Gamma_{\text{total}}$	<u>(</u> 1%)	DOCUMENT ID		TECN	COMMENT	Г ₄₇ /Г
<0 00094	<u>00</u>	151 NEMATI	98	CLF2	$e^+e^- \rightarrow \gamma(4S)$)
• • • We do not use the	followi	ing data for average	s. fits.	limits.	etc. ● ● ●)
< 0.00086	90	¹⁵² ALAM	94	CLE2	Repl. by NEMAT	-l 98
151 NEMATI 08 assumes	oqual n	roduction of B^+ on	д <u>в</u> 0 .	0 <u></u>	$\Gamma(4S)$ and use the	
values for D^0 , D^{*0} , 152 ALAM 94 assume eq absolute B($D^0 \rightarrow K^- \pi^-$	η, η', a ual pro π^+) a $\pi^+\pi^+\pi^-$	nd ω branching frac duction of B^+ and and the PDG 1992 B $^-)/B(D^0 \rightarrow K^- \pi$	tions. B^0 at $(D^0 - +)$.	t the $\gamma \rightarrow K^{-} \gamma$	(45) and use the (45) and use the $(\pi^+ \pi^0)/B(D^0 \rightarrow D^0)$	CLEO II $K^{-}\pi^{+}$)

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$\Gamma(\overline{D}^0\omega)/\Gamma_{\rm total}$					Г ₄₈ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	,
<0.00051	90	¹⁵³ NEMATI	98 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • We do not use	the follow	ing data for averages,	fits, limits,	etc. • • •	
<0.00063	90	¹⁵⁴ ALAM	94 CLE2	Repl. by N	IEMATI 98
¹⁵³ NEMATI 98 assum	nes equal p 0 /	production of B^+ and	B^0 at the	arphi(4S) and u	se the PDG 96
values for D° , D^+ 154 ALAM 94 assume absolute B($D^0 \rightarrow$ and B($D^0 \rightarrow K^-$	equal pro $K^{-}\pi^{+}$) = $\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}\pi^{+}$	and ω branching fract soluction of B^+ and I and the PDG 1992 B($^-)/B(D^0 \rightarrow K^- \pi^-)$	D^{0} at the $D^{0} \rightarrow K^{-}$	$\Gamma(4S)$ and ${ m u}$ $\pi^+\pi^0)/{ m B}(D)$	se the CLEO II $0^0 \rightarrow \kappa^- \pi^+)$
$\left(\overline{D}^{*0}\gamma\right)/\Gamma_{total}$					Г ₄₉ /Г
ALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<5.0 × 10 ^{—5}	90	¹⁵⁵ ARTUSO	00 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
^{.55} Assumes equal pro	duction o	f B^+ and B^0 at the	$\Upsilon(4S).$		
$(\overline{D}^*(2007)^0\pi^0)/l$	total				Г ₅₀ /Г
/ALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<0.00044	90	¹⁵⁶ NEMATI	98 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • We do not use	the follow	ing data for averages,	fits, limits,	etc. ● ● ●	
<0.00097	90	¹⁵⁷ ALAM	94 CLE2	Repl. by N	IEMATI 98
⁵⁶ NEMATI 98 assum	nes equal p 0 /	production of B^+ and	B ⁰ at the	arphi(4S) and u	se the PDG 96
^{L57} ALAM 94 assume B $(D^*(2007)^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0)$	equal pro $D^0 \pi^0$) and $K^- \pi^0$	duction of B^+ and I nd absolute B($D^0 ightarrow K^+$) and B($D^0 ightarrow K$	B ⁰ at the π $(K^-\pi^+)$ a $(\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi$	r(4 <i>S</i>) and us nd the PDG [—])/B(<i>D</i> ⁰ —	se the CLEO II 1992 B($D^0 \rightarrow K^- \pi^+$).
$\left(\overline{D}^{*}(2007)^{0} ho^{0} ight)/r$	total				Г ₅₁ /Г
ALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<0.00056	90	¹⁵⁰ NEMATI	98 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • vve do not use	the follow	ing data for averages,	fits, limits,	etc. • • •	
< 0.00117	90	139 ALAM	94 CLE2	Repl. by N	IEMATI 98
^{.30} NEMATI 98 assum values for D^0 , D^* ^{.59} ALAM 94 assume $B(D^*(2007)^0 \rightarrow \kappa^- \pi^+ \pi^0)/B(D^0)$	The section of the section D^0, η, η', η' and $D^0 \pi^0$ and $D^0 \pi^0$ and $D^0 \to K^- \pi^0$	production of B^+ and and ω branching fract induction of B^+ and B^+ and absolute $B(D^0 \rightarrow \pi^+)$ and $B(D^0 \rightarrow K^+)$	B^0 at the ions. B^0 at the T $K^-\pi^+$) a $T^-\pi^+\pi^+\pi^+$	$\Upsilon(4S)$ and us $\Upsilon(4S)$ and us nd the PDG $^{-})/\mathrm{B}(D^0-^{-})$	se the PDG 96 se the CLEO II 1992 B($D^0 \rightarrow K^- \pi^+$).
⁻ (<u></u> <i>D</i> [*] (2007) ⁰ η)/Γ _t	otal		TECH		Г ₅₂ /Г
ALUE	<u> </u>	160 NEVATI		\perp _	
<0.00026	90 the follow	ing data for average	98 CLE2	$e \cdot e \rightarrow$	1(45)
		161 ALANA			
<0.00069 ⁶⁰ NEMATI 98 assum	90 1es equal p	production of <i>B</i> ⁺ and	94 CLE2 B ⁰ at the	Repl. by N $\Upsilon(4S)$ and u	IEMATT 98 se the PDG 96
values for D^0 , D^* L^{61} ALAM 94 assume $B(D^*(2007)^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0)$	${}^0,\ \eta,\ \eta',\ { m a}$ equal pro $D^0\pi^0)$ ar ${}^{I} ightarrow K^-\gamma$	and ω branching fract eduction of B^+ and B^+ and absolute $B(D^0 \rightarrow \pi^+)$ and $B(D^0 \rightarrow K^+)$	ions. B ⁰ at the π $(K^-\pi^+)$ a $(T^-\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi$	r(4 <i>S</i>) and us nd the PDG ^{.—})/B(<i>D</i> ⁰ —	se the CLEO II 1992 B($D^0 \rightarrow K^- \pi^+$).
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VALUE CLS DOCUMENT ID TECN COMMENT C0.0014 90 BRANDENE 98 CLE2 $e^+e^- \rightarrow T(45)$ • • • We do not use the following data for averages, fits, limits, etc. • • • COMMENT 90 163 NEMATI 98 CLE2 $e^+e^- \rightarrow T(45)$ COMMENT 90 163 ALAM 94 CLE2 Repl. by NEMATI 98 162 NEMATI 98 assumes equal production of B^+ and B^0 at the $T(45)$ and use the CLEO II B($D^*(2007)^0 \rightarrow D^0 \pi^0$) and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$. F($\overline{D^*(2007)^0 \omega$) $/\Gamma_{total}$ FGA F COMMENT 98 CLE2 $e^+e^- \rightarrow T(45)$ COMMENT 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 assumes equal production of B^+ and B^0 at the $T(45)$ and use the PDG 96 values for D^0 , D^*0 , π , π' , and ω branching fractions. 165 ALAM 94 Assume acqual production of B^+ and B^0 at the $T(45)$ and use the PDG 96 values for D^0 , D^*0 , π , π' , and ω branching fractions. 165 ALAM 94 assume acqual production of B^+ and B^0 at the $T(45)$ and use the CLEO II B($D^*(2007)^0 \rightarrow D^0 \pi^0$) and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$. F($D^*(2010)^+ D^*(2010)^-$) / F _{total} FECN COMMENT (9.9 $\frac{4.3}{2.3}\pm 1.2$) × 10 ⁻⁴ 166 LIPELES 00 CLE2 $e^+e^- \rightarrow T(45)$ • • • We do not use the following data for averages, fits, limits, etc. • • • (6.2 $\frac{+4.0}{-2.2}\pm 1.0$) × 10 ⁻⁴ 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 $< 6.1 \times 10^{-3}$ 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 ASNMER 97 at CLE0 observes 1 events with an expected background of 0.10 \pm 0.03 which corresponds to a branching ratio of $(5.3^+ \frac{3.7}{2.1}\pm 1.0) \times 10^{-3}$. 169 ASNER 97 at CLE0 observes 1 events with an expected background of 0.022 \pm 0.011. This corresponds to a branching ratio of $(5.3^+ \frac{3.7}{2.1}\pm 1.0) \times 10^{-3}$. 169 ASNER 97 at CLE0 observes 1 events with an expected background o	Γ(<u>D</u> *(2007) ⁰ η [/]	')/Γ _{total}				Г ₅₃ /Г
C0.0014 90 BRANDENE 98 CLE2 $e^+e^- \rightarrow T(45)$ COMMENT: 98 CLE2 $e^+e^- \rightarrow T(45)$ COMPART: 90 163 ALAM 94 CLE2 Repl. by NEMATI 98 COMPART: 90 163 ALAM 94 CLE2 Repl. by NEMATI 98 COMPART: 90 164 ALAM 94 CLE2 Repl. by NEMATI 98 COMPART: 90 164 ADSOUTCO $K^-\pi^+$ and H^-PDG 1992 $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^0)/B(D^0 \rightarrow K^-\pi^+)$ and $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F(D*(2007) $O \rightarrow D^0\pi^0$) and absolute $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F(D*(2007) $O \rightarrow D^0\pi^0$) and absolute $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F(D*(2007) $O \rightarrow D^0\pi^0$) 164 NEMATI 98 COMMENT: COMMENT: COMMENT: COMMENT: COMMENT: COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 COMMENT: 90 160 AC π^+ and B^0 at the $T(45)$ and use the CLEO III B ($D^0 \rightarrow K^-\pi^+$) and B ($D^0 \rightarrow K^-\pi^+$) and the PDG 1992 B($D^0 \rightarrow K^-\pi^+\pi^+\pi^-$)/B($D^0 \rightarrow K^-\pi^+$). F(D*(2007) $D D^0\pi^0$) and absolute $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F(D*(2007) $D D^0\pi^0$) and absolute $T(D)$ TECN. COMMENT COMMENT: (9.9^+3.2^+1.2) $A = 100^+10^-16^-166$ LIPELES 00 CLE2 $e^+e^- \rightarrow T(45)$ COMMENT: CL% DOCUMENT ID TECN COMMENT: (9.9^+4.2^+1.2) $A = 10^-3$ (CL%) DOCUMENT ID TECN COMMENT: (10, 2, 4, 10^-3, 10^-6) COMMENT: (10, 2, 10^-4) 166 BARATE 980 AL	VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
••• We do not use the following data for averages, fits, limits, etc. ••• <0.0019 90 162 NEMATI 98 CLE2 $e^+e^- \rightarrow T(45)$ (0.0027 90 163 ALAM 94 CLE2 Repl. by NEMATI 98 162 NEMATI 98 assumes equal production of B^+ and B^0 at the $T(45)$ and use the PDG 96 values for D^0 , D^+0 , η , η' , and ω branching fractions. 163 ALAM 94 assume equal production of B^+ and B^0 at the $T(45)$ and use the CLEO II B($D^*(2007)^0 \rightarrow D^0\pi^0$) and absolute $B(D^0 \rightarrow K^-\pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^-\pi^+)$ $R^-\pi^+\pi^0)/B(D^0 \rightarrow K^-\pi^+)$ and $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F($\overline{D^*(2007)^0}\omega$)/F total VALUE FEANOMENTIAL FORMATI 98 CLE2 $e^+e^- \rightarrow T(45)$ ••• We do not use the following data for averages, fits, limits, etc. ••• <<0.0021 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 assumes equal production of B^+ and B^0 at the $T(45)$ and use the PDG 96 values for D^0 , $D^0\pi^0$, and ω branching fractions. 165 ALAM 94 assume equal production of B^+ and B^0 at the $T(45)$ and use the CLEO II B($D^*(2007)^0 \rightarrow D^0\pi^0$) and absolute $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F($D^*(2010)^+ D^*(2010)^-$)/F total FECN COMMENT (9.9 $\frac{+4.2}{-3.3}\pm 1.2$) × 10 ⁻⁴ 167 ARTUSO 99 CLE2 e ⁺ e^- $\rightarrow T(45)$ ••• We do not use the following data for averages, fits, limits, etc. ••• (6.2 $\frac{+4.0}{-1.0}\pm 1.0 \times 10^{-4}$ 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 < 6.1 × 10^{-3} 90 168 BARATE 98Q ALEP $e^+e^- \rightarrow Z$ < 2.2 × 10^{-3} 90 169 ASNER 97 CLE2 Repl. by LIPELES 00 < 6.1 × 10^{-3} 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 Assumes equal production of B^+ and B^0 at the $T(45)$. 167 ARTUSO 99 uses $B(T(45) \rightarrow B^0\overline{B^0}) = (48 \pm 4)\%$. 168 BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.010 \pm 0.03 which corresponds to a branching ratio of $(3.3\frac{+1.9}{-1.2} \pm 0.4) \times 10^{-3}$. 169 ASNER 97 at CLEO observes 1 event with an expected background of 0.022 \pm 0.011. This corresponds to a branching ratio of $(5.3\frac{+7.1}{-3.7} \pm 1.0) \times 10^{-4}$. F($D^+(2010)$	<0.0014	90	BRANDENB	98 CLE2	$e^+e^- ightarrow$ γ	(4S)
(20.0019 90 162 NEMATI 98 CLE2 $e^+e^- \rightarrow T(4S)$ (20.0027 90 163 ALAM 94 CLE2 Repl. by NEMATI 98 162 NEMATI 98 assumes equal production of B^+ and B^0 at the $T(4S)$ and use the PDG 96 values for D^0 , p, η' , and ω branching fractions. 163 ALAM 94 assume equal production of B^+ and B^0 at the $T(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0\pi^0)$ and absolute $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F($\overline{D^*(2007)^0} \omega$) $/(\Gamma_{total}$ C1% DOCUMENT ID TECN COMMENT C0.00074 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 CLE2 $e^+e^- \rightarrow T(4S)$ *•• We do not use the following data for averages, fits, limits, etc. ••• <0.0021 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 assume equal production of B^+ and B^0 at the $T(4S)$ and use the PDG 96 values for D^0, D^{*0} , η, η' , and ω branching fractions. 165 ALAM 94 assume equal production of B^+ and B^0 at the $T(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0\pi^0)$ 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 $B(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F($D^*(2010)^+ D^*(2010)^-$) $/(\Gamma_{total})$ TECN COMMENT (163 ALAM 94 assume equal production of B^+ and B^0 at the $T(4S)$ and use the CLEO II $B(D^*(2010)^+ D^*(2010)^-)/(\Gamma_{total})$ TECN COMMENT (164 NEMATI 98 assume equal production of B^+ and $B^0 = T^+\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. F($D^*(2010)^+ D^-(2010)^-$) $/(\Gamma_{total})$ 165 ALAM 94 assume equal production of B^+ and B^0 at the $T(4S)$ and use the CLEO II $B(D^*(2010)^+ D^-(2010)^-)/(\Gamma_{total})$ 166 Assume equal production of B^+ and B^0 at the $T(4S)$. 167 ARTUSO 99 USE $B(T(4S) \rightarrow B^0B^0) = (48 \pm 4)\%$. 168 BARATE 980 (ALEPH) observes 2 events with an expected background of 0.10 \pm 0.03 which corresponds to a branching ratio of $(2.3 \pm 1.9 \pm 0.4) \times 10^{-3}$. 169 ASNER 97 at CLEO	• • • We do not	use the following	data for averages	, fits, limits,	etc. ● ● ●	
(0.0027 90 103 ALAM 94 CLE2 Repl. by NEMATI 98 162 NEMATI 98 assumes equal production of B ⁺ and B ⁰ at the T(4S) and use the PDG 96 values for D ⁰ , D ^{*0} , \eta, \eta', and ω branching fractions. 163 ALAM 94 assume equal production of B ⁺ and B ⁰ at the T(4S) and use the CLEO II B(D [*] (2007) ⁰ \rightarrow D ⁰ π^{0}) and absolute B(D ⁰ \rightarrow K ⁻ π^+ π^+ π^-)/B(D ⁰ \rightarrow K ⁻ π^+). If $\overline{D^*(2007)^0} \omega//Ftotal 164 NEMATI 98 CLE2 e+e- \rightarrow T(4S) •• We do not use the following data for averages, fits, limits, etc. ••• (0.00074 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 CLE2 e+e- \rightarrow T(4S) •• We do not use the following data for averages, fits, limits, etc. ••• (0.00074 90 165 ALAM 94 CLE2 Repl. by NEMATI 98 164 NEMATI 98 assume equal production of B+ and B0 at the T(4S) and use the PDG 96 values for D0, D*0, \eta, \eta', and \omega branching fractions. 165 ALAM 94 assume equal production of B+ and B0 at the T(4S) and use the CLEO II B(D*(2007)0 \rightarrow D0 \pi^{0}) and absolute B(D0 \rightarrow K- \pi^+ \pi^+ \pi^-)/B(D0 \rightarrow K- \pi^+) and B(D0 \rightarrow K- \pi^+ \pi^+ \pi^-)/B(D0 \rightarrow K- \pi^+). T(D*(2010)+D*(2010)-)/Ftotal $	<0.0019	90 1	⁶² NEMATI	98 CLE2	$e^+e^- ightarrow \gamma$	(4 <i>S</i>)
¹⁶² NEMATI 98 assumes equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>) and use the PDG 96 values for <i>D</i> ⁰ , <i>D</i> ^{*0} , <i>n</i> , <i>n'</i> , and <i>w</i> branching fractions. ¹⁶³ ALAM 94 assume equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>) and use the CLEO II B(<i>D</i> [*] (2007) ⁰ <i>w</i>)/ <i>G</i> (<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺) and B(<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺) and the PDG 1992 B(<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺ <i>π</i> ⁰)/B(<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺) and B(<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺ <i>π</i> ⁺ <i>π</i> ⁻)/B(<i>D</i> ⁰ <i>w</i> ⁻ <i>π</i> ⁺). Г (D [*] (2007) ⁰ <i>w</i>)/ Γ total F (<i>X</i>) 1 (4 NEMATI 98 CLE2 <i>e</i> ⁺ <i>e</i> ⁻ <i>→ T</i> (4 <i>S</i>) ••• We do not use the following data for averages, fits, limits, etc. ••• <0.0001 90 ¹⁶⁵ ALAM 94 CLE2 Repl. by NEMATI 98 ¹⁶⁴ NEMATI 98 assume equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>) and use the PDG 96 values for <i>D</i> ⁰ , <i>D</i> ^{*0} , <i>n</i> , <i>n'</i> , and <i>w</i> branching fractions. ¹⁶⁵ ALAM 94 assume equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>) and use the PDG 96 values for <i>D</i> ⁰ , <i>D</i> ^{*0} , <i>n</i> , <i>n'</i> , and <i>w</i> branching fractions. ¹⁶⁵ ALAM 94 assume equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>) and use the CLEO II B(<i>D</i> [*] (2007) ⁰ <i>→ D</i> ⁰ <i>n</i> ⁰) and absolute B(<i>D</i> ⁰ <i>→ K</i> ⁻ <i>π</i> ⁺) and the PDG 1992 B(<i>D</i> ⁰ <i>→ K</i> ⁻ <i>π</i> ⁺ <i>n</i> ⁰)/B(<i>D</i> ⁰ <i>→ K</i> ⁻ <i>π</i> ⁺) and B(<i>D</i> ⁰ <i>→ K</i> ⁻ <i>π</i> ⁺ <i>n</i> ⁺ <i>n</i> ⁻)/B(<i>D</i> ⁰ <i>→ K</i> ⁻ <i>π</i> ⁺). Г (<i>D</i> [*] (2010) ⁺ <i>D</i> [*] (2010) ⁻)/ Γ total TECN <u>COMMENT</u> (9.9 ^{+3.3} ±1.2) × 10 ⁻⁴ 166 LIPELES 00 CLE2 <i>e</i> ⁺ <i>e</i> ⁻ <i>→ T</i> (4 <i>S</i>) ••• We do not use the following data for averages, fits, limits, etc. ••• (6.2 ^{+4.0} ±1.0) × 10 ⁻⁴ 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 < 6.1 × 10 ⁻³ 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 Assumes equal production of <i>B</i> ⁺ and <i>B</i> ⁰ at the <i>T</i> (4 <i>S</i>). ¹⁶⁷ ARTUSO 99 uses B(<i>T</i> (4 <i>S</i>) <i>→ B</i> ⁰ <i>B</i> ⁰)=(48 ±4)%. ¹⁶⁸ BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of (5.3 ^{+7.1} / _{1.2} ± 0.4) × 10 ⁻³ . ¹⁶⁹ ASNER 97 at CLE0 observes 1 event with an expected background	<0.0027	90 1	⁶³ ALAM	94 CLE2	Repl. by NEM	1ATI 98
Note:	¹⁶² NEMATI 98 a	ssumes equal properties \mathcal{O}^{*0} and \mathcal{O}^{*0}	duction of B^+ and	l B ⁰ at the	$\Upsilon(4S)$ and use	the PDG 96
$ \begin{split} & \Gamma(\overline{D^*}(2007)^0 \omega)/\Gamma_{\text{total}} & \Gamma_{54}/\Gamma \\ \hline \\ $	¹⁶³ ALAM 94 ass B($D^*(2007)^0$ $K^- \pi^+ \pi^0$)/E	ume equal produ $\rightarrow D^0 \pi^0$) and $B(D^0 \rightarrow K^- \pi^+)$	ction of B^+ and absolute B($D^0 \rightarrow$) and B($D^0 \rightarrow$ F	B^0 at the γ $K^-\pi^+$) and $K^-\pi^+\pi^+\pi^-$	$\hat{f}(4S)$ and use the PDG 199 $^-)/{ m B}(D^0 o F)$	the CLEO II $D_2 \ B(D^0 \rightarrow \pi^+).$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Γ(<u>D</u> *(2007) ⁰ ω)/Γ _{total}				Г ₅₄ /Г
CU.0074 90 Let NEMATT 98 CLE2 $e^+e^- \rightarrow T(4S)$ ••• We do not use the following data for averages, fits, limits, etc. ••• <0.0021 90 165 ALAM 94 CLE2 Repl. by NEMATT 98 164 NEMATT 98 assumes equal production of B^+ and B^0 at the $T(4S)$ and use the PDG 96 values for D^0 , D^{*0} , η , η' , and ω branching fractions. 165 ALAM 94 assume equal production of B^+ and B^0 at the $T(4S)$ and use the CLEO II B($D^*(2007)^0 \rightarrow D^0 \pi^0$) 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($D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$. F ($D^*(2010)^+ D^*(2010)^-$)/ F _{total} F ₅₅ / F VALUE CL% DOCUMENT ID TECN COMMENT (9.9 $^+3.3 \pm 1.2$) × 10 ⁻⁴ 166 LIPELES 00 CLE2 $e^+e^- \rightarrow T(4S)$ •• We do not use the following data for averages, fits, limits, etc. •• ($6.2^+4.0 \pm 1.0$) × 10 ⁻⁴ 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 < 6.1 × 10^{-3} 90 168 BARATE 98Q ALEP $e^+e^- \rightarrow Z$ < 2.2 × 10^{-3} 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 Assumes equal production of B^+ and B^0 at the $T(4S)$. 167 ARTUSO 99 uses B($T(4S) \rightarrow B^0 \overline{B^0}$)=(48 ± 4)%. 168 BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of $(2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}$. 169 ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011. This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. F ($D^*(2010)^+ D^-$)/ F _{total} DOCUMENT 1D TECN COMMENT tech DOCUMENT 1D TECN COMMENT tech DOCUMENT 1D T (1) F ($D^*(2010)^+ D^-$)/ F _{total} F ₅₆ / F C (2.5×10^{-3} 90 BARATE 98Q ALEP $e^+e^- \to T(4S)$ ••• We do not use the following data for averages, fits, limits, etc. ••• <5.6 × 10^{-3} 90 ASNER 97 CLE2 $e^+e^- \to T(4S)$ 170 Assumes equal production of B^+ and B^0 at the $T(4S)$.	VALUE	<u>CL%</u>	<u>DOCUMENT ID</u>		<u>COMMENT</u>	(4.6)
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Values for D° , D° , η , η , and ω branching fractions. 165 ALAM 94 assume equal production of B^{+} and B^{0} at the $\Upsilon(4S)$ and use the CLEO II $B(D^{*}(2007)^{0} \rightarrow D^{0}\pi^{0})$ 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 $B(D^{0} \rightarrow K^{-}\pi^{+}\pi^{+}\pi^{-})/B(D^{0} \rightarrow K^{-}\pi^{+})$. F($D^{*}(2010)^{+} D^{*}(2010)^{-}$)/F_{total} F VALUE CL% DOCUMENT ID TECN COMMENT (9.9^{+4.2}_{-3.3}\pm1.2) \times 10^{-4} 166 LIPELES 00 CLE2 $e^{+}e^{-} \rightarrow \Upsilon(4S)$ ••• We do not use the following data for averages, fits, limits, etc. ••• ($6.2^{+4.0}_{-2.9}\pm1.0$) × 10^{-4} 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 < 6.1 × 10^{-3} 90 168 BARATE 98Q ALEP $e^{+}e^{-} \rightarrow Z$ < 2.2 × 10^{-3} 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 Assumes equal production of B^{+} and B^{0} at the $\Upsilon(4S)$. 168 BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of $(2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}$. 169 ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011 . This correcoponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. F F CD VALUE CL% DOCUMENT ID TECN COMMENT CD CLE2 COMMENT CD CD CLE2 COMMENT CD CD CLE2 CD CD CD CLE2 CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD CD	¹⁰⁴ NEMATI 98 a	ssumes equal pro	duction of B^{+} and	B ^o at the	T(4S) and use	the PDG 96
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Γ(D*(2010)+ VALUE)*(2010)[_])/Г₁	otal DOCUMENT IL) TECI	I COMMENT	Г ₅₅ /Г
• • We do not use the following data for averages, fits, limits, etc. • • • ($6.2^{+4.0}_{-2.9}\pm1.0$) × 10 ⁻⁴ 167 ARTUSO 99 CLE2 Repl. by LIPELES 00 < 6.1 × 10 ⁻³ 90 168 BARATE 98Q ALEP $e^+e^- \rightarrow Z$ < 2.2 × 10 ⁻³ 90 169 ASNER 97 CLE2 Repl. by ARTUSO 99 166 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. 167 ARTUSO 99 uses B($\Upsilon(4S) \rightarrow B^0 \overline{B}^0$)=(48 ± 4)%. 168 BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of $(2.3^{+1.9}_{-1.2}\pm0.4)\times10^{-3}$. 169 ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011. This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7}\pm1.0)\times10^{-4}$. F($D^*(2010)^+ D^-$)/Γ_{total} F VALUE CL VALUE VALUE VA	$(9.9^{+4.2}_{-3.3}\pm 1.2)$) × 10 ⁻⁴	¹⁶⁶ LIPELES	00 CLE	$2 e^+e^- \rightarrow$	$\Upsilon(4S)$
$(6.2^{+4.0}_{-2.9}\pm1.0)\times10^{-4} \qquad 167 \text{ ARTUSO} \qquad 99 \text{ CLE2 Repl. by LIPELES 00} < 6.1 \times 10^{-3} 90 \qquad 168 \text{ BARATE} \qquad 980 \text{ ALEP } e^+e^- \rightarrow Z < 2.2 \times 10^{-3} 90 \qquad 169 \text{ ASNER} \qquad 97 \text{ CLE2 Repl. by ARTUSO 99} 166 \text{ Assumes equal production of } B^+ \text{ and } B^0 \text{ at the } \Upsilon(4S). 167 \text{ ARTUSO 99 uses B}(\Upsilon(4S) \rightarrow B^0\overline{B}^0) = (48 \pm 4)\%. 168 \text{ BARATE 980 (ALEPH) \text{ observes 2 events with an expected background of 0.10 \pm 0.03 } \text{ which corresponds to a branching ratio of } (2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}. 169 \text{ ASNER 97 at CLEO observes 1 event with an expected background of 0.022 \pm 0.011. } \text{ This corresponds to a branching ratio of } (5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}. \Gamma(D^*(2010)^+ D^-)/\Gamma_{\text{total}} \qquad \Gamma_{CLE2} \qquad CLE2 \qquad e^+e^- \rightarrow \Upsilon(4S) \bullet \text{ We do not use the following data for averages, fits, limits, etc. } \bullet \bullet \bullet <5.6 \times 10^{-3} \qquad 90 \qquad \text{BARATE } 980 \text{ ALEP } e^+e^- \rightarrow \Upsilon(4S) 170 \text{ Assumes equal production of } B^+ \text{ and } B^0 \text{ at the } \Upsilon(4S). $	• • • We do not	use the following	data for averages	, fits, limits,	etc. ● ● ●	
$(0.2_{-2.9}\pm 1.0) \times 10^{-3} = 10^{-3} + 10^{-3} = 10^{-3} + 10^{-3} = 10^{-3} + 10^{-3} = 10^{$	$(6.2^{+4.0}_{+1.0})$	$) \times 10^{-4}$		00 CIF	2 Replay II	
$< 6.1 \times 10^{-3} \ 90^{-100} \ BARATE = 980 \ ALEP \ e^+e^- \rightarrow Z$ $< 2.2 \times 10^{-3} \ 90^{-160} \ ASNER 97^{-1} \ CLE2 \ Repl. by ARTUSO 99^{-166} \ Assumes equal production of B^+ and B^0 at the \Upsilon(4S). 166 \ Assumes equal production of B^+ and B^0 at the \Upsilon(4S). 167 \ ARTUSO 99 \ uses \ B(\Upsilon(4S) \rightarrow B^0 \overline{B}^0) = (48 \pm 4)\%. 168 \ BARATE \ 980 \ (ALEPH) \ observes \ 2 \ events \ with \ an \ expected \ background \ of \ 0.10 \pm 0.03 \ which \ corresponds to a \ branching \ ratio of \ (2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}. 169 \ ASNER \ 97 \ at \ CLE0 \ observes \ 1 \ event \ with \ an \ expected \ background \ of \ 0.022 \pm 0.011. This corresponds to a \ branching \ ratio of \ (5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}. \Gamma(D^*(2010)^+ D^-)/\Gamma_{total} \qquad DOCUMENT \ ID \ Accurate a \ Accurate \ Accurate \ Accurate \ Accurate$	$(0.2 - 2.9 \pm 1.0)$	7×10^{-3} 00				7
$\frac{1}{100} + \frac{1}{100} + \frac{1}$	< 0.1	$\times 10^{-3} 90^{-3}$	169 ASNER	980 ALE 97 CLE	Pere → 2 RenlbvAl	Z RTUSO 99
Assumes equal production of B ⁺ and B ⁺ at the T(45). ¹⁶⁷ ARTUSO 99 uses B(T(4S) → B ⁰ B ⁰)=(48 ± 4)%. ¹⁶⁸ BARATE 98Q (ALEPH) observes 2 events with an expected background of 0.10 ± 0.03 which corresponds to a branching ratio of $(2.3^{+1.9}_{-1.2} \pm 0.4) \times 10^{-3}$. ¹⁶⁹ ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011. This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. Γ(D*(2010)⁺D⁻)/Γ_{total} Γ(D*(2010)⁺D⁻)/Γ_{total} Γ(D*(2010)⁺D⁻)/Γ_{total} Γ(D*(2010)⁺D⁻)/Γ_{total} Γ	166		$p + and R^0$ at the	$\gamma(AC)$		
¹⁶⁹ ASNER 97 at CLEO observes 1 event with an expected background of 0.022 ± 0.011 . This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. $\Gamma(D^*(2010)^+ D^-)/\Gamma_{total}$ $\Gamma(D^*(2010)^+ D^-$	167 ARTUSO 99 168 BARATE 98Q which corresp	uses B($\Upsilon(4S) \rightarrow$ (ALEPH) observonds to a branch	$B^0 \overline{B}^0 = (48 \pm 4)$ yes 2 events with a pratio of (2.3^+)	(+3). (1)%. (1) expected (1) $\frac{1.9}{1.2} \pm 0.4$) >	background of (10^{-3}) .	0.10 ± 0.03
This correcsponds to a branching ratio of $(5.3^{+7.1}_{-3.7} \pm 1.0) \times 10^{-4}$. F(D*(2010)+D-)/F_{total} F ₅₆ /F <u>VALUE</u> <u>CL%</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u> 4 5 (5.3 × 10^{-4}) 5 (170)	¹⁶⁹ ASNER 97 at	CLEO observes	1 event with an e	xpected bac	kground of 0.02	$22 \pm 0.011.$
$ \begin{array}{c c} \Gamma(D^*(2010)^+D^-)/\Gamma_{\text{total}} & \Gamma_{56}/\Gamma \\ \hline \\ $	This correcspo	onds to a branchi	ng ratio of (5.3^+)	$3.7 \pm 1.0) imes$	10 ⁻⁴ .	
VALUECL%DOCUMENT IDTECNCOMMENT<6.3 × 10 ⁻⁴ 90170LIPELES00CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • •<5.6 × 10 ⁻³ 90BARATE98QALEP $e^+e^- \rightarrow \Upsilon(4S)$ <1.8 × 10 ⁻³ 90ASNER97CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 170Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.	Γ(<i>D</i> *(2010)+ <i>L</i>	Ͻ [_])/Γ _{total}				Г ₅₆ /Г
<6.3 × 10 ⁻⁴ 90 ^{1/0} LIPELES 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • • <5.6 × 10 ⁻³ 90 BARATE 98Q ALEP $e^+e^- \rightarrow Z$ <1.8 × 10 ⁻³ 90 ASNER 97 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ¹⁷⁰ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.	VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
$<5.6 \times 10^{-3}$ 90 BARATE 98Q ALEP $e^+e^- \rightarrow Z$ $<1.8 \times 10^{-3}$ 90 ASNER 97 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 170 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.	<6.3 × 10 ⁻⁴	90 ¹ use the following	^{ULIPELES} data for averages	00 CLE2	$e^+e^- \rightarrow \gamma$ etc. •••	(4 <i>S</i>)
$< 1.8 \times 10^{-3}$ 90 ASNER 97 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 170 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.	<pre><5 6 \leq 10⁻³</pre>	00	BARATE		a ⁺ a ⁻ 7	
¹⁷⁰ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$	$< 1.8 \times 10^{-3}$	90	ASNER	97 CLE2	$e^+e^- \rightarrow \gamma$	(45)
	170 Assumes equa	l production of F	B^+ and B^0 at the	$\Upsilon(4S)$		× /

$\Gamma(D^{(*)0}\overline{D}^{(*)0})/\Gamma_{\text{total}}$						
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT		
<0.027	90	BARATE	98Q ALEP	$e^+e^- \rightarrow$	Ζ	
$\Gamma(\eta_c K^0) / \Gamma_{ ext{total}}$					Г ₅₈ /Г	
VALUE (units 10^{-3})		DOCUMENT ID	TECN	COMMENT		
$1.09^{+0.55}_{-0.42} {\pm} 0.33$		¹⁷¹ EDWARDS	01 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$	

¹⁷¹ EDWARDS 01 assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$. The correlated uncertainties (28.3)% from $B(J/\psi(1S) \rightarrow \gamma \eta_c)$ in those modes have been accounted for.

$\Gamma(J/\psi(1S)K)$	⁰)/Γ _{total}
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Γ₅₉/Γ

VALUE (units 10^{-4})	<u>CL% EVTS</u>	DOCUMENT ID		TECN	COMMENT
9.6±0.9 OUR AVE	ERAGE				
$9.5\!\pm\!0.8\!\pm\!0.6$		¹⁷² AVERY	00	CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
$11.5\!\pm\!2.3\!\pm\!1.7$		¹⁷³ ABE	96H	CDF	<i>р р</i> at 1.8 ТеV
$7.0\!\pm\!4.1\!\pm\!0.1$		¹⁷⁴ BORTOLETT	092	CLEO	$e^+ e^- ightarrow ~\Upsilon(4S)$
$9.3 {\pm} 7.3 {\pm} 0.2$	2	¹⁷⁵ ALBRECHT	90J	ARG	$e^+ e^- ightarrow ~\Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use	the following da	ta for averages, fit	s, lim	its, etc.	• • •
$8.5^{+1.4}_{-1.2}\pm0.6$		¹⁷² JESSOP	97	CLE2	Repl. by AVERY 00

$8.5 + 1.2 \pm 0.6$			JESSOP	97	CLE2	Repl. by AVERY 00
$7.5\!\pm\!2.4\!\pm\!0.8$		10	¹⁷⁴ ALAM	94	CLE2	Sup. by JESSOP 97
<50	90		ALAM	86	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

¹⁷² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

¹⁷³ABE 96H assumes that $B(B^+ \rightarrow J/\psi K^+) = (1.02 \pm 0.14) \times 10^{-3}$.

¹⁷⁴ BORTOLETTO 92 reports $6 \pm 3 \pm 2$ 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 $\Upsilon(4S)$.

¹⁷⁵ ALBRECHT 90J reports $8 \pm 6 \pm 2$ 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 $\Upsilon(4S)$.

$\Gamma(J/\psi(1S)K^+\pi)$	⁻)/Γ _{total}			Г ₆₀ /Г
VALUE	<u>CL%</u> EVTS	<u>DOCUMENT ID</u>	D <u>TECN</u>	<u>COMMENT</u>
0.00116±0.00056	5±0.00002	¹⁷⁶ BORTOLET	TO92 CLEO	$e^+e^- ightarrow \gamma(4S)$
• • • We do not us	e the following data	for averages, fits, li	mits, etc. • •	•
<0.0013	90	¹⁷⁷ ALBRECHT	87d ARG	$e^+e^- ightarrow \gamma_{(4S)}$
<0.0063	90 2	GILES	84 CLEO	$e^+e^- \rightarrow \gamma(4S)$
176 BORTOLETTO 0.069 \pm 0.009. 10 ⁻² . Our first	92 reports 0.0010 We rescale to our be error is their experi	\pm 0.0004 \pm 0.0003 est value B $(J/\psi(1S))$ ment's error and ou	for B($J/\psi(1S) \rightarrow e^+e^-$) = r second error	$b) ightarrow e^+ e^-) = 0$ = (5.93 \pm 0.10) $ imes$ is the systematic

error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ¹⁷⁷ ALBRECHT 87D assume $B^+B^-/B^0\overline{B}^0$ ratio is 55/45. $K\pi$ system is specifically selected as nonresonant.

$\Gamma(J/\psi(1S) K^*(892)^0)/\Gamma_t$	otal			Г ₆₁ /Г
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.00150 ± 0.00017 OUR AVER	RAGE			
$0.00174 \pm 0.00020 \pm 0.00018$		¹⁷⁸ ABE	980 CDF	<i>р</i> р 1.8 ТеV
$0.00132 \pm 0.00017 \pm 0.00017$		¹⁷⁹ JESSOP	97 CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.00128 \pm 0.00066 \pm 0.00002$		¹⁸⁰ BORTOLETTO	O92 CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.00128 \!\pm\! 0.00060 \!\pm\! 0.00002$	6	¹⁸¹ ALBRECHT	90j ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
$0.0041 \ \pm 0.0018 \ \pm 0.0001$	5	¹⁸² BEBEK	87 CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the follow	owing	data for averages, fit	s, limits, etc.	
$0.00136 \pm 0.00027 \pm 0.00022$		¹⁸³ ABE	96н CDF	Sup. by ABE 980
$0.00169 \!\pm\! 0.00031 \!\pm\! 0.00018$	29	¹⁸⁴ ALAM	94 CLE2	Sup. by JESSOP 97
		¹⁸⁵ ALBRECHT	94g ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.0040 ± 0.0030		¹⁸⁶ ALBAJAR	91E UA1	Е ^{рр} = 630 GeV
0.0033 ± 0.0018	5	¹⁸⁷ ALBRECHT	87d ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.0041 ± 0.0018	5	¹⁸⁸ ALAM	86 CLEO	Repl. by BEBEK 87

¹⁷⁸ ABE 980 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.

¹⁷⁹Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

¹⁸⁰ 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 $\Upsilon(4S)$. ¹⁸¹ ALBRECHT 90J reports $0.0011 \pm 0.0005 \pm 0.0002$ for $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$

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 $\Upsilon(4S)$.

¹⁸² 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.

¹⁸³ABE 96H assumes that $B(B^+ \rightarrow J/\psi K^+) = (1.02 \pm 0.14) \times 10^{-3}$.

- ¹⁸⁴ 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 $\Upsilon(4S)$.
- ¹⁸⁵ 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 $K_S^0 \pi^0$.

¹⁸⁶ ALBAJAR 91E assumes B_d^0 production fraction of 36%.

¹⁸⁷ ALBRECHT 87D assume $\vec{B}^+ B^- / B^0 \overline{B}^0$ ratio is 55/45. Superseded by ALBRECHT 90J. ¹⁸⁸ 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.

$\Gamma(J/\psi(1S) K^*(892)^0) / \Gamma(J/\psi(1S) K^0)$					
VALUE	DOCUMENT ID		TECN	COMMENT	
$1.39 \pm 0.36 \pm 0.10$	ABE	96Q	CDF	p p	

 $\Gamma(J/\psi(1S)\phi K^0)/\Gamma_{\text{total}}$ Γ_{62}/Γ DOCUMENT ID TECN COMMENT $(8.8^{+3.5}_{20}\pm1.3)\times10^{-5}$ ¹⁸⁹ ANASTASSOV 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 189 ANASTASSOV 00 finds 10 events on a background of 0.5 \pm 0.2. Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$, a uniform Dalitz plot distribution, isotropic $J/\psi(1S)$ and ϕ decays, and $B(B^+ \rightarrow J/\psi(1S)\phi K^+) = B(B^0 \rightarrow J/\psi(1S)\phi K^0)$. $\Gamma(J/\psi(1S)\pi^0)/\Gamma_{\text{total}}$ Γ_{63}/Γ VALUE (units 10^{-5}) CL% EVTS DOCUMENT ID TECN COMMENT $2.5^{+1.1}_{-0.9}\pm0.2$ 190 AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ \bullet \bullet \bullet We do not use the following data for averages, fits, limits, etc. \bullet \bullet ¹⁹¹ ACCIARRI 90 < 32 97C L3 96 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ < 5.8 90 BISHAI ¹⁹² ALEXANDER 95 CLE2 Sup. by BISHAI 96 90 1 <690 ¹⁹⁰Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ¹⁹¹ ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). ¹⁹²Assumes equal production of B^+B^- and $B^0\overline{B}^0$ on $\Upsilon(4S)$. $\Gamma(J/\psi(1S)\eta)/\Gamma_{\text{total}}$ Γ_{64}/Γ VALUE DOCUMENT ID TECN CL% $<1.2 \times 10^{-3}$ 97C L3 ¹⁹³ ACCIARRI 90 ¹⁹³ACCIARRI 97C assumes B^0 production fraction (39.5 ± 4.0%) and B_s (12.0 ± 3.0%). $\Gamma(J/\psi(1S)\rho^0)/\Gamma_{\text{total}}$ Γ_{65}/Γ <u>CL%</u> DOCUMENT ID TECN COMMENT VALUE <2.5 × 10⁻⁴ 96 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ BISHAI $\Gamma(J/\psi(1S)\omega)/\Gamma_{\text{total}}$ Γ₆₆/Γ <u>DOCUMENT</u> ID TECN COMMENT VALUE CL% $< 2.7 \times 10^{-4}$ 96 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 90 BISHAI $\Gamma(\psi(2S)K^0)/\Gamma_{\text{total}}$ Γ_{67}/Γ DOCUMENT ID VALUE CL% TECN COMMENT ¹⁹⁴ ALAM 94 CLE2 $\Upsilon(4S)$ 90 < 0.0008 • • • We do not use the following data for averages, fits, limits, etc ¹⁹⁴ BORTOLETTO92 CLEO $e^+e^-
ightarrow ~ \Upsilon(4S)$ 90 < 0.0015 $e^+e^- \rightarrow \Upsilon(4S)$ ¹⁹⁴ ALBRECHT 90J ARG 90 < 0.0028 ¹⁹⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\psi(2S)K^+\pi^-)/\Gamma_{\text{total}}$ Γ₆₈/Γ DOCUMENT ID TECN COMMENT VALUE CL% ¹⁹⁵ ALBRECHT 90J ARG $e^+e^- \rightarrow \Upsilon(4S)$ < 0.001 90

¹⁹⁵ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

$1(\psi(25)K^{*}(892)^{\circ})/$	Γ _{total}		Г ₆₉ /Г
VALUE	<u>CL%</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
(9.3 ±2.3		$\times 10^{-4}$ OUR AVERAGE	
$0.00090 \pm 0.00022 \pm 0$	0.00009	¹⁹⁰ ABE 980 CDF $p\bar{p}$ 1.8 leV	C)
$0.0014 \pm 0.0008 \pm 0.0008$).0004 . f. llaud	¹³ BORIOLEITO92 CLEO $e \cdot e \rightarrow T(4)$	5)
• • • vve do not use the	e tollow	ng data for averages, fits, limits, etc. • • •	
< 0.0019 < 0.0023	90 90	197 ALAM 94 CLE2 $e^+e^- ightarrow \Upsilon(4)$ 197 ALBRECHT 90J ARG $e^+e^- ightarrow \Upsilon(4)$	S) S)
¹⁹⁶ ABE 980 reports [B 0.194±0.10. We mu Our first error is their using our best value.	$B(B^0 \rightarrow B(B^0)$ (Big) $B(B^0)$ (Bi	$\psi(2S) K^*(892)^0)]/[B(B^+ \rightarrow J/\psi(1S) K^+)] = 0$ our best value $B(B^+ \rightarrow J/\psi(1S) K^+) = (9.9 \pm 1.0) \times$ nent's error and our second error is the systematic error	$.908 \pm 10^{-4}$.
Assumes equal produ	lction o	D^{+} and D^{-} at the $T(43)$.	
$\Gamma(\chi_{c0}(1P)K^0)/\Gamma_{tota}$	al		Г ₇₀ /Г
VALUE	<u>CL%</u>	DOCUMENT ID <u>TECN</u> COMMENT	
<5.0 × 10 ⁻⁴	90	¹⁹⁸ EDWARDS 01 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$	
¹⁹⁸ EDWARDS 01 assur uncertainties (28.3)% for.	nes equ % from	al production of B^0 and B^+ at the $\Upsilon(4S)$. The conduction $\beta(J/\psi(1S) o \gamma \eta_{\mathcal{C}})$ in those modes have been acc	related ounted
$\Gamma(\chi_{c1}(1P)K^0)/\Gamma_{tota}$	al		Г ₇₁ /Г
VALUE (units 10 ⁻⁴)	<u>CL%</u>	DOCUMENT ID <u>TECN</u> COMMENT	
a a + 1 0 , a .			
$3.9^{+1.3}_{-1.3}\pm0.4$		¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$	
3.9 ^{+1.3} _{-1.3} ±0.4 • • • We do not use the	e follow	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • •	
3.9 ⁺ 1.3 [±] 0.4 • • • We do not use the <27	e followi 90	$\begin{array}{rcccc} 199 & \text{AVERY} & 00 & \text{CLE2} & e^+ e^- \rightarrow & \Upsilon(4S) \\ \text{ng data for averages, fits, limits, etc.} \bullet \bullet \bullet \\ 199 & \text{ALAM} & 94 & \text{CLE2} & e^+ e^- \rightarrow & \Upsilon(4S) \end{array}$	
3.9 ⁺ 1.3 [±] 0.4 • • • We do not use the <27 ¹⁹⁹ Assumes equal produ	e followi 90 uction o	$\begin{array}{rcl} 199 & \text{AVERY} & 00 & \text{CLE2} & e^+e^- \rightarrow & \mathcal{T}(4S) \\ \text{ng data for averages, fits, limits, etc.} \bullet \bullet \bullet \\ 199 & \text{ALAM} & 94 & \text{CLE2} & e^+e^- \rightarrow & \mathcal{T}(4S) \\ \text{f } B^+ & \text{and } B^0 & \text{at the } \mathcal{T}(4S). \end{array}$	
3.9 \pm 1.3 \pm 0.4 ••• We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P) K^*(892)^0)$	e followi 90 uction o)/F_{tota}	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$.	Г ₇₂ /Г
3.9 -1.3 ± 0.4 •••We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P) K^*(892)^0)$ <u>VALUE</u>	e followi 90 uction o)/F_{tota <u>20</u>}	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$.	Г ₇₂ /Г
3.9 \pm 1.3 \pm 0.4 • • • We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P)K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a	e followi 90 uction o)/ Г_{tot: 90} assumes	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. $\frac{DOCUMENT \ ID}{ALAM}$ 94 $\frac{TECN}{CLE2}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$ equal production of B^+ and B^0 at the $\Upsilon(4S)$.	Г ₇₂ /Г
3.9 \pm 1.3 \pm 0.4 ••• We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P) K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a $\Gamma(K^+)/\Gamma$	e followi 90 uction o)/ Г toti 90 assumes	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. $\frac{DOCUMENT ID}{ALAM}$ 94 $\frac{TECN}{CLE2}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$ equal production of B^+ and B^0 at the $\Upsilon(4S)$.	Γ ₇₂ /Γ
3.9 \pm 1.3 \pm 0.4 •••We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P) K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a $\Gamma(K^+\pi^-)/\Gamma_{total}$	e followi 90 uction o)/F_{tot:} 90 assumes	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. $\frac{DOCUMENT ID}{ALAM}$ 94 CLE2 $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$ equal production of B^+ and B^0 at the $\Upsilon(4S)$.	Г ₇₂ /Г
3.9 \pm 1.3 ±0.4 ••• We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P) K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a $\Gamma(K^+\pi^-)/\Gamma_{total}$ <u>VALUE (units 10^5)</u>	e followi 90 uction o)/F_{tot:} 90 assumes	$\begin{array}{rcl} 199 & \text{AVERY} & 00 & \text{CLE2} & e^+e^- \rightarrow & \Upsilon(4S) \\ \text{ng data for averages, fits, limits, etc. } \bullet \bullet \bullet \\ 199 & \text{ALAM} & 94 & \text{CLE2} & e^+e^- \rightarrow & \Upsilon(4S) \\ \text{f } B^+ & \text{and } B^0 & \text{at the } & \Upsilon(4S). \\ \end{array}$ $\begin{array}{rcl} \hline & \underline{DOCUMENT \ ID} & \underline{TECN} & \underline{COMMENT} \\ equal \ \text{production of } B^+ & \text{and } B^0 & \text{at the } & \Upsilon(4S). \\ \end{array}$	Г ₇₂ /Г Г ₇₃ /Г
3.9 \pm 1.3 ±0.4 •••We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P)K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a $\Gamma(K^+\pi^-)/\Gamma_{total}$ <u>VALUE (units 10⁻⁵)</u> 1.72 \pm 0.25 ±0.12	e followi 90 uction o)/ $\Gamma_{tot:}$ 90 assumes 	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. ¹⁰ ²⁰⁰ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ equal production of B^+ and B^0 at the $\Upsilon(4S)$. ²⁰¹ CRONIN-HEN00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$	Г ₇₂ /Г Г ₇₃ /Г
3.9 $\frac{-1.3}{1.3}\pm 0.4$ ••• We do not use the <27 ¹⁹⁹ Assumes equal produ $\Gamma(\chi_{c1}(1P)K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 a $\Gamma(K^+\pi^-)/\Gamma_{total}$ <u>VALUE (units 10^5)</u> 1.72 $^+0.25_{-0.24}\pm 0.12$ ••• We do not use the	e followi 90 uction o)/ $\Gamma_{tot:}$ 90 assumes <u>CL%</u> e followi	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. ¹⁰ ²⁰⁰ $\frac{DOCUMENT \ ID}{ALAM}$ 94 $\frac{TECN}{CLE2}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$ equal production of B^+ and B^0 at the $\Upsilon(4S)$. ²⁰¹ CRONIN-HEN00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • •	Г ₇₂ /Г Г ₇₃ /Г
3.9 $\frac{-1.3}{1.3}\pm 0.4$ ••• We do not use the <27 ¹⁹⁹ Assumes equal produce $\Gamma(\chi_{c1}(1P)K^*(892)^0)$ <u>VALUE</u> <0.0021 ²⁰⁰ BORTOLETTO 92 as $\Gamma(K^+\pi^-)/\Gamma_{total}$ <u>VALUE</u> (units 10 ⁻⁵) 1.72 $^+0.25_{-0.24}\pm 0.12$ ••• We do not use the	e followi 90 uction o)/ Γ_{tota} 90 assumes <u>CL%</u> e followi	¹⁹⁹ AVERY 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • • ¹⁹⁹ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ f B^+ and B^0 at the $\Upsilon(4S)$. DOCUMENT ID TECN COMMENT $e^+e^- \rightarrow \Upsilon(4S)$ equal production of B^+ and B^0 at the $\Upsilon(4S)$. DOCUMENT ID TECN COMMENT 201 CRONIN-HEN00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ng data for averages, fits, limits, etc. • • •	Г ₇₂ /Г Г ₇₃ /Г

< 6.6	90	²⁰² ABE	00c SLD	$e^+e^- \rightarrow Z$
$1.5 \begin{array}{c} +0.5 \\ -0.4 \end{array} \pm 0.14$		GODANG	98 CLE2	Repl. by CRONIN- HENNESSY 00
$2.4 \ \begin{array}{c} +1.7 \\ -1.1 \end{array} \pm 0.2$		²⁰³ ADAM	96D DLPH	$e^+e^- \rightarrow Z$
< 1.7	90	ASNER	96 CLE2	Sup. by ADAM 96D
< 3.0	90	²⁰⁴ BUSKULIC	96∨ ALEP	$e^+e^- \rightarrow Z$
< 9	90	²⁰⁵ ABREU	95n DLPH	Sup. by ADAM 96D
< 8.1	90	²⁰⁶ AKERS	94l OPAL	$e^+e^- \rightarrow Z$
< 2.6	90	²⁰⁷ BATTLE	93 CLE2	$e^+ e^- ightarrow ~\Upsilon(4S)$
<18	90	ALBRECHT	91b ARG	$e^+e^- ightarrow ~\Upsilon(4S)$
< 9	90	²⁰⁸ AVERY	89b CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<32	90	AVERY	87 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

²⁰¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ²⁰² ABE 00C assumes B($Z \rightarrow b\overline{b}$)=(21.7 ± 0.1)% and the *B* fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})$ % and $f_{B_s} = (10.5^{+1.8}_{-2.2})$ %.

²⁰³ 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. ²⁰⁴ BUSKULIC 96V assumes PDG 96 production fractions for B^0 , B^+ , B_s , *b* baryons.

 $^{205}\,\mathrm{Assumes}$ a $B^0,~B^-$ production fraction of 0.39 and a B_s production fraction of 0.12. Contributions from B^0 and B_s^0 decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral *B* mesons. ²⁰⁶ Assumes B($Z \rightarrow b\overline{b}$) = 0.217 and B_d^0 (B_s^0) fraction 39.5% (12%).

²⁰⁷ BATTLE 93 assumes equal production of $B^{0}\overline{B}^{0}$ and $B^{+}B^{-}$ at $\Upsilon(4S)$. ²⁰⁸ Assumes the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$.

$\Gamma(\kappa^0 \pi^0) / \Gamma_{\text{total}}$

Γ74/Γ

$(K^{\circ}\pi^{\circ})/I_{total}$					74/	
VALUE (units 10 ⁻⁵)	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	_
$1.46^{+0.59+0.24}_{-0.51-0.33}$	209	CRONIN-HEN.	.00	CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$	
\bullet \bullet \bullet We do not use the	following d	ata for averages	, fits	, limits,	etc. • • •	
<4.1	90	GODANG	98	CLE2	Repl. by CRONIN-	
<4.0	90	ASNER	96	CLE2	Rep. by GODANG 98	
²⁰⁹ Assumes equal produc	tion of B^+	and B^0 at the	γ(4	S).		
$\Gamma(\eta' K^0) / \Gamma_{ m total}$					Г ₇₅ /Г	-
VALUE		DOCUMENT ID		TECN	COMMENT	
$(8.9^{+1.8}_{-1.6}\pm 0.9) imes 10^{-5}$	210	RICHICHI	00	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$	
\bullet \bullet \bullet We do not use the	following d	ata for averages	, fits	, limits,	etc. • • •	
$(4.7^{+2.7}_{-2.0}{\pm}0.9)\times10^{-5}$		BEHRENS	98	CLE2	Repl. by RICHICHI 00	

²¹⁰ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

 $\Gamma(\eta' K^*(892)^0)/\Gamma_{total}$ Γ₇₆/Γ TECN COMMENT $<2.4 \times 10^{-5}$ 211 RICHICHI 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 90 • • • We do not use the following data for averages, fits, limits, etc. • $< 3.9 \times 10^{-5}$ 90 BEHRENS 98 CLE2 Repl. by RICHICHI 00 ²¹¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\eta K^*(892)^0)/\Gamma_{total}$ Γ77/Γ TECN COMMENT VALUE (units 10^{-5}) CL% DOCUMENT ID $1.38^{+0.55}_{-0.46}\pm0.16$ ²¹² RICHICHI $e^+e^- \rightarrow \Upsilon(4S)$ 00 CLE2 • • • We do not use the following data for averages, fits, limits, etc. • • • Repl. by RICHICHI 00 <3.0 90 BEHRENS 98 CLE2 ²¹²Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\eta K^0)/\Gamma_{\text{total}}$ Γ₇₈/Γ <u>CL%</u> 90 VALUE TECN COMMENT <9.3 × 10⁻⁶ ²¹³ RICHICHI $e^+e^- \rightarrow \Upsilon(4S)$ 00 CLE2 • • • We do not use the following data for averages, fits, limits, etc. $< 3.3 \times 10^{-5}$ 90 98 CLE2 Repl. by RICHICHI 00 BEHRENS ²¹³Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\omega K^0)/\Gamma_{\text{total}}$ Γ₇₉/Γ DOCUMENT ID CL% TECN COMMENT 214 JESSOP $< 2.1 \times 10^{-5}$ 90 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • • We do not use the following data for averages, fits, limits, etc. • • • ²¹⁴ BERGFELD 98 CLE2 Repl. by JESSOP 00 $< 5.7 \times 10^{-5}$ 90 ²¹⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\omega K^*(892)^0)/\Gamma_{total}$ Γ_{80}/Γ DOCUMENT ID 215 BERGFELD TECN VALUE <u>CL%</u> $< 2.3 \times 10^{-5}$ 90 98 CLE2 ²¹⁵ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\left[\Gamma(K^{+}\pi^{-})+\Gamma(\pi^{+}\pi^{-})\right]/\Gamma_{\text{total}}$ $(\Gamma_{73}+\Gamma_{115})/\Gamma$ VALUE DOCUMENT ID TECN COMMENT $(1.9\pm0.6) \times 10^{-5}$ OUR AVERAGE ²¹⁶ ADAM 96D DLPH $e^+e^- \rightarrow Z$ $(2.8^{+1.5}_{-1.0}\pm2.0)\times10^{-5}$ $(1.8^{+0.6}_{-0.5}{}^{+0.3}_{-0.4})\times10^{-5}~~17.2$ 96 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ASNER • • • We do not use the following data for averages, fits, limits, etc. • • • ²¹⁷ BATTLE 93 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ $(2.4^{+0.8}_{-0.7}\pm0.2)\times10^{-5}$ 216 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. ²¹⁷ BATTLE 93 assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. HTTP://PDG.LBL.GOV Page 32 Created: 7/31/2001 16:04

$\Gamma(K^+K^-)/\Gamma_{total}$					Г ₈₁ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT
<1.9 × 10 ⁻⁶	90	²¹⁸ CRONIN-HEN.	.00	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the	followi	ng data for averages	, fits	, limits,	etc. • • •
$< 6.6 \times 10^{-5}$	90	²¹⁹ ABE	00 C	SLD	$e^+e^- \rightarrow Z$
$< 4.3 \times 10^{-6}$	90	GODANG	98	CLE2	Repl. by CRONIN-
$< 4.6 imes 10^{-5}$		²²⁰ ADAM	96 D	DLPH	$e^+e^- \rightarrow Z$
$< 0.4 \times 10^{-5}$	90	ASNER	96	CLE2	Repl. by GODANG 98
$< 1.8 \times 10^{-5}$	90	²²¹ BUSKULIC	9 6∨	ALEP	$e^+e^- \rightarrow Z$
$< 1.2 \times 10^{-4}$	90	²²² ABREU	95N	DLPH	Sup. by ADAM 96D
$< 0.7 \times 10^{-5}$	90	²²³ BATTLE	93	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
²¹⁸ Assumes equal produ	ction of	f B^+ and B^0 at the	$\Upsilon(4$	<i>S</i>).	
²¹⁹ ABE 00C assumes E	$3(Z \rightarrow$	$b\overline{b}$)=(21.7 \pm 0.1	.)%	and the	B fractions $f_{B^0} = f_{B^+} =$
$(39.7^{+1.8}_{-2.2})\%$ and f_B	e = (10.	$5^{+1.8}_{-22})\%$.			

²²⁰ 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.

²²¹ BUSKULIC 96V assumes PDG 96 production fractions for B^0 , B^+ , B_s , b baryons.

²²² 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_s^0 decays cannot be separated. Limits are given for the weighted average of the decay rates for the two neutral B mesons.

²²³ BATTLE 93 assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.



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

$< 3.2 \times 10^{-4}$	90	ALBRECHT	91b ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$< 5.0 \times 10^{-4}$	90	²²⁵ AVERY	89b CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<0.064	90	²²⁶ AVERY	87 CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$

²²⁵ AVERY 89B reports $< 5.8 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We not rescale to 50%.

²²⁶ AVERY 87 reports < 0.08 assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale to 50%.

$\Gamma(\kappa^0 f_0(980))/\Gamma_{\text{total}}$

Г₈₆/Г

VALUE	CL%	DOCUMENT ID	TECN	COMMENT	
<3.6 × 10 ⁻⁴	90	²²⁷ AVERY	89b CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	
²²⁷ AVERY 89B reports rescale to 50%.	< 4.2	imes 10 ⁻⁴ assuming	the $arphi(4S)$ de	ecays 43% to $B^0 \overline{B}{}^0$. We

$\Gamma(K^*(892)^+\pi^-)/I$	- total				Г ₈₇ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<7.2 × 10 ⁻⁵	90	ASNER	96 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
<3.8 × 10 ⁻⁴	90	²²⁸ AVERY	89B CLEC	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • • We do not use $\frac{1}{2}$	the follow	ing data for averages	s, fits, limits	s, etc. ● ● ●	
$< 6.2 \times 10^{-4}$	90	ALBRECHT	91b ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$< 5.6 imes 10^{-4}$	90	²²⁹ AVERY	87 CLEC	$e^+e^- \rightarrow$	$\Upsilon(4S)$
²²⁸ AVERY 89B repor rescale to 50%. 229 AVERY 87 reports	ts $<$ 4.4 $<$ 7 \times 10	$ imes$ 10^{-4} assuming tl $^{-4}$ assuming the $arphi($	he $ \Upsilon(4S) { m d}$	lecays 43% t 40% to B ⁰⁷	to $B^0 \overline{B}^0$. We \overline{B}^0 . We rescale
to 50%.					
$\Gamma(K^*(892)^0\pi^0)/\Gamma_0$	total				Г ₈₈ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<3.6 × 10 ⁻⁰	90	170 JESSOP	00 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • We do not use	the follow	ing data for averages	s, fits, limits	, etc. ● ● ●	
$< 2.8 \times 10^{-5}$	90	ASNER	96 CLE2	Repl. by J	ESSOP 00
$\Gamma(K_2^*(1430)^+\pi^-))$	/Γ _{total}				Г ₈₉ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN		
$< 2.6 \times 10^{-3}$	90	ALBRECHT	91b ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$\Gamma(\kappa^0 \kappa^+ \kappa^-)/\Gamma_{tot}$	tal				Г ₉₀ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
$<1.3 \times 10^{-3}$	90	ALBRECHT	91e ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$\Gamma(\kappa^0 \phi) / \Gamma_{\text{total}}$					Г ₉₁ /Г
VALUE	CI %	DOCUMENT ID	TECN	COMMENT	

VALUECL%DOCUMENT IDTECNCOMMENT $<3.1 \times 10^{-5}$ 90 230 BERGFELD98CLE2

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

$< 8.8 \times 10^{-5}$	90	ASNER	96 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$< 7.2 \times 10^{-4}$	90	ALBRECHT	91b ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$< 4.2 \times 10^{-4}$	90	²³¹ AVERY	89b CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$< 1.0 \times 10^{-3}$	90	²³² AVERY	87 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$

 $^{230}\operatorname{Assumes}$ equal production of B^+ and B^0 at the $\Upsilon(4S).$

²³¹ AVERY 89B reports $< 4.9 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%. 232 AVERY 87 reports $<1.3\times10^{-3}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0\overline{B}{}^0$. We rescale

to 50%.

$ (K^{-}\pi^{+}\pi^{-}\pi^{-})/ _{tota}$	tal
--	-----

 Γ_{92}/Γ

•					-
VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.3 × 10 ⁻⁴	90	233 ADAM	96D	DLPH	$e^+e^- \rightarrow Z$
\bullet \bullet \bullet We do not use the	followi	ng data for averages,	fits,	limits,	etc. ● ● ●
$< 2.1 \times 10^{-4}$	90	²³⁴ ABREU	95N	DLPH	Sup. by ADAM 96D

²³³ 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. ²³⁴ 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.

$\Gamma(K^*(892)^0\pi^+\pi^-)$	⁻)/Γ _{total}					Г ₉₃ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	7	TECN	COMMENT	
<1.4 × 10 ⁻³	90	ALBRECHT	91E A	ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$\Gamma(\kappa^*(892)^0 ho^0)/\Gamma$	total					Г ₉₄ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	7	FECN	COMMENT	
<2.86 × 10 ⁻⁴	90	²³⁵ ABE	00C S	SLD	$e^+e^- \rightarrow$	Ζ
\bullet \bullet \bullet We do not use	the following	g data for average	s, fits, l	limits,	etc. • • •	
$<4.6 \times 10^{-4}$ $<5.8 \times 10^{-4}$ $<9.6 \times 10^{-4}$ $^{235}ABE 00C assume(39.7^{+1.8}_{-2.2})\% and^{236}AVERY 89B repo$	90 90 90 Z es B($Z \rightarrow$ d $f_{B_s} = (10.5)$ orts < 6.7 ×	ALBRECHT 236 AVERY 237 AVERY $b\overline{b} = (21.7 \pm 0.4)^{+1.8} - 2.2)\%$. $10^{-4} \text{ assuming f}$	91Β Α 89Β C 87 C 1)% ar	ARG CLEO CLEO nd the 4 <i>S</i>) de	$e^+e^- \rightarrow e^+e^- \rightarrow e^+e^- \rightarrow B \text{ fraction}$	$\begin{array}{c} \Upsilon(4S) \\ \Upsilon(4S) \\ \Upsilon(4S) \\ \text{ns} \ f_{B^0} = f_{B^+} = \\ \\ \text{so} \ B^0 \overline{B}^0. \text{We} \end{array}$
237 rescale to 50%. AVERY 87 report to 50%.	${ m s} < 1.2 imes 10^{-1}$	$^{-3}$ assuming the 7	r(4 <i>S</i>) d	écays -	40% to $B^0 \overline{B}$	$\overline{3}^0$. We rescale
Γ(K*(892)⁰ f₀(980 VALUE)))/Γ _{total}	DOCUMENT ID	7	TECN	<u>COMMENT</u>	Г ₉₅ /Г
<1.7 × 10 ⁻⁴	90	238 AVERY	89B C	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
²³⁸ AVERY 89B report rescale to 50%.	orts $<$ 2.0 $ imes$	10^{-4} assuming	the $\Upsilon(4)$	4 <i>S</i>) de	cays 43% t	to $B^0 \overline{B}^0$. We

$\Gamma(K_1(1400)^+\pi^-)/$	Γ _{total}				Г ₉₆ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<1.1 × 10 ⁻³	90	ALBRECHT	91b ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
-(<i>K⁻ a</i> 1(1260) ⁺)/	Γ _{total}				Г ₉₇ /Г
ALUE	<u> </u>	230	<u></u>	COMMENT	
<2.3 × 10 ⁻⁴	90 he followi	²³⁹ ADAM	96D DLPH	$e^+e^- \rightarrow$	Ζ
(3.9×10^{-4})	90	240 ABREU	95N DI PH	Sup by A	DAM 96D
39 ADAM 96D assum	esfa=	$f = 0.39$ and $f_{\rm f}$	= 0.12 (Contribution	s from B^0 and
B_s decays cannot rates for the two n 40 Assumes a B^0 , B^-	be separa eutral <i>B</i> product	ted. Limits are giver mesons. tion fraction of 0.39	for the wei	ghted average	ge of the decay
weighted average o	of the dec	B_s° decays cannot ay rates for the two	be separated neutral <i>B</i> m	i. Limits are esons.	e given for the
⁻ (K*(892) ⁰ K ⁺ K ⁻)/Г _{total}	I			Г ₉₈ /Г
ALUE	<u> </u>	DOCUMENT ID	TECN	COMMENT	
<6.1 × 10	90	ALBRECHT	91E ARG	$e^+e^- \rightarrow$	T(4S)
$(K^*(892)^0\phi)/\Gamma_{tor}$	tal				٦/ وو٦
ALUE	CL%	DOCUMENT ID	TECN	COMMENT	
<2.1 × 10 ⁻⁵	90	²⁴¹ BERGFELD	98 CLE2		
• • We do not use t	he follow	ing data for averages	s, fits, limits,	etc. • • •	
(3.84×10^{-4})	90	²⁴² ABF	00C SLD	$e^+e^- \rightarrow$	7
(4.3×10^{-5})	90	ASNER	96 CLE2	$e^+e^- \rightarrow$	$\Upsilon(4.5)$
(3.2×10^{-4})	90	ALBRECHT	91B ARG	$e^+e^- \rightarrow$	$\Upsilon(45)$
$<3.8 \times 10^{-4}$	00	243 AVERY			$\Upsilon(AS)$
$< 3.0 \times 10^{-4}$	00			e e —	T(+5)
(3.0 × 10 ·	90		of CLEU	$e \cdot e \rightarrow$	1 (43)
⁴¹ Assumes equal pro ⁴² ABE 00C assumes (22 7 + 1.8) 0(duction o $B(Z \rightarrow (10))$	of B^+ and B^0 at the $b \overline{b} = (21.7 \pm 0.1)$ c + 1.8	$\Upsilon(4S).$ 1)% and the	e <i>B</i> fractior	ns $f_{B^0} = f_{B^+} =$
(39.7 - 2.2)% and $(39.7 - 2.2)%$	${}^{t}B_{s} = (10.$	(5 - 2.2)%			-0 - 0
 ⁴³ AVERY 89B report rescale to 50%. ⁴⁴ AVERY 87 reports to 50% 	ts < 4.4 < 4.7 imes 1	$ imes 10^{-4}$ assuming t 0^{-4} assuming the γ	he $~\mathcal{T}(4S)$ d `(4S) decays	ecays 43% t 40% to B ⁰ 7	o B ⁰ B ⁰ . We 3 ⁰ . We rescale
т(<u>К</u> *(892) ⁰ К*(892	2) ⁰)/Г _{to}	otal			Г ₁₀₀ /Г
ALUE	<u> </u>	245 ADE		<u>COMMENT</u>	7
4.09 X 10	90		UUC SLD	$e \cdot e \rightarrow$	۷
$^{49}\mathrm{ABE}$ 00C assumes $(39.7^{+1.8}_{-2.2})\%$ and	$f_{B_s} = (10.$	$(5^{+1.8}_{-2.2})\%$	l)% and th	e <i>B</i> fractior	is $f_{B^0} = f_{B^+} =$
$(K_1(1400)^0 \rho^0) / \Gamma$	total	DOCUMENT ID	TECN	COMMENT	Г ₁₀₁ /Г
~10=3	<u> </u>			$\frac{CONNENT}{2}$	$\mathcal{C}(AC)$
<3.0 × 10 ⁻⁵	90	ALBRECHT	91B ARG	$e \cdot e^- \rightarrow$	1 (45)
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$\Gamma(K_1(1400)^0\phi)/\Gamma_{\rm tot}$	al					Γ ₁₀₂ /Γ
VALUE	CL%	DOCUME	NT ID	TECN	COMME	NT
<5.0 × 10 ⁻³	90	ALBREC	С НТ 91 в	ARG	e^+e^-	$ ightarrow ~ \Upsilon(4S)$
$\Gamma(\kappa_2^*(1430)^0\rho^0)/\Gamma_{\rm to}$	otal					Г ₁₀₃ /Г
VALUE	<u>CL%</u>	DOCUME	NT ID	TECN	<u>COMME</u>	NT
<1.1 × 10 ⁻³	90	ALBREC	С НТ 91 в	ARG	e^+e^-	$ ightarrow ~ \Upsilon(4S)$
$\Gamma(K_2^*(1430)^0\phi)/\Gamma_{tot}$	al					Г ₁₀₄ /Г
VALUE	<u>CL%</u>	<u>DOCUME</u>	NT ID	TECN	COMME	ENT
<1.4 × 10 ⁻³	90	ALBREC	С НТ 91 в	ARG	e^+e^-	$ ightarrow ~ \Upsilon(4S)$
$\Gamma(K^*(892)^0\gamma)/\Gamma_{tota}$	I					Г ₁₀₅ /Г
VALUE (units 10^{-5})	CL% E	/TS	DOCUMENT	ID	TECN	COMMENT
$4.55^{+0.72}_{-0.68}\pm0.34$		246	COAN	00	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
\bullet \bullet \bullet We do not use th	e following	data for av	verages, fits	, limits,	etc. • •	•
< 21	90	247	ADAM	96 D	DLPH	$e^+e^- \rightarrow Z$
$4.0 \ \pm 1.7 \ \pm 0.8$		8 248	AMMAR	93	CLE2	Repl. by COAN 00
< 42	90		ALBRECHT	F 89G	ARG	$e^+e^- \rightarrow \gamma(4S)$
< 24	90	249	AVERY	89 B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
<210	90		AVERY	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
²⁴⁶ Assumes equal produ	uction of B	$+$ and B^0	at the $\Upsilon(4)$	5). No (evidence	for a nonresonant

247 ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$. 248 AMMAR 93 observed 6.6 \pm 2.8 events above background. 249 AVERY 89B reports < 2.8 \times 10⁻⁴ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We

rescale to 50%.

$\Gamma(K_1(1270)^0\gamma)/\Gamma_{\text{total}}$

Γ_{106}/Γ

(±(, ,,,	LULAI				±00/
VALUE		<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<0.0070		90	²⁵⁰ ALBRECHT	89g ARG	$e^+e^- \rightarrow $	$\Upsilon(4S)$
250 ALBREC	нт 80)G_reports <	0.0078 assuming t	he $\Upsilon(4.5)$ de	cavs 45% to	$B^0 \overline{B}^0$. We

rescale to 50%.

$\Gamma(K_1(1400)^0\gamma)/\Gamma_{\text{total}}$ Γ₁₀₇/Γ <u>TECN</u> <u>COMMEN</u>T VALUE DOCUMENT ID CL% 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ²⁵¹ ALBRECHT 90 < 0.0043 251 ALBRECHT 89G reports < 0.0048 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%.

$\Gamma(K_2^*(1430)^0\gamma)$)/Γ _{total}				Г ₁₀₈ /	Γ
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT		
$< 4.0 \times 10^{-4}$	90	²⁵² ALBRECHT	89g ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$	
252 ALBRECHT	89G reports $<$ 4	$1.4 imes10^{-4}$ assuming	the $\Upsilon(4S)$	decays 45%	to $B^0 \overline{B}^0$. V	Ve

rescale to 50%.

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F(V*(1600)0~)/F		Г /Г
	total	109/1
	<u>00</u>	$\frac{253}{\text{ALBRECHT}} = \frac{80}{\text{ABC}} = \frac{1}{253} \frac{1}{\text{ALBRECHT}} = \frac{1}{253} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}$
	50	$A = \frac{1}{2} \left(\frac{1}{2} \right)^{2} \left(\frac{1}{2} \right)^{2$
rescale to 50%.	reports <	0.0022 assuming the $I(43)$ decays 45% to $B^{\circ}B^{\circ}$. We
$\Gamma(K_3^*(1780)^0\gamma)/\Gamma$	total	Г ₁₁₀ /Г
VALUE	<u> </u>	DOCUMENT ID <u>TECN</u> COMMENT
<0.010	90	²⁻³⁴ ALBRECHT 89G ARG $e^+e^- \rightarrow T(4S)$
²⁵⁴ ALBRECHT 89G r to 50%.	reports < 0).011 assuming the $arphi(4S)$ decays 45% to $B^{0}\overline{B}{}^{0}$. We rescale
$\Gamma(\kappa_4^*(2045)^0\gamma)/\Gamma$	total	Г ₁₁₁ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT
<0.0043	90	255 ALBRECHT 89G ARG $e^+e^- ightarrow argama(4S)$
²⁵⁵ ALBRECHT 89G rescale to 50%.	reports $<$	0.0048 assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We
$\Gamma(ho^0\gamma)/\Gamma_{ m total}$		Г ₁₁₂ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT
$<1.7 \times 10^{-5}$	90	²⁵⁰ COAN 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$
²⁵⁶ Assumes equal pro	oduction o	f B^+ and B^0 at the $arphi(4S).$
$\Gamma(\omega\gamma)/\Gamma_{ m total}$		Г ₁₁₃ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT
<0.92 × 10 ⁻⁵	90	²⁵⁷ COAN 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$
²⁵⁷ Assumes equal pro	oduction o	f B^+ and B^0 at the $arphi(4S)$.
${\sf F}ig(\phi\gammaig)/{\sf F}_{\sf total}$		Г ₁₁₄ /Г
VALUE	<u>CL%</u>	DOCUMENT ID TECN COMMENT
<0.33 × 10 ⁻⁵	90	²⁵⁸ COAN 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$
²⁵⁸ Assumes equal pro	oduction o	f B^+ and B^0 at the $arGamma(4S).$
$\Gamma(\pi^+\pi^-)/\Gamma_{total}$		Г ₁₁₅ /Г
VALUE (units 10^{-6})	<u>CL%</u> EV	TS DOCUMENT ID TECN COMMENT
$4.3^{+1.6}_{-1.4}\pm0.5$		259 CRONIN-HEN00 CLE2 $e^+e^- ightarrow argama(4S)$
• • • We do not use	the followi	ng data for averages, fits, limits, etc. $ullet$ $ullet$
< 67	90	260 ABE 00C SLD $e^+e^- \rightarrow Z$
< 15	90	GODANG 98 CLE2 Repl. by CRONIN-
< 45	90	²⁶¹ ADAM 96D DLPH $e^+e^- \rightarrow Z$
< 20	90	ASNER 96 CLE2 Repl. by GO-
< 41	90	
< 55	90	2^{63} ABREU 95N DLPH Sup. by ADAM 96D

 $^{271}\,\rm ACCIARRI$ 95H assumes f_{B^0} = 39.5 \pm 4.0 and f_{B_s} = 12.0 \pm 3.0%.

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 $\Gamma(\eta' \pi^0) / \Gamma_{\text{total}}$ Γ₁₁₉/Γ CL% TECN COMMENT <5.7 × 10⁻⁶ 272 RICHICHI 90 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • • We do not use the following data for averages, fits, limits, etc. • • • $< 1.1 \times 10^{-5}$ 90 BEHRENS 98 CLE2 Repl. by RICHICHI 00 ²⁷² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\eta'\eta')/\Gamma_{\text{total}}$ Γ_{120}/Γ VALUE DOCUMENT ID TECN COMMENT CL% $< 4.7 \times 10^{-5}$ 98 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ 90 **BEHRENS** $\Gamma(\eta'\eta)/\Gamma_{\text{total}}$ Γ_{121}/Γ VALUE DOCUMENT ID CL% TECN COMMENT <2.7 × 10⁻⁵ $e^+e^- \rightarrow \Upsilon(4S)$ 90 98 CLE2 **BEHRENS** $\Gamma(\eta' \rho^0) / \Gamma_{\rm total}$ Γ_{122}/Γ DOCUMENT ID VALUE CL% TECN COMMENT <1.2 × 10⁻⁵ 273 RICHICHI 90 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • • We do not use the following data for averages, fits, limits, etc. • • • $< 2.3 \times 10^{-5}$ 90 98 CLE2 Repl. by RICHICHI 00 BEHRENS ²⁷³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\eta \rho^0) / \Gamma_{\text{total}}$ Γ_{123}/Γ DOCUMENT ID VALUE CL% TECN COMMENT 274 RICHICHI $<1.0 \times 10^{-5}$ $e^+e^- \rightarrow \Upsilon(4S)$ 90 00 CLE2 • • • We do not use the following data for averages, fits, limits, etc. • • • $< 1.3 \times 10^{-5}$ 90 BEHRENS 98 CLE2 Repl. by RICHICHI 00 ²⁷⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\omega\eta)/\Gamma_{\text{total}}$ Γ_{124}/Γ 275 BERGFELD VALUE TECN $< 1.2 \times 10^{-5}$ 90 98 CLE2 275 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\omega \eta') / \Gamma_{\text{total}}$ Γ_{125}/Γ DOCUMENT IDTECN276BERGFELD98CLE2 VALUE <u>CL%</u> $< 6.0 \times 10^{-5}$ 90 ²⁷⁶ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. $\Gamma(\omega \rho^0) / \Gamma_{\text{total}}$ Γ_{126}/Γ <u>DOCUMENT</u> ID VALUE TECN <u>CL%</u> $<1.1 \times 10^{-5}$ 277 BERGFELD 90 98 CLE2 $^{277}\,\text{Assumes}$ equal production of B^+ and B^0 at the $\varUpsilon(4S).$

$\Gamma(\omega\omega)/\Gamma_{ ext{total}}$						Г ₁₂₇ /Г
VALUE	<u>CL%</u>	<u>DOCUMEI</u>	NT ID	TECN		
<1.9 × 10 ⁻⁵	90	²⁷⁸ BERGFE	LD 98	CLE2		
²⁷⁸ Assumes equal proc	duction o	of B^+ and B^0	at the $\Upsilon(4)$	4 <i>S</i>).		
$\Gamma(\phi\pi^0)/\Gamma_{ m total}$						Г ₁₂₈ /Г
VALUE	<u>CL%</u>	<u>DOCUMEI</u>	NT ID	TECN		
$< 0.5 \times 10^{-5}$	90	²⁷⁹ BERGFE	LD 98	CLE2		
²⁷⁹ Assumes equal proc	duction o	of B^+ and B^0	at the $\Upsilon(4)$	1 <i>5</i>).		
$\Gamma(\phi\eta)/\Gamma_{ ext{total}}$						Г ₁₂₉ /Г
VALUE	<u>CL%</u>	<u>DOCUMEI</u>	NT ID	TECN		
<0.9 × 10 ⁻⁵	90	²⁸⁰ BERGFE	LD 98	CLE2		
²⁸⁰ Assumes equal proc	duction o	of B^+ and B^0	at the $\Upsilon(4)$	4 <i>S</i>).		
$\Gamma(\phi\eta')/\Gamma_{total}$						Г ₁₃₀ /Г
VALUE	<u>CL%</u>	<u>DOCUMEI</u>	NT ID	TECN		
<3.1 × 10 ⁻⁵	90	²⁸¹ BERGFE	LD 98	CLE2		
²⁸¹ Assumes equal proc	duction o	of B^+ and B^0	at the $arphi(4)$	4 <i>S</i>).		
$\Gamma(\phi ho^0) / \Gamma_{total}$						Г ₁₃₁ /Г
VALUE	<u>CL%</u>	<u>DOCUMEI</u>	NT ID	TECN	<u>COMMENT</u>	
<1.3 × 10 ⁻⁵	90	²⁸² BERGFE	LD 98	CLE2		
• • • We do not use t	he follow	ing data for av	verages, fits	s, limits,	etc. • • •	
$< 1.56 imes 10^{-4}$	90	²⁸³ ABE	000	SLD	$e^+e^- \rightarrow$	Ζ
²⁸² Assumes equal proc ²⁸³ ABE 00C assumes $(39.7^{+1.8}_{-2.2})\%$ and a	$B(Z - B_s = (10)$	of B^+ and B^0 $\rightarrow b \overline{b} = (21.7)$ $.5^{+1.8}_{-2.2}$	at the $arTau(2\ \pm\ 0.1)\%$	1 <i>S</i>). and the	e <i>B</i> fraction	s $f_{B^0} = f_{B^+} =$
$\Gamma(\phi\omega)/\Gamma_{\rm total}$						Г ₁₃₂ /Г
VALUE	<u>CL%</u>	DOCUME	NT ID	TECN		
<2.1 × 10 ⁻⁵	90	²⁸⁴ BERGFE	LD 98	CLE2		
²⁸⁴ Assumes equal proc	duction o	of B^+ and B^0	at the $\Upsilon(4)$	1 <i>5</i>).		
$\Gamma(\phi\phi)/\Gamma_{ ext{total}}$						Г ₁₃₃ /Г
VALUE	<u>CL%</u>	DOCUME	NT ID	TECN	<u>COMMENT</u>	
$<1.2 \times 10^{-5}$	90	²⁸⁵ BERGFE	LD 98	CLE2		
• • We do not use the	he follow	ing data for av	erages, fits	s, limits,	etc. • • •	
$<3.21 \times 10^{-4}$	90	²⁸⁶ ABE	000	SLD	$e^+e^- \rightarrow$	Z
$<3.9 \times 10^{-5}$	90	ASNER	96	CLE2	$e^+e^- \rightarrow$	T(4S)
²⁸⁵ Assumes equal proc ²⁸⁶ ABE 00C assumes	luction c B(Z —	of B^+ and B^0 $\rightarrow b\overline{b} = (21.7)$	at the $\Upsilon(4)$ \pm 0.1)%	1 <i>S</i>). and the	B fraction	s $f_{D0} = f_{D^{+}} = 1$
$(39.7^{+1.8}_{-2.2})\%$ and a	f _{Bs} =(10	$.5^{+1.8}_{-2.2})\%$.	,			D° R⊥

 $\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{\rm total}$ Γ_{134}/Γ TECN <u>COMMENT</u> ²⁸⁷ ALBRECHT 90b ARG $< 7.2 \times 10^{-4}$ 90 $e^+e^- \rightarrow \Upsilon(4S)$ 287 ALBRECHT 90B limit assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. $\Gamma(\rho^0 \pi^0) / \Gamma_{\text{total}}$ Γ_{135}/Γ VALUE DOCUMENT ID TECN COMMENT CL% ¹⁶⁶ JESSOP <5.5 × 10^{—6} 90 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • • $< 2.4 \times 10^{-5}$ 96 CLE2 90 ASNER Repl. by JESSOP 00 ²⁸⁸ ALBRECHT $< 4.0 \times 10^{-4}$ 90 90b ARG $e^+e^- \rightarrow \Upsilon(4S)$ ²⁸⁸ ALBRECHT 90B limit assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. $\Gamma(\rho^{\mp}\pi^{\pm})/\Gamma_{\text{total}}$ Γ_{136}/Γ VALUE (units 10^{-5}) DOCUMENT ID CL% TECN COMMENT $2.76^{+0.84}_{-0.74}\pm0.42$ ²⁸⁹ JESSOP 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • • We do not use the following data for averages, fits, limits, etc. 90 ASNER 96 CLE2 Repl. by JESSOP 00 < 8.8 ²⁹⁰ ALBRECHT 90b ARG $e^+e^- \rightarrow \Upsilon(4S)$ 90 < 52 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ ²⁹¹ BEBEK 90 <520 ²⁸⁹Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ²⁹⁰ ALBRECHT 90B limit assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. ²⁹¹ BEBEK 87 reports $< 6.1 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%. $\Gamma(\pi^+\pi^-\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{137}/Γ VALUE DOCUMENT ID TECN COMMENT <u>CL%</u> ²⁹² ADAM $<2.3 \times 10^{-4}$ 96D DLPH $e^+e^- \rightarrow Z$ 90 • • We do not use the following data for averages, fits, limits, etc. • ²⁹³ ABREU $< 2.8 \times 10^{-4}$ 90 95N DLPH Sup. by ADAM 96D $< 6.7 \times 10^{-4}$ ²⁹⁴ ALBRECHT 90b ARG $e^+e^- \rightarrow \Upsilon(4S)$ 90 $^{292}\,\mathrm{ADAM}$ 96D assumes $f_{B^0}=f_{B^-}=0.39$ and $f_{B_s}=0.12.$ ²⁹³Assumes a B^0 , B^- production fraction of 0.39 and a B_s production fraction of 0.12. ²⁹⁴ ALBRECHT 90B limit assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. $\Gamma(\rho^0 \rho^0) / \Gamma_{\text{total}}$ Γ_{138}/Γ VALUE CL% DOCUMENT ID TECN COMMENT ²⁹⁵ ABE $<1.36 \times 10^{-4}$ 90 00C SLD Ζ • • We do not use the following data for averages, fits, limits, etc $< 2.8 \times 10^{-4}$ 90 ²⁹⁶ ALBRECHT 90B ARG $e^+e^- \rightarrow \Upsilon(4S)$ ²⁹⁷ BORTOLETTO89 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ $< 2.9 \times 10^{-4}$ 90 ²⁹⁷ BEBEK $<4.3 \times 10^{-4}$ 90 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ ²⁹⁵ABE 00C assumes B(Z $\rightarrow b\overline{b}$)=(21.7 \pm 0.1)% and the B fractions $f_{B^0} = f_{B^+} =$ (39.7 + 1.8) % and $f_{B_c} = (10.5 + 1.8) \%$. ²⁹⁶ ALBRECHT 90B limit assumes equal production of $B^0 \overline{B}{}^0$ and $B^+ B^-$ at $\Upsilon(4S)$. ²⁹⁷ Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%.

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$\Gamma(a_1(1260)^{\mp}\pi^{\pm})/\Gamma_{tc}$	otal				Г ₁₃₉ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<4.9 × 10 ⁻⁺	90 fallaui	²⁹⁰ BORTOLETTO	89 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • • vve do not use the	TOIIOWI	ng data for averages,	tits, limits,		
$< 6.3 \times 10^{-4}$	90	299 ALBRECHT	90B ARG	$e^+e^- \rightarrow + -$	T(4S)
<1.0 × 10 °	90		87 CLEO	$e \cdot e \rightarrow$	1 (43)
²⁹⁹ ALBRECHT 90B limit	(45) de t assum	ecays 43% to B ^o B ^o . nes equal production	We rescale of <i>B⁰ B⁰</i> an	to 50%. Id $B^+ B^-$ a	t $\Upsilon(4S)$.
$\Gamma(a_2(1320)^{\mp}\pi^{\pm})/\Gamma_{tc}$	otal				Г ₁₄₀ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<3.0 × 10 ⁻⁴	90	³⁰⁰ BORTOLETTO	89 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • We do not use the	followi	ng data for averages,	fits, limits,	etc. • • •	
$< 1.4 \times 10^{-3}$	90	³⁰⁰ BEBEK	87 CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
300 Paper assumes the γ	(4 <i>S</i>) de	ecays 43% to $B^0\overline{B}^0$.	We rescale	to 50%.	
$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{\rm tota}$	h				Γ ₁₄₁ /Γ
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<3.1 × 10 ⁻⁵	90	³⁰¹ ALBRECHT	90B ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
³⁰¹ ALBRECHT 90B limi	t assum	nes equal production	of $B^0 \overline{B}{}^0$ an	d B^+B^- a	t $\Upsilon(4S)$.
$\Gamma(\rho^+\rho^-)/\Gamma_{\text{total}}$	CI %	DOCUMENT ID	TECN	COMMENT	Γ ₁₄₂ /Γ
$\sim 2.2 \times 10^{-3}$	00	302 ALBRECHT			$\Upsilon(AS)$
³⁰² ALBRECHT 90B limi	t assum	nes equal production	of $B^0 \overline{B}^0$ and	Ind $B^+ B^-$ as	$\gamma(4.5)$
$\Gamma(a_{1}(1260))^{0} = 0) / \Gamma$		··· · · · · · · · · · · · · · · · · ·			Г /Г
$(a_1(1200)^{\circ}\pi^{\circ})/(tot)$	al	DOCUMENT ID	TECN	COMMENT	· 143/ ·
$\sim 1.1 \times 10^{-3}$	00	303 AL RECUT			$\Upsilon(AS)$
	.90	ALDRECHT			(+3)
	t assum	ies equal production	of B°B° ar	ICI B' B' A	t 7 (45).
$\Gamma(\omega \pi^0) / \Gamma_{total}$					Г ₁₄₄ /Г
VALUE	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<5.5 × 10 ~	90 followi	JESSOP	00 CLE2	$e e \rightarrow$	T(4S)
• • • we do not use the	TOHOWI	304 percenter			
$<1.4 \times 10^{-5}$	90	305 AL PREFELD	98 CLE2	Repl. by Ji	2SOP 00
<4.0 × 10	90			$e \cdot e \rightarrow$	T (43)
³⁰⁵ ALBRECHT 90B limi	ction of t assum	B^{+} and B^{0} at the nes equal production	7 (45). of <i>B⁰ B⁰</i> ar	d B^+B^- a	t Υ(4 <i>S</i>).
$\Gamma(\pi^{+}\pi^{+}\pi^{-}\pi^{-}\pi^{0})/r$					Г1ас /Г
		DOCUMENT ID	TECN	COMMENT	• 145/ •
<9.0 × 10 ⁻³	90	³⁰⁶ ALBRECHT	90B ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
306 AL BRECHT OND Limit	+ 2601m	as equal production	of $B^0 \overline{B}^0$ or	d B+ B- ~	$+ \gamma(\Lambda S)$
ALDINECTTI SUD IIIII	i assull			u D d	(43).

$\Gamma(a_1(1260)^+ \rho^-)/\Gamma_{\star}$	otal			г	146/Г
VALUE	CL%	DOCUMENT ID	TECN	COMMENT	1407 -
<3.4 × 10 ⁻³	90	307 ALBRECHT	90b ARG	$e^+e^- \rightarrow \Upsilon(4S)$	
307 ALBRECHT 90B lim	nit assun	nes equal production	of $B^0 \overline{B}{}^0$ and	d B^+B^- at $\Upsilon(4S)$).
$\Gamma(a_1(1260)^0 ho^0)/\Gamma_{ m to}$	tal			Г	₁₄₇ /Γ
VALUE	<u> </u>	DOCUMENT ID	TECN		
<2.4 × 10 ⁻⁵	90	300 ALBRECHT	90B ARG	$e^+e^- \rightarrow T(4S)$	
³⁰⁸ ALBRECHT 90B lim	nit assun	nes equal production	of $B^{U}B^{U}$ ar	d B^+B^- at $\Upsilon(4S)$).
$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi$	^{.–})/Г _t	otal		Г	₁₄₈ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
$<3.0 \times 10^{-3}$	90	³⁰⁹ ALBRECHT	90b ARG	$e^+e^- \rightarrow \Upsilon(4S)$	
³⁰⁹ ALBRECHT 90B lim	nit assun	nes equal production	of $B^0 \overline{B}^0$ and	d B^+B^- at $\Upsilon(4S)$).
$\Gamma(a_1(1260)^+a_1(126$	D) [_])/Г	total		Г	₁₄₉ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN		
$<2.8 \times 10^{-3}$	90	³¹⁰ BORTOLETT	O89 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	
• • We do not use th	e follow	ing data for averages	s, fits, limits,	etc. • • •	
$< 6.0 \times 10^{-3}$	90	³¹¹ ALBRECHT	90b ARG	$e^+e^- \rightarrow \Upsilon(4S)$	
³¹⁰ BORTOLETTO 89 We rescale to 50%	reports	$< 3.2 imes 10^{-3}$ assum	ning the $arphi(4)$	S) decays 43% to	в ⁰
311 ALBRECHT 90B lim	nit assun	nes equal production	of $B^0 \overline{B}{}^0$ an	d B^+B^- at $arphi(4S)$).
$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi$	· ⁻ π ⁰)/	/F _{total}		Г	₁₅₀ /Г
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT	
<1.1 × 10 ⁻²	90	³¹² ALBRECHT	90b ARG	$e^+e^- ightarrow ~\Upsilon(4S)$	
³¹² ALBRECHT 90B lim	nit assun	nes equal production	of $B^0 \overline{B}{}^0$ and	d B^+B^- at \varUpsilon (4 S).
$\Gamma(p\overline{p})/\Gamma_{total}$				г	151 / Г
VALUE	CL%	DOCUMENT ID	TECN	COMMENT	191/
$< 7.0 \times 10^{-6}$	90	³¹³ COAN	99 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$	
$\bullet \bullet \bullet$ We do not use th	e follow	ing data for averages	s, fits, limits,	etc. • • •	
$< 1.8 imes 10^{-5}$	90	³¹⁴ BUSKULIC	96∨ ALEP	$e^+e^- \rightarrow Z$	
$< 3.5 \times 10^{-4}$	90	³¹⁵ ABREU	95N DLPH	Sup. by ADAM 96	5 D
$< 3.4 \times 10^{-5}$	90	316 BORTOLETTO	O89 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	
$< 1.2 \times 10^{-4}$	90	³¹⁷ ALBRECHT	88F ARG	$e^+e^- \rightarrow \Upsilon(4S)$	
$< 1.7 \times 10^{-4}$	90	³¹⁶ BEBEK	87 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$	
³¹³ Assumes equal prod	uction o	f B^+ and B^0 at the	$\Upsilon(4S).$		
³¹⁴ BUSKULIC 96V assu	umes PE	OG 96 production fra	ctions for B ^C	, B ⁺ , B _s , b baryor	ıs.
315 Assumes a B^0 , B^-	product	ion fraction of 0.39 a	and a B_{s} pro	duction fraction of	0.12.
316 Danor accumes the	$r(\lambda c) d$	$P_{P_{1}} = P_{1} = $		to 50%	

³¹⁶ Paper assumes the $\Upsilon(4S)$ decays 43% to $B^0\overline{B}^0$. We rescale to 50%. ³¹⁷ ALBRECHT 88F reports $< 1.3 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\overline{B}^0$. We rescale to 50%.

$\Gamma(ho \overline{ ho} \pi^+ \pi^-) / \Gamma_{ m total}$							Г ₁₅₂ /Г
VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT	
<2.5	90	318	BEBEK	89	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • • We do not use the	followi	ng d	ata for averages	s, fits	, limits,	etc. • • •	
${<}9.5$ 5.4 ${\pm}1.8{\pm}2.0$	90	319 320	ABREU ALBRECHT	95n 88f	DLPH ARG	Sup. by A $e^+e^- ightarrow$	DAM 96D $\Upsilon(4S)$
³¹⁸ BEBEK 89 reports <	2.9×10^{-10}	ŋ−4	assuming the γ	<u>^(4</u> 5)	decavs	43% to $B^{0}\overline{I}$	$\overline{3}^0$. We rescale
to 50%.				(-)	_		
³¹³ Assumes a B ^o , B ⁻ p ³²⁰ ALBRECHT 88F repo We rescale to 50%.	oroducti orts 6.0	on f ± 2	raction of 0.39 \pm 2.0 \pm 2.2 assum	and a ning 1	the $\Upsilon(4$	oduction frac S) decays 4	15% to $B^0 \overline{B}^0$.
$\Gamma(ho\overline{\Lambda}\pi^{-})/\Gamma_{total}$							Г ₁₅₃ /Г
VALUE	<u>CL%</u>	201	DOCUMENT ID		TECN	COMMENT	
<1.3 × 10 ⁻⁵	90	321	COAN	99	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
• • We do not use the	followi	ng d	ata for averages	s, fits	, limits,	etc. • • •	
$< 1.8 \times 10^{-4}$	90	322	ALBRECHT	88F	ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
 ³²¹ Assumes equal produ ³²² ALBRECHT 88F reported rescale to 50%. 	ction of orts < 2	F B+ 2.0 ×	and B ⁰ at the 10 ⁻⁴ assuming	$\Upsilon(4)$ g the	·S). Υ(4S)	decays 45%	to <i>B⁰ B</i> ⁰ . We
$\Gamma(\overline{\Lambda}\Lambda)/\Gamma_{total}$							Г ₁₅₄ /Г
VALUE	<u>CL%</u>	200	DOCUMENT ID		TECN	COMMENT	
$<3.9 \times 10^{-0}$	90	323	COAN	99	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
³²³ Assumes equal produ	ction of	F B+	and B^0 at the	$\Upsilon(4$	·S).		
$\Gamma(\sqrt{\sqrt{0}}\sqrt{0})/\Gamma_{\text{table}}$							Г155 /Г
	CI %		DOCUMENT ID		TECN	COMMENT	• 155/ •
<0.0015	90	324	BORTOL FTT	089	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4.5)$
³²⁴ BORTOLETTO 89 re	eports <	< 0.0	018 assuming γ	^(4 <i>S</i>)	decays	43% to B ⁰ 7	B ⁰ . We rescale
$\Gamma(\Lambda^{++}\Lambda^{})/\Gamma_{\text{table}}$							Г156/Г
VALUE	CL%		DOCUMENT ID		TECN	COMMENT	- 1507 -
<1.1 × 10 ⁻⁴	90	325	BORTOL FTT	089	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4.5)$
³²⁵ BORTOLETTO 89 rescale to 50%.	eports <	< 1.3	3×10^{-4} assume	ning	$\Upsilon(4S)$ of	decays 43%	to $B^0 \overline{B}^0$. We
$\Gamma(\overline{\Sigma}_{c}^{}\Delta^{++})/\Gamma_{\text{total}}$					TECN	COMMENT	Г ₁₅₇ /Г
<u>value</u>	<u>UL%</u>	326		04		$\frac{COMMENT}{2}$	$\Upsilon(\Lambda S)$
	90			94	$- \pm $		1 (43)
PROCARIO 94 repor	ts < 0.	0012	2 tor $B(\Lambda_{C}^{\prime} \rightarrow$	pK ⁻	$\pi^{+}) =$	= 0.043. We	rescale to our
best value $B(\Lambda_{c}^{+} ightarrow$	$pK^{-}\pi$	·+)	= 0.050.				

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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\Gamma(\overline{\Lambda}_{c}^{-}p\pi^{+}\pi^{-})/\Gamma_{\text{tota}}$	al						Г ₁₅₈ /Г
1.33 ⁺ 0.45 ± 0.37 327 FU 97 CLE2 e ⁺ e ⁻ → T(45) 327 FU 97 uses PDG 96 values of A _c branching fraction. T($\overline{A_c} p$)/ Γ_{total} CLSS DOCUMENT ID 328 FU 97 CLE2 COMMENT (2.1 × 10 ⁻⁴ 90 328 FU 97 CLE2 e ⁺ e ⁻ → T(45) 328 FU 97 uses PDG 96 values of A _c branching ratio. T($\overline{A_c} p \pi^0$)/ Γ_{total} CLSS DOCUMENT ID 329 FU 97 CLE2 COMMENT (329 FU 97 uses PDG 96 values of A _c branching ratio. T($\overline{A_c} p \pi^+ \pi^- \pi^0$)/ Γ_{total} CLSS DOCUMENT ID 329 FU 97 CLE2 COMMENT (4.10) FO 10-3 90 320 FU 97 CLE2 CLE2 COMMENT (5.07 × 10 ⁻³ 90 330 FU 97 CLE2 CLE2 COMMENT (5.07 × 10 ⁻³ 90 330 FU 97 CLE2 CLE2 COMMENT (5.07 × 10 ⁻³ 90 330 FU 97 CLE2 CLE2 COMMENT (5.07 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (7(γ))/ Γ_{total} CLSS DOCUMENT ID TECN COMMENT (2.74 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (2.74 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (2.74 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (2.74 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (7(γ))/ Γ_{total} CLSS DOCUMENT ID TECN COMMENT (2.74 × 10 ⁻³ 90 331 FU 97 CLE2 CLE2 COMMENT (2.74 × 10 ⁻⁵ 90 332 ACCIARRI 951 L3 COMMENT (7(γ))/ Γ_{total} T163/ Γ (7(γ))/ Γ_{total} Test for ΔB = 1 weak neutral current. Allowed by higher-order electroweak interact tions. CLSS DOCUMENT ID TECN COMMENT (3.33 DECGFELD 008 CLE2 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 335 AVERY 896 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 335 AVERY 896 CLE0 e ⁺ e ⁻ → T(45) (2.6 × 10 ⁻⁵ 90 335 AVERY 896 CLE0 e ⁺ e ⁻ → T(45) (2.6 × 10 ⁻⁵ 90 335 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 10 ⁻⁵ 90 337 AVERY 87 CLE0 e ⁺ e ⁻ → T(45) (3.4 × 1	VALUE (units 10^{-3})			DOCUMENT ID		TECN	COMMENT	
³²⁷ FU 97 uses PDG 96 values of Λ_c branching fraction. $\Gamma(\overline{\Lambda_c} p)/\Gamma_{total} \qquad \Gamma_{159}/\Gamma$ $(2.1 \times 10^{-4} 90 328 FU 97 CLE2 e^{+e^{-}} \rightarrow T(4S)$ $\frac{328}{FU} 97 uses PDG 96 values of \Lambda_c branching ratio.\Gamma(\overline{\Lambda_c} p \pi^0)/\Gamma_{total} \qquad \Gamma_{160}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10} \qquad \Gamma_{10}/\Gamma \frac{7}{(160)} \Gamma_{10} \qquad \Gamma_{10} \qquad$	$1.33^{+0.46}_{-0.42}\pm0.37$		327	FU	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{split} & \Gamma(\overline{\Lambda_c} - p)/\Gamma_{\text{total}} & \Gamma_{159}/\Gamma \\ \hline & (2.1 \times 10^{-4} & 90 & 328 \ FU & 97 & \text{CLE2} & e^+ e^- \rightarrow T(45) \\ \hline & (2.1 \times 10^{-4} & 90 & 328 \ FU & 97 & \text{CLE2} & e^+ e^- \rightarrow T(45) \\ \hline & (328 \ FU \ 97 \ \text{uses PDG 96 values of } \Lambda_c \ \text{branching ratio.} \\ \hline & \Gamma(\overline{\Lambda_c} - p\pi^0)/\Gamma_{\text{total}} & \Gamma_{160}/\Gamma \\ \hline & (329 \times 10^{-4} & 90 & 329 \ FU & 97 & \text{CLE2} & e^+ e^- \rightarrow T(45) \\ \hline & (329 \ FU \ 97 \ \text{uses PDG 96 values of } \Lambda_c \ \text{branching ratio.} \\ \hline & (160/\Gamma \\ \hline & (329 \times 10^{-4} & 90 & 329 \ FU & 97 & \text{CLE2} & e^+ e^- \rightarrow T(45) \\ \hline & (329 \ FU \ 97 \ \text{uses PDG 96 values of } \Lambda_c \ \text{branching ratio.} \\ \hline & (\Gamma(\overline{\Lambda_c} - p\pi^+ \pi^- \pi^0)/\Gamma_{\text{total}} & DOCUMENT \ ID & TECN \\ \hline & (330 \ FU \ 97 \ \text{uses PDG 96 values of } \Lambda_c \ \text{branching ratio.} \\ \hline & (\Gamma(\overline{\Lambda_c} - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & DOCUMENT \ ID & TECN \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & DOCUMENT \ ID & TECN \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & DOCUMENT \ ID & TECN \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & DOCUMENT \ ID & TECN \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T162/\Gamma \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - p\pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^+ \pi^-)/\Gamma_{\text{total}} & T163/\Gamma \\ \hline & (\Lambda_c - \pi^+ \pi^- \pi^- \pi^+ \pi^- \pi^- \pi^+ \pi^- \pi^- \pi^+ \pi^- \pi^- \pi^+ \pi^- \pi^+ \pi^- \pi^- \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^-$	³²⁷ FU 97 uses PDG 96	values o	of Λ_c	branching frac	tion.			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\Gamma(\overline{\Lambda}_{c}^{-}p)/\Gamma_{\text{total}}$							Г ₁₅₉ /Г
(2.1 × 10⁻⁴ 90 3 ²⁰ FU 97 CLE2 e ⁺ e ⁻ → γ(45) 3 ²⁸ FU 97 uses PDG 96 values of Λ _c branching ratio. (Γ(Λ_c⁻ ρπ⁰)/Γ_{total} (CLS) (CLS)	VALUE	<u>CL%</u>	220	DOCUMENT ID		TECN	COMMENT	
³²⁸ FU 97 uses PDG 96 values of Λ _c branching ratio. $\Gamma(\overline{\Lambda_c} p \pi^0)/\Gamma_{total} \qquad \Gamma_{160}/\Gamma$ $\frac{T_{160}}{\sqrt{LUE}} \qquad CL\% \qquad DOCUMENT ID \qquad TECN \qquad COMMENT$ $\frac{CL\%}{\sqrt{5.9 \times 10^{-4}}} \qquad 90 \qquad 329 FU \qquad 97 \qquad CLE2 \qquad e^+ e^- \rightarrow \Upsilon(4S)$ $\frac{329}{50} FU 97 \text{ uses PDG 96 values of Λ_c branching ratio.}$ $\Gamma(\overline{\Lambda_c} p \pi^+ \pi^- \pi^0)/\Gamma_{total} \qquad \Gamma_{161}/\Gamma$ $\frac{T_{161}}{\sqrt{1}} \qquad T_{161}/\Gamma \qquad T_{161}/\Gamma$ $\frac{T_{161}}{\sqrt{1}} \qquad T_{161}/\Gamma \qquad T_{161}/$	<2.1 × 10 ⁻⁴	90	328	FU	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{split} & \Gamma(\overline{\lambda_c} \ \rho \pi^0) / \Gamma_{\text{total}} & \Gamma_{160} / \Gamma_{10} \\ & \begin{array}{c} \hline P\pi^0 \\ \hline P\mu^0 \\ \hline Ph^0 $	³²⁸ FU 97 uses PDG 96	values o	of Λ_c	branching ratio) .			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\Gamma(\overline{\Lambda}_{c}^{-} \rho \pi^{0}) / \Gamma_{\text{total}}$							Г ₁₆₀ /Г
<5.9 × 10⁻⁴ 90 ³²⁹ FU 97 CLE2 e ⁺ e ⁻ → T(45) ³²⁹ FU 97 uses PDG 96 values of Λ _c branching ratio. Γ ($\overline{\Lambda}_{c}^{-} p \pi^{+} \pi^{-} \pi^{0}$)/ Γ total CLE2 $e^{+}e^{-} → T(45)$ CLE3 $e^{+}e^{-} → T(45)$ CLE3 $e^{+}e^{-} → T(45)$ CLE4 $e^{+}e^{-} → T(45)$ CLE5 $e^{+}e^{-} → T(45)$ CLE6 $e^{+}e^{-} → T(45)$ CLE7 $e^{+}e^{-} → T(45)$ CLE8 $e^{+}e^{-} → T(45)$ CLE9 $e^{+}e^{-} \to T(45)$ CLE9	VALUE	<u>CL%</u>		DOCUMENT ID		TECN	COMMENT	
³²⁹ FU 97 uses PDG 96 values of Λ _c branching ratio.	<5.9 × 10 ⁻⁴	90	329	FU	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{split} & \Gamma(\overline{A}_{c}^{-}\rho\pi^{+}\pi^{-}\pi^{0})/\Gamma_{total} & \Gamma_{161}/\Gamma \\ \hline \begin{array}{c} Value & (L\%) \\ (S.07 \times 10^{-3} & 90 & 330 \ FU & 97 \ CLE2 & (COMMENT) \\ (S.07 \times 10^{-3} & 90 & 330 \ FU & 97 \ CLE2 & (e^{+}e^{-} \rightarrow \Upsilon(4S)) \\ \hline \begin{array}{c} 330 \ FU & 97 \ uses \ PDG \ 96 \ values \ of \ \Lambda_{c} \ branching \ ratio. \\ \hline \begin{array}{c} \Gamma(\overline{A}_{c}^{-}\rho\pi^{+}\pi^{-}\pi^{+}\pi^{-})/\Gamma_{total} & \Gamma_{162}/\Gamma \\ \hline \begin{array}{c} Value & (L\%) & (2L\%) & (2L\%$	³²⁹ FU 97 uses PDG 96	values o	of Λ_c	branching ratio) .			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\Gamma(\overline{\Lambda}_{c}^{-} ho\pi^{+}\pi^{-}\pi^{0})/\Gamma$	total						Г ₁₆₁ /Г
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	VALUE	<u>CL%</u>		DOCUMENT ID		TECN	COMMENT	
³³⁰ FU 97 uses PDG 96 values of Λ _c branching ratio.	<5.07 × 10 ⁻³	90	330	FU	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{split} & \Gamma(\overline{\Lambda_c} p \pi^+ \pi^- \pi^+ \pi^-) / \Gamma_{\text{total}} & \Gamma_{162} / \Gamma_{12} \\ \hline \chi_{ALUE} & \underline{\zeta L\%} & \underline{DOCUMENT \ ID} & \underline{TECN} & \underline{COMMENT} \\ \hline \langle 2.74 \times 10^{-3} & 90 & 331 \ FU & 97 \ CLE2 & e^+ e^- \rightarrow \Upsilon(4S) \\ \hline 3^{31} FU \ 97 \ uses PDG \ 96 \ values of \ \Lambda_c \ branching \ ratio. \\ \hline T(\gamma \gamma) / \Gamma_{\text{total}} & \Gamma_{163} / \Gamma_{13} \\ \hline \chi_{ALUE} & \underline{\zeta L\%} & \underline{DOCUMENT \ ID} & \underline{TECN} & \underline{COMMENT} \\ \hline \langle 3.9 \times 10^{-5} & 90 & 332 \ ACCIARRI \ 951 \ L3 & e^+ e^- \rightarrow Z \\ \hline 3^{32} \ ACCIARRI \ 951 \ assumes \ f_{B^0} = 39.5 \pm 4.0 \ and \ f_{B_s} = 12.0 \pm 3.0\%. \\ \hline T(e^+ e^-) / \Gamma_{\text{total}} & \Gamma_{164} / \Gamma_{17} \\ \hline Test \ for \ \Delta B = 1 \ weak \ neutral \ current. \ Allowed \ by \ higher-order \ electroweak \ interactions. \\ \hline \chi_{ALUE} & \underline{\zeta L\%} & \underline{DOCUMENT \ ID} & \underline{TECN} & \underline{COMMENT} \\ \hline \langle 8.3 \times 10^{-7} & 90 & 333 \ BERGFELD \ 00B \ CLE2 & e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \bullet \bullet We \ do \ not \ use \ the \ following \ data \ for \ averages, \ fits, \ limits, \ etc. \ \bullet \bullet \\ \hline \langle 1.4 \times 10^{-5} & 90 & 334 \ ACCIARRI \ 97B \ L3 & e^+ e^- \rightarrow Z \\ \hline \langle 5.9 \times 10^{-6} & 90 & AMMAR \ 94 \ CLE2 \ Repl. \ by \\ \hline \langle 2.6 \times 10^{-5} & 90 & 335 \ AVERY \ 89B \ CLEO \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 7.6 \times 10^{-5} & 90 & 337 \ AVERY \ 89B \ CLEO \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87D \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 3.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon(4S) \\ \hline \langle 5.4 \times 10^{-5} & 90 & 337 \ AVERY \ 87C \ CLE0 \ e^+ e^- \rightarrow \Upsilon$	³³⁰ FU 97 uses PDG 96	values o	of Λ_c	branching ratio) .			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\Gamma(\overline{\Lambda}^{-}_{a}p\pi^{+}\pi^{-}\pi^{+}\pi^{-}$)/ _{tota}	al					Г ₁₆₂ /Г
$< 2.74 \times 10^{-3}$ 90 331 FU 97 $CLE2$ $e^+e^- \rightarrow \Upsilon(4S)$ Basis FU 97 uses PDG 96 values of Λ_c branching ratio. $\Gamma(\gamma\gamma)/\Gamma_{total}$ Γ_{163}/Γ $XALUE$ $CL\%$ $DOCUMENT ID$ $TECN$ $COMMENT$ $< 3.9 \times 10^{-5}$ 90 332 $ACCIARRI$ 951 $L3$ $e^+e^- \rightarrow Z$ 332 ACCIARRI 951 assumes $f_{B0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. Γ_{164}/Γ Γ_{164}/Γ Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions. $VALUE$ $CL\%$ $DOCUMENT ID$ $TECN$ $COMMENT$ $< 8.3 \times 10^{-7}$ 90 333 $BERGFELD$ 008 $CLE2$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 4.4 \times 10^{-5}$ 90 334 $ACCIARRI$ $97B$ $L3$ $e^+e^- \rightarrow Z$ $< 5.9 \times 10^{-6}$ 90 334 $ACCIARRI$ $97B$ $L3$ $e^+e^- \rightarrow Z$ $< 6.6 \times 10^{-5}$ 90 334 $ACCIARRI$ $97B$ $L3$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 2.6 \times 10^{-5}$ 90 335 $AVERY$ $89B$ $CLE0$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 2.6 \times 10^{-5}$ 90 335 $AVERY$ $89B$ $CLE0$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 2.6 \times 10^{-5}$ 90 335 $AVERY$ $89B$ $CLE0$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 3.6 \times 10^{-5}$ 90 337 $AVERY$ 87 $CLE0$ $e^+e^- \rightarrow \Upsilon(4S)$ $< 3.6 \times 10^{-5}$ 90	VALUE	<u>CL%</u>		DOCUMENT ID		TECN	<u>COMMENT</u>	,
³³¹ FU 97 uses PDG 96 values of Λ _c branching ratio. $\Gamma(\gamma \gamma)/\Gamma_{total} \qquad \Gamma_{163}/\Gamma$ $\xrightarrow{VALUE} & CL\% & DOCUMENT ID & TECN & COMMENT \\ \hline <3.9 × 10^{-5} & 90 & 332 \text{ ACCIARRI} & 951 & L3 & e^+e^- \rightarrow Z \\ \hline 332 \text{ ACCIARRI 951 assumes } f_{B0} = 39.5 \pm 4.0 \text{ and } f_{B_s} = 12.0 \pm 3.0\%.$ $\Gamma(e^+e^-)/\Gamma_{total} \qquad \Gamma_{164}/\Gamma$ Test for ΔB = 1 weak neutral current. Allowed by higher-order electroweak interactions. $VALUE & CL\% & DOCUMENT ID & TECN & COMMENT \\ \hline <8.3 × 10^{-7} & 90 & 333 \text{ BERGFELD} & 00B \text{ CLE2} & e^+e^- \rightarrow \Upsilon(4S) \\ \bullet \bullet \text{ We do not use the following data for averages, fits, limits, etc. • • • \\ <1.4 × 10^{-5} & 90 & 334 \text{ ACCIARRI} & 97B L3 & e^+e^- \rightarrow Z \\ <5.9 × 10^{-6} & 90 & AMMAR & 94 & \text{CLE2} & \text{Repl. by} \\ ≥2.6 × 10^{-5} & 90 & 335 \text{ AVERY} & 89B \text{ CLEO} & e^+e^- \rightarrow \Upsilon(4S) \\ <7.6 × 10^{-5} & 90 & 337 \text{ AVERY} & 87 & \text{CLEO} & e^+e^- \rightarrow \Upsilon(4S) \\ <3 × 10^{-4} & 90 & \text{GILES} & 84 & \text{CLEO} & \text{Repl. by AVERY 87} \\ 333 \text{ Assumes equal production of } B^+ \text{ and } B^0 \text{ at the } \Upsilon(4S). \\ 334 \text{ ACCIARRI 97B assume PDG 96 production fractions for } B^+ B^0, B, \text{ and } Λ_L. \\ \end{cases}$	<2.74 × 10 ⁻³	90	331	FU	97	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	³³¹ FU 97 uses PDG 96	values o	of Λ_c	branching ratio) .			
$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} $	$\Gamma(\gamma\gamma)/\Gamma_{total}$							Г ₁₆₃ /Г
<. 3 ³² ACCIARRI 951 L3 $e^+e^- \rightarrow Z$ 3 ³² ACCIARRI 951 assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. T (e^+e^-)/ F _{total} F ₁₆₄ / F Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions. VALUE <u>CL%</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u> <8.3 × 10 ⁻⁷ 90 333 BERGFELD 00B CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • • < $(1.4 \times 10^{-5} 90 334 \text{ ACCIARRI} 97B \text{ L3} e^+e^- \rightarrow Z$ < $(5.9 \times 10^{-6} 90 \text{ AMMAR} 94 \text{ CLE2} \text{ Repl. by}$ BERGFELD 00B < $(2.6 \times 10^{-5} 90 335 \text{ AVERY} 89B \text{ CLEO} e^+e^- \rightarrow \Upsilon(4S)$ < $(-6.4 \times 10^{-5} 90 337 \text{ AVERY} 877 \text{ CLEO} e^+e^- \rightarrow \Upsilon(4S)$ < $(-6.4 \times 10^{-5} 90 337 \text{ AVERY} 877 \text{ CLEO} e^+e^- \rightarrow \Upsilon(4S)$ < $(-6.4 \times 10^{-5} 90 337 \text{ AVERY} 877 \text{ CLEO} e^+e^- \rightarrow \Upsilon(4S)$ 3 ³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. 3 ³³ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{-1} and Λ_{L} .	VALUE	CL%		DOCUMENT ID		TECN	COMMENT	1007
ACCIARRI 951 assumes $f_{B^0} = 39.5 \pm 4.0$ and $f_{B_s} = 12.0 \pm 3.0\%$. $\begin{aligned} & \Gamma(e^+e^-)/\Gamma_{total} & \Gamma_{164}/\Gamma \\ & \text{Test for } \Delta B = 1 \text{ weak neutral current. Allowed by higher-order electroweak interactions.} \\ \hline & \text{VALUE} & CL\% & DOCUMENT ID & TECN & COMMENT \\ \hline & \text{<8.3 $\times 10^{-7}} & 90 & 333 \text{ BERGFELD} & 00B \text{ CLE2} & e^+e^- \rightarrow \Upsilon(4S) \\ \hline & \bullet \text{ We do not use the following data for averages, fits, limits, etc. } \bullet \bullet \\ \hline & \text{<1.4 $\times 10^{-5}} & 90 & 334 \text{ ACCIARRI} & 97B \text{ L3} & e^+e^- \rightarrow Z \\ \hline & \text{<5.9 $\times 10^{-6}} & 90 & AMMAR & 94 & \text{CLE2} & \text{Repl. by} \\ \hline & \text{BERGFELD} & 00B \\ \hline & \text{<2.6 $\times 10^{-5}} & 90 & 335 \text{ AVERY} & 89B \text{ CLEO} & e^+e^- \rightarrow \Upsilon(4S) \\ \hline & \text{<7.6 $\times 10^{-5}} & 90 & 336 \text{ ALBRECHT} & 87D \text{ ARG} & e^+e^- \rightarrow \Upsilon(4S) \\ \hline & \text{<6.4 $\times 10^{-5}} & 90 & 337 \text{ AVERY} & 87 & \text{CLEO} & e^+e^- \rightarrow \Upsilon(4S) \\ \hline & \text{<3 $\times 10^{-4}$} & 90 & \text{GILES} & 84 & \text{CLEO} & \text{Repl. by AVERY 87} \\ \hline & \text{333} \text{ Assumes equal production of } B^+ \text{ and } B^0 \text{ at the } \Upsilon(4S). \\ \hline & \text{34} \text{ ACCIARRI 97B assume PDG 96 production fractions for } B^+ B^0 B \text{ and } \Lambda_L. \end{aligned}$	<3.9 × 10 ⁻⁵	90	332	ACCIARRI	95ı	L3	$e^+e^- \rightarrow$	Ζ
$\Gamma(e^+e^-)/\Gamma_{total} \qquad \Gamma_{164}/\Gamma$ Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interactions. VALUE $CL\%$ $DOCUMENT ID$ $TECN$ $COMMENT$ <8.3 × 10 ⁻⁷ 90 333 BERGFELD 00B CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ••• We do not use the following data for averages, fits, limits, etc. ••• <1.4 × 10 ⁻⁵ 90 334 ACCIARRI 97B L3 $e^+e^- \rightarrow Z$ <5.9 × 10 ⁻⁶ 90 AMMAR 94 CLE2 Repl. by BERGFELD 00B <2.6 × 10 ⁻⁵ 90 335 AVERY 89B CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <7.6 × 10 ⁻⁵ 90 336 ALBRECHT 87D ARG $e^+e^- \rightarrow \Upsilon(4S)$ <6.4 × 10 ⁻⁵ 90 337 AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <6.4 × 10 ⁻⁵ 90 337 AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <3 × 10 ⁻⁴ 90 GILES 84 CLEO Repl. by AVERY 87 ³³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{e^-} and Λ_{b^-}	³³² ACCIARRI 951 assur	nes f _B 0	= 39	0.5 ± 4.0 and f_{I}	_ عر =	12.0 \pm	3.0%.	
Test for $\Delta B = 1$ weak neutral current. Allowed by higher-order electroweak interac- tions. <u>VALUE</u> <u>CL%</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u> <8.3 × 10⁻⁷ 90 333 BERGFELD 00B CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • • <1.4 × 10 ⁻⁵ 90 334 ACCIARRI 97B L3 $e^+e^- \rightarrow Z$ <5.9 × 10 ⁻⁶ 90 AMMAR 94 CLE2 Repl. by BERGFELD 00B <2.6 × 10 ⁻⁵ 90 335 AVERY 89B CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <7.6 × 10 ⁻⁵ 90 336 ALBRECHT 87D ARG $e^+e^- \rightarrow \Upsilon(4S)$ <6.4 × 10 ⁻⁵ 90 337 AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <3 × 10 ⁻⁴ 90 GILES 84 CLEO Repl. by AVERY 87 ³³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{-1} and Λ_{+1} .	$\Gamma(e^+e^-)/\Gamma_{total}$							[164/ [
tions. <u>VALUE</u> CL% DOCUMENT ID TECN COMMENT e +e ⁻ $\rightarrow \Upsilon(4S)$ COMMENT e +e ⁻ $\rightarrow \Upsilon(4S)$ COMMENT CLEO e +e ⁻ $\rightarrow \Upsilon(4S)$ CLEO e +e ⁻ $\rightarrow \Upsilon(4S)$ CLEO CLEO E +e ⁻ $\rightarrow \Upsilon(4S)$ CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO CLEO	Test for $\Delta B = 1$	weak ne	eutral	current. Allow	ed by	/ higher-	order electr	oweak interac-
 <8.3 × 10⁻⁷ 90 333 BERGFELD 00B CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ • • We do not use the following data for averages, fits, limits, etc. • • • <1.4 × 10⁻⁵ 90 90 334 ACCIARRI 97B L3 $e^+e^- \rightarrow Z$ (LE2 Repl. by BERGFELD 00B $e^+e^- \rightarrow \Upsilon(4S)$ <2.6 × 10⁻⁵ 90 $<2.6 \times 10^{-5}$ 90 <335 AVERY <336 ALBRECHT $87D$ ARG $e^+e^- \rightarrow \Upsilon(4S)$ $<10^{-5}$ 90 $<10^{-5}$ 90 337 AVERY $<10^{-5}$ 90 $<10^{-5}$ $<10^{-5}$ 90 $<10^{-5}$ 90 $<10^{-5}$ 90 $<10^{-5}$ $<10^$	tions.	CL 0/				TECN	CONANACNIT	
• • We do not use the following data for averages, fits, limits, etc. • • • <1.4 × 10 ⁻⁵ 90 334 ACCIARRI 97B L3 $e^+e^- \rightarrow Z$ <5.9 × 10 ⁻⁶ 90 AMMAR 94 CLE2 Repl. by BERGFELD 00B <2.6 × 10 ⁻⁵ 90 335 AVERY 89B CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <7.6 × 10 ⁻⁵ 90 336 ALBRECHT 87D ARG $e^+e^- \rightarrow \Upsilon(4S)$ <6.4 × 10 ⁻⁵ 90 337 AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ <3 × 10 ⁻⁴ 90 GILES 84 CLEO Repl. by AVERY 87 ³³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{-1} and Λ_{+1} .	VALUE	<u> </u>	333		005		<u>COMMENT</u>	$\tilde{c}(AC)$
(1.4 × 10 ⁻⁵) 90 334 ACCIARRI 97B L3 $e^+e^- \rightarrow Z$ (5.9 × 10 ⁻⁶) 90 AMMAR 94 CLE2 Repl. by BERGFELD 00B (2.6 × 10 ⁻⁵) 90 335 AVERY 89B CLEO $e^+e^- \rightarrow \Upsilon(4S)$ (7.6 × 10 ⁻⁵) 90 336 ALBRECHT 87D ARG $e^+e^- \rightarrow \Upsilon(4S)$ (6.4 × 10 ⁻⁵) 90 337 AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ (3 × 10 ⁻⁴) 90 GILES 84 CLEO Repl. by AVERY 87 (333 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. (334 ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{a} , and Λ_{b} .		90 o followi	لہ مم	BERGFELD	UUB	CLE2	$e \cdot e \rightarrow$	1 (45)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	• • • vve do not use th		ng d∶ ∧ san	ata for averages	s, rits	, mnits,		-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$<1.4 \times 10^{-5}$	90	554	ACCIARRI	97B	L3	$e^{+}e^{-} \rightarrow$	Z
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	<5.9 × 10 °	90		AMMAR	94	CLE2	Repl. by BFRGF	ELD 00B
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$< 2.6 \times 10^{-5}$	90	335	AVERY	89 B	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$< 7.6 \times 10^{-5}$	90	336	ALBRECHT	87 D	ARG	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$<3 \times 10^{-4}$ 90 GILES 84 CLEO Repl. by AVERY 87 ³³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_{2} , and Λ_{4} .	$< 6.4 \times 10^{-5}$	90	337	AVERY	87	CLEO	$e^+e^- \rightarrow$	$\Upsilon(4S)$
³³³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. ³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B_2 , and Λ_{L_2} .	$< 3 \times 10^{-4}$	90		GILES	84	CLEO	Repl. by A	VERY 87
³³⁴ ACCIARRI 97B assume PDG 96 production fractions for B^+ . B^0 . B . and Λ_{L} .	³³³ Assumes equal prod	uction o	f <i>B</i> +	and B^0 at the	Υ(4	<i>S</i>).		
	334 ACCIARRI 97B assu	me PDC	5 96 i	production fract	ions	for B^+ .	B ⁰ , B ₋ , an	d Λ_{h} .

³³⁵ AVERY 89B reports $< 3 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B}^0$. We rescale to 50%.

³³⁶ ALBRECHT 87D reports $< 8.5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \overline{B}^0$. We rescale to 50%.

 337 AVERY 87 reports $< 8 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale to 50%.

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$				Г ₁₆₅ /Г
Test for $\Delta B=1$ v	veak nei	utral current. Allow	ed by higher	-order electroweak interac-
tions.				
VALUE	<u>CL%</u>	DOCUMENT ID	TECN	COMMENT
<6.1 × 10 ⁻⁷	90	³³⁸ BERGFELD	00B CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
$\bullet \bullet \bullet$ We do not use the	followir	ng data for averages	, fits, limits,	etc. • • •
$< 4.0 \times 10^{-5}$	90	ABBOTT	98b D0	<i>р</i> р 1.8 ТеV
$< 6.8 \times 10^{-7}$	90	³³⁹ ABE	98 CDF	<i>р</i> рат 1.8 ТеV
$< 1.0 \times 10^{-5}$	90	³⁴⁰ ACCIARRI	97B L3	$e^+e^- \rightarrow Z$
$< 1.6 \times 10^{-6}$	90	³⁴¹ ABE	96l CDF	Repl. by ABE 98
6	~ ~			\perp – $\alpha(\cdot, \alpha)$

$< 5.9 \times 10^{-6}$	90	AMMAR	94 CLE2	$e^+e^- \rightarrow \Upsilon(4S)$
$< 8.3 \times 10^{-6}$	90	³⁴² ALBAJAR	91c UA1	$E_{cm}^{p\overline{p}}$ = 630 GeV
$< 1.2 \times 10^{-5}$	90	³⁴³ ALBAJAR	91c UA1	$E_{cm}^{p\overline{p}}$ = 630 GeV
$< 4.3 \times 10^{-5}$	90	³⁴⁴ AVERY	89b CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$< 4.5 \times 10^{-5}$	90	³⁴⁵ ALBRECHT	87d ARG	$e^+e^- \rightarrow \Upsilon(4S)$
$< 7.7 \times 10^{-5}$	90	³⁴⁶ AVERY	87 CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
$<2 \times 10^{-4}$	90	GILES	84 CLEO	Repl by AVERY 8

 $^{338}\,\text{Assumes}$ equal production of B^+ and B^0 at the $\varUpsilon(4S).$

³³⁹ABE 98 assumes production of $\sigma(B^0) = \sigma(B^+)$ and $\sigma(B_s)/\sigma(B^0) = 1/3$. They normalize to their measured $\sigma(B^0, p_T(B) > 6, |y| < 1.0) = 2.39 \pm 0.32 \pm 0.44 \,\mu b$.

³⁴⁰ ACCIARRI 97B assume PDG 96 production fractions for B^+ , B^0 , B_s , and Λ_h .

 341 ABE 96L assumes equal B^0 and B^+ production. They normalize to their measured $\sigma(B^+, p_T(B) > 6 \text{ GeV}/c, |y| < 1) = 2.39 \pm 0.54 \,\mu\text{b}.$

 $^{342}B^{0}$ and B^{0}_{s} are not separated.

³⁴³Obtained from unseparated B^0 and B^0_s measurement by assuming a $B^0:B^0_s$ ratio 2:1.

³⁴⁴ AVERY 89B reports $< 5 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \overline{B^0}$. We rescale to 50%.

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

³⁴⁶ AVERY 87 reports $< 9 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale to 50%.

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

Γ_{166}/Γ

87

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

VALUE CL% DOCUMENT ID TECN COM <3.0 × 10⁻⁴ 90 91E ARG $e^+e^- \rightarrow \Upsilon(4S)$ ALBRECHT • • We do not use the following data for averages, fits, limits, etc. • $< 5.2 \times 10^{-4}$ 90 ³⁴⁷ AVERY 87 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ ³⁴⁷ AVERY 87 reports $< 6.5 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \overline{B}^0$. We rescale

to 50%.

$\frac{\Gamma(K^{\circ} \mu^{+} \mu^{-})}{\Gamma \text{ total}}$ Test for $\Delta B = 1$ w	veak neutra	al current. Allow	ed by	higher-	order electroweal	Γ ₁₆₇ /Γ
tions. <u>VALUE</u>	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<3.6 × 10 ⁻⁴ • • • We do not use the	90 34 following	^{.8} AVERY data for averages	87 , fits,	CLEO , limits,	$e^+e^- \rightarrow \Upsilon(43)$ etc. $\bullet \bullet \bullet$	5)
$< 5.2 \times 10^{-4}$	90	ALBRECHT	91E	ARG	$e^+e^- \rightarrow \Upsilon(43)$	5)
$\frac{348}{to}$ AVERY 87 reports $<$ to 50%.	4.5×10^{-4}	4 assuming the γ	(45)	decays	40% to B ⁰ B ⁰ . W	/e rescale
$\Gamma(K^*(892)^0 e^+ e^-)/\Gamma$ Test for $\Delta B = 1$ w	- total eak neutra	al current.				Г ₁₆₈ /Г
<u>VALUE</u>	<u>CL%</u>	DOCUMENT ID	01	<u>TECN</u>	$\frac{COMMENT}{a^+a^-} \rightarrow \Upsilon(A)$	5)
	90	ALDICECTT	91L	ANG	$e^{+}e^{-} \rightarrow 1(+,$	
$\Gamma(K^*(892)^{\circ}\mu^+\mu^-)/I$ Test for $\Delta B = 1$ w VALUE	total eak neutra <i>CL%</i>	al current. DOCUMENT ID		TECN	COMMENT	Г ₁₆₉ /Г
<4.0 × 10 ⁻⁶	90 34	⁹ AFFOLDER	99 B	CDF	<i>p</i> p at 1.8 TeV	
• • We do not use the	following	data for averages	, fits,	, limits,	etc. ● ● ●	
$<2.5 \times 10^{-5}$	90 55	ABE	96L	CDF	Repl. by AF- FOLDER 99E	5
$<\!\!2.3 imes10^{-5}$	90 35	¹ ALBAJAR	91 C	UA1	$E_{\rm cm}^{p\overline{p}} = 630 {\rm GeV}$	
$< 3.4 \times 10^{-4}$	90	ALBRECHT	91E	ARG	$e^+e^- \rightarrow \Upsilon(43)$	5)
³⁵¹ ALBAJAR 91C assum $\Gamma(K^*(892)^0 \nu \overline{\nu})/\Gamma_{\text{tot}}$	es 36% of	\overline{b} quarks give B^{C}) mes	sons.		
Test for $\Delta B = 1$ w	eak neutra	al current.		TECH		I 170/I
Test for $\Delta B = 1$ w <u>VALUE</u>	eak neutra <u>CL%</u> 00 35	al current. <u>DOCUMENT ID</u> 2 ADAM	060	<u>TECN</u>	$\frac{COMMENT}{c^+ c^-} > 7$	170/1
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes	eak neutra <u>CL%</u> 90 35	² ADAM	96D — 0	<u>TECN</u> DLPH	$\frac{COMMENT}{e^+ e^- \rightarrow Z}$	170/1
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$	$f_{B0}^{all} = f_{B^{-}}^{cl\%}$	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39$ and f_{B_s}	96D = 0	<u>TECN</u> DLPH .12.	$\frac{COMMENT}{e^+e^- \rightarrow Z}$	Γ ₁₇₁ /Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{total}$ Test of lepton fami	eak neutra $\frac{CL\%}{90}$ 35 $f_{B^0} = f_{B^-}$ ly number	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39$ and f_{B_s} conservation.	96D = 0	<u>TECN</u> DLPH .12.	$\frac{COMMENT}{e^+e^- \rightarrow Z}$	Γ ₁₇₁ /Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷	reak neutra $\frac{CL\%}{90}$ 35 $f_{B0} = f_{B^{-1}}$ ly number $\frac{CL\%}{90}$ 35	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39 \text{ and } f_{B_s}$ conservation. <u>DOCUMENT ID</u> ³ REPORT ID	96D = 0	<u>TECN</u> DLPH .12. <u>TECN</u>	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(A)}$	Γ ₁₇₀ /Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the	reak neutra $\frac{CL\%}{90}$ 35 $f_{B0} = f_{B^{-1}}$ ly number $\frac{CL\%}{90}$ 35 following	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39 \text{ and } f_{B_s}$ conservation. <u>DOCUMENT ID</u> ³ BERGFELD data for averages	96D = 0 00B	<u>TECN</u> DLPH .12. <u>TECN</u> CLE2 , limits,	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4.5)}$ etc. • • •	Γ₁₇₁/Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶	eak neutra $\frac{CL\%}{90}$ 35 $f_{B^0} = f_{B^-}$ ly number $\frac{CL\%}{90}$ 35 following 90	al current. <u>DOCUMENT ID</u> ² ADAM $= 0.39 \text{ and } f_{B_s}$ conservation. <u>DOCUMENT ID</u> ³ BERGFELD data for averages ABE	96D = 0 00B 5, fits 98V	<u>TECN</u> DLPH .12. <u>TECN</u> CLE2 , limits, CDF	$\frac{COMMENT}{e^+ e^- \rightarrow Z}$ $\frac{COMMENT}{e^+ e^- \rightarrow \Upsilon(43)}$ etc. ••• $p\overline{p} \text{ at } 1.8 \text{ TeV}$	Γ ₁₇₀ /Γ Γ ₁₇₁ /Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ ••• a 10 ⁻⁶	eak neutra $\frac{CL\%}{90}$ 35 $f_{B0} = f_{B^{-1}}$ ly number $\frac{CL\%}{90}$ 35 following 90 90 35 90 35	al current. DOCUMENT ID ² ADAM $= 0.39$ and f_{B_s} conservation. <u>DOCUMENT ID</u> ³ BERGFELD data for averages ABE ⁴ ACCIARRI	96D = 0 00B , fits, 98V 97B	<u>TECN</u> DLPH .12. <u>TECN</u> CLE2 , limits, CDF L3	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(43)}$ etc. • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $+$	Γ₁₇₁/Γ 5)
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ < 5.9 × 10 ⁻⁶ < 2.4 × 10 ⁻⁵	eak neutra $\frac{CL\%}{90}$ 35 $f_{B^0} = f_{B^-}$ ly number $\frac{CL\%}{90}$ 35 following 90 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 35 90 35 90 35 90 35 90 35 90 35 35 90 35 35 35 35 35 35 35 35 35 35	al current. DOCUMENT ID 2 ADAM $_{-} = 0.39 \text{ and } f_{B_{s}}$ conservation. DOCUMENT ID 3 BERGFELD data for averages ABE 4 ACCIARRI AMMAR 5 AVEDY	96D = 0 00B 5, fits, 98∨ 97B 94	TECN DLPH .12. TECN CLE2 , limits, CDF L3 CLE2 CLE2	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(43)}$ etc. • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $e^+e^- \rightarrow \Upsilon(43)$ $e^+e^- \rightarrow \Upsilon(43)$	Γ₁₇₀/Γ Γ₁₇₁/Γ
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{total}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ < 5.9 × 10 ⁻⁶ < 3.4 × 10 ⁻⁵ < 4.5 × 10 ⁻⁵	eak neutra $\frac{CL\%}{90}$ 35 $f_{B^0} = f_{B^-}$ ly number $\frac{CL\%}{90}$ 35 following 90 90 90 90 35 90 90 35 90 90 35 90 90 35 90 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 90 35 35 35 35 35 35 35 35 35 35	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39$ and f_{B_s} conservation. <u>DOCUMENT ID</u> ³ BERGFELD data for averages ABE ⁴ ACCIARRI AMMAR ⁵ AVERY ⁶ AL RECHT	96D = 0 00B 5, fits 98∨ 97B 94 89B 87D	TECN DLPH .12. TECN CLE2 , limits, CDF L3 CLE2 CLE0 ARC	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(42)}$ etc. • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $e^+e^- \rightarrow \Upsilon(42)$	Γ₁₇₀/Γ Γ₁₇₁/Γ 5)
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ < 5.9 × 10 ⁻⁶ < 3.4 × 10 ⁻⁵ < 4.5 × 10 ⁻⁵ < 7.7 × 10 ⁻⁵	The algorithm for the second state is a second state in the second st	al current. DOCUMENT ID ² ADAM DOCUMENT ID ³ BERGFELD data for averages ABE ⁴ ACCIARRI AMMAR ⁵ AVERY ⁶ ALBRECHT ⁷ AVERY	96D = 0 00B 5, fits 98∨ 97B 94 89B 87D 87	TECN DLPH .12. CLE2 , limits, CDF L3 CLE2 CLE0 ARG CLE0	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(43)}$ etc. • • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $e^+e^- \rightarrow \Upsilon(43)$	Γ₁₇₀/Γ Γ₁₇₁/Γ 5)
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ < 5.9 × 10 ⁻⁶ < 3.4 × 10 ⁻⁵ < 4.5 × 10 ⁻⁵ < 7.7 × 10 ⁻⁵ < 3 × 10 ⁻⁴	eak neutra $\frac{CL\%}{90}$ 35 $f_{B^0} = f_{B^-}$ ly number $\frac{CL\%}{90}$ 35 following 90 35 90	al current. DOCUMENT ID ² ADAM $= 0.39 \text{ and } f_{B_s}$ conservation. DOCUMENT ID ³ BERGFELD data for averages ABE ⁴ ACCIARRI AMMAR ⁵ AVERY ⁶ ALBRECHT ⁷ AVERY GILES	96D = 0 00B , fits, 98∨ 97B 94 89B 87D 87 84	TECN DLPH .12. TECN CLE2 , limits, CDF L3 CLE2 CLE0 ARG CLE0 CLE0 CLE0	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(4S)}$ etc. • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ $e^+e^- \rightarrow \Upsilon(4S)$ Repl. by AVERY	Γ₁₇₀/Γ Γ₁₇₁/Γ 5) 5) 5) 5) 5) 5) 5)
Test for $\Delta B = 1$ w <u>VALUE</u> <1.0 × 10 ⁻³ ³⁵² ADAM 96D assumes $\Gamma(e^{\pm}\mu^{\mp})/\Gamma_{total}$ Test of lepton fami <u>VALUE</u> <15 × 10 ⁻⁷ ••• We do not use the < 3.5 × 10 ⁻⁶ < 1.6 × 10 ⁻⁵ < 5.9 × 10 ⁻⁶ < 3.4 × 10 ⁻⁵ < 4.5 × 10 ⁻⁵ < 7.7 × 10 ⁻⁵ < 3 × 10 ⁻⁴ ³⁵³ Assumes equal produc ³⁵⁴ ACCIARRI 97B assum ³⁵⁵ Paper assumes the Υ ³⁵⁶ ALBRECHT 87D reports < to 50%.	eak neutra CL% 90 35 $f_{B^0} = f_{B^-}$ ly number CL% 90 35 following 90 35 90	al current. <u>DOCUMENT ID</u> ² ADAM $_{-} = 0.39 \text{ and } f_{B_s}$ conservation. <u>DOCUMENT ID</u> ³ BERGFELD data for averages ABE ⁴ ACCIARRI AMMAR ⁵ AVERY ⁶ ALBRECHT ⁷ AVERY GILES ⁺ and B^0 at the production fract ys 43% to $B^0 \overline{B}^0$ 10^{-5} assuming assuming the Υ (96D = 0 00B , fits, 98V 97B 94 89B 87D 87 84 $\Upsilon(4)$ ions . We the (4 <i>S</i>)	TECN DLPH .12. TECN CLE2 , limits, CDF L3 CLE2 CLE0 ARG CLE0 CLE0 CLE0 S). for B^+ , rescale T(4S) c	$\frac{COMMENT}{e^+e^- \rightarrow Z}$ $\frac{COMMENT}{e^+e^- \rightarrow \Upsilon(42)}$ etc. • • • $p\overline{p} \text{ at } 1.8 \text{ TeV}$ $e^+e^- \rightarrow Z$ $e^+e^- \rightarrow \Upsilon(42)$ $e^+e^- \rightarrow \Upsilon(42)$ $e^+e^- \rightarrow \Upsilon(42)$ $e^+e^- \rightarrow \Upsilon(42)$ Repl. by AVERY $B^0, B_s, \text{ and } \Lambda_b$ to 50%. Recays 45% to B^0 Recays 45% to B^0 Recays 45% to B^0 Recays 45% to B^0	F 170/ F F 171/ F 5) 5) 5) 5) 5) 7 87 1 \overline{B}^0 . We <i>i</i> rescale

Γ(e [±] τ [∓])/Γ _{total} Test of lepton f	family numb	er conservation.				Г ₁₇₂ /Г
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	<u>COMMENT</u>	
<5.3 × 10 ⁻⁴	90	AMMAR	94	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
$\Gamma(\mu^{\pm} au^{\mp}) / \Gamma_{ ext{total}}$						Г ₁₇₃ /Г
Test of lepton f	family numb	er conservation.				
VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT	
<8.3 × 10 ⁻⁴	90	AMMAR	94	CLE2	$e^+ e^- \rightarrow$	$\Upsilon(4S)$

POLARIZATION IN B⁰ DECAY

Γ_L/Γ in $B^0 \rightarrow J/\psi(1S) K^*(892)^0$ $\Gamma_I/\Gamma = 1$ would indicate that $B^0 \rightarrow J/\psi(1S) K^*(892)^0$ followed by $K^*(892)^0 \rightarrow J/\psi(1S) K^*(892)^0$ $K_{S}^{0}\pi^{0}$ is a pure *CP* eigenstate with *CP* = -1. <u>VAL</u>UE EVTS DOCUMENT ID TECN COMMENT **0.59±0.05 OUR AVERAGE** Error includes scale factor of 1.2. ³⁵⁸ AFFOLDER 00N CDF $p\overline{p}$ at 1.8 TeV $0.59 \pm 0.06 \pm 0.01$ 359 JESSOP 97 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ $0.52 \pm 0.07 \pm 0.04$ $0.65\!\pm\!0.10\!\pm\!0.04$ 65 ABE 95z CDF pp at 1.8 TeV ³⁶⁰ ALBRECHT 94g ARG 13 $e^+e^- \rightarrow \Upsilon(4S)$ $0.97 \pm 0.16 \pm 0.15$ • • • We do not use the following data for averages, fits, limits, etc. • • • 360 AI AM $0.80 \pm 0.08 \pm 0.05$ 42 94 CLE2 Sup. by JESSOP 97 ³⁵⁸ AFFOLDER 00N measurements are based on 190 B^0 candidates obtained from a data sample of 89 pb⁻¹. The *P*-wave fraction is found to be $0.13^{+0.12}_{-0.9} \pm 0.06$. 359 JESSOP 97 is the average over a mixture of B^0 and B^+ decays. The *P*-wave fraction

is found to be 0.16 \pm 0.08 \pm 0.04.

³⁶⁰ Averaged over an admixture of B^0 and B^+ decays.

Γ_L/Γ in $B^0 \rightarrow D_s^{*+}D^{*-}$ VALUE TECN <u>COMMENT</u> $00B \overline{\text{CLE2}} \overline{e^+e^-} \rightarrow \gamma(4S)$ $0.506 \pm 0.139 \pm 0.036$ AHMED Γ_I/Γ in $B^0 \rightarrow D^{*-}\rho^+$ VALUE **EVTS** DOCUMENT ID $\Upsilon(4S)$ $0.93 \pm 0.05 \pm 0.05$ ALAM 94 CLE2 76

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B⁰-B⁰ MIXING PARAMETERS

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.

 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.

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

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

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

χd

This $B^0 - \overline{B}^0$ mixing parameter is 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

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

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} .

VALUE	<u>CL%</u>	DOCUMENT ID		TECN	COMMENT		
0.176 ± 0.006 OUR EV	ALUATIO	N					
0.182 ± 0.015 OUR AV	ERAGE						
$0.198\!\pm\!0.013\!\pm\!0.014$		³⁶¹ BEHRENS	00 B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$		
$0.16\ \pm 0.04\ \pm 0.04$		³⁶² ALBRECHT	94	ARG	$e^+e^- \rightarrow \Upsilon(4S)$		
$0.149\!\pm\!0.023\!\pm\!0.022$		³⁶³ BARTELT	93	CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$		
0.171 ± 0.048		³⁶⁴ ALBRECHT	92L	ARG	$e^+e^- \rightarrow \Upsilon(4S)$		
\bullet \bullet \bullet We do not use the	following	g data for averages, f	its, li	mits, et	C. ● ● ●		
$0.20 \ \pm 0.13 \ \pm 0.12$		³⁶⁵ ALBRECHT	96 D	ARG	$e^+e^- ightarrow ~\Upsilon(4S)$		
$0.19 \ \pm 0.07 \ \pm 0.09$		³⁶⁶ ALBRECHT	96 D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$		
0.24 ± 0.12		³⁶⁷ ELSEN	90	JADE	e^+e^- 35–44 GeV		
$0.158 \substack{+\ 0.052 \\ -\ 0.059}$		ARTUSO	89	CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$		
$0.17\ \pm 0.05$		³⁶⁸ ALBRECHT	87ı	ARG	$e^+e^- \rightarrow \Upsilon(4S)$		
<0.19	90	³⁶⁹ BEAN	87 B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$		
<0.27	90	³⁷⁰ AVERY	84	CLEO	$e^+e^- ightarrow ~\Upsilon(4S)$		
361 BEHRENS 00B uses	high-mo	mentum lepton tags	and	partiall	ly reconstructed $\overline{B}^0 \rightarrow$		
$D^{*+}\pi^-$, $ ho^-$ decays	to deterr	nine the flavor of the	Bm	eson.	-		
362 ALBRECHT 94 repor	ts <i>r</i> =0.19	$4\pm 0.062\pm 0.054$. V	Ve co	nvert to	χ for comparison. Uses		
tagged events (leptor	n + pion	from <i>D</i> *).					
³⁶³ BARTELT 93 analys	³⁶³ BARTELT 93 analysis performed using tagged events (lepton+pion from D^*). Using						
dilepton events they o	dilepton events they obtain $0.157 \pm 0.016 + 0.033$.						
³⁶⁴ ALBRECHT 92L is a lt uses all previous A	combined RGUS da	l measurement emplo Ita in addition to nev	ying v dat	several l a and t	epton-based techniques. herefore supersedes AL-		

BRECHT 871. A value of $r=20.6\pm7.0\%$ 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 $\tau_{B^{\pm}}/\tau_{B^{0}} = (0.95 \pm 0.14) (f_{+-}/f_{0})$.

³⁶⁵ Uses $D^{*+}K^{\pm}$ correlations. ³⁶⁶ Uses $(D^{*+}\ell^{-})K^{\pm}$ correlations.

 367 These experiments see a combination of B_s and B_d mesons.

 368 ALBRECHT 871 is inclusive measurement with like-sign dileptons, with tagged B decays plus leptons, and one fully reconstructed event. Measures r=0.21 \pm 0.08. We convert to χ for comparison. Superseded by ALBRECHT 92L.

³⁶⁹ BEAN 87B measured r < 0.24; we converted to χ .

 370 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 .

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

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

The second "OUR EVALUATION" (0.476 \pm 0.012) is an average of the data listed below performed by the LEP B Oscillation Working Group as described in our "Review of $B-\overline{B}$ Mixing" in the B^0 Section of these Listings. The averaging procedure takes into account correlations between the measurements.

The first "OUR EVALUATION" (0.479 \pm 0.012), also provided by the LEP B Oscillation Working Group, includes Δm_d calculated from χ_d measured at $\Upsilon(4S)$.

<u>VALUE (10¹² $h s^{-1}$)</u>	EVTS		DOCUMENT ID		TECN	COMMENT
0.479 ± 0.012 OUR EVA	LUATIO	N				
0.476 ± 0.012 OUR EVA	LUATIO	N				
$0.463\!\pm\!0.008\!\pm\!0.016$		371	ABE	01 D	BELL	$e^+e^- ightarrow~\Upsilon(4S)$
$0.497\!\pm\!0.024\!\pm\!0.025$		372	ABBIENDI,G	00 B	OPAL	$e^+e^- \rightarrow Z$
$0.503\!\pm\!0.064\!\pm\!0.071$		373	ABE	99 K	CDF	<i>р<mark>р</mark></i> ат 1.8 ТеV
$0.500\!\pm\!0.052\!\pm\!0.043$		374	ABE	99 Q	CDF	<i>р<mark>р</mark> at 1.8 TeV</i>
$0.516 \!\pm\! 0.099 \!+\! 0.029 \\ -0.035$		375	AFFOLDER	99 C	CDF	<i>р<mark>р</mark> at 1.8 Те</i> V
$0.471^{+0.078}_{-0.068}{}^{+0.033}_{-0.034}$		376	ABE	9 8C	CDF	<i>р</i> р at 1.8 ТеV
$0.458\!\pm\!0.046\!\pm\!0.032$		377	ACCIARRI	98 D	L3	$e^+e^- \rightarrow Z$
$0.437\!\pm\!0.043\!\pm\!0.044$		378	ACCIARRI	98 D	L3	$e^+e^- \rightarrow Z$
$0.472\!\pm\!0.049\!\pm\!0.053$		379	ACCIARRI	98 D	L3	$e^+e^- \rightarrow Z$
$0.523\!\pm\!0.072\!\pm\!0.043$		380	ABREU	97N	DLPH	$e^+e^- \rightarrow Z$
$0.493\!\pm\!0.042\!\pm\!0.027$		378	ABREU	97N	DLPH	$e^+e^- \rightarrow Z$
$0.499\!\pm\!0.053\!\pm\!0.015$		381	ABREU	97N	DLPH	$e^+e^- \rightarrow Z$
$0.480\!\pm\!0.040\!\pm\!0.051$		377	ABREU	97N	DLPH	$e^+e^- \rightarrow Z$
$0.444 \!\pm\! 0.029 \!+\! 0.020 \\ -\! 0.017$		378	ACKERSTAFF	97 U	OPAL	$e^+e^- \rightarrow Z$
$0.430 \!\pm\! 0.043 \!+\! 0.028 \\ -0.030$		377	ACKERSTAFF	97∨	OPAL	$e^+e^- \rightarrow Z$
$0.482\!\pm\!0.044\!\pm\!0.024$		382	BUSKULIC	97 D	ALEP	$e^+e^- \rightarrow Z$
$0.404 \!\pm\! 0.045 \!\pm\! 0.027$		378	BUSKULIC	97 D	ALEP	$e^+e^- \rightarrow Z$
$0.452\!\pm\!0.039\!\pm\!0.044$		377	BUSKULIC	97 D	ALEP	$e^+e^- \rightarrow Z$
$0.539\!\pm\!0.060\!\pm\!0.024$		383	ALEXANDER	96v	OPAL	$e^+e^- \rightarrow Z$
$0.567 \!\pm\! 0.089 \!+\! 0.029 \\ - 0.023$		384	ALEXANDER	96∨	OPAL	$e^+e^- \rightarrow Z$

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

$0.444 \pm 0.028 \pm 0.028$ 0.497 ± 0.035		³⁸⁵ ACCIARRI ³⁸⁶ ABREU	98d L3 97n DLPH	$e^+e^- \rightarrow Z$ $e^+e^- \rightarrow Z$
$0.467 \!\pm\! 0.022 \!+\! 0.017 \\ - 0.015$		³⁸⁷ ACKERSTAFF	97∨ OPAL	$e^+e^- \rightarrow Z$
0.446±0.032		³⁸⁸ BUSKULIC	97d ALEP	$e^+e^- \rightarrow Z$
$0.531^{+0.050}_{-0.046} \pm 0.078$		³⁸⁹ ABREU	96Q DLPH	Sup. by ABREU 97N
$0.496^{+0.055}_{-0.051}{\pm}0.043$		³⁷⁷ ACCIARRI	96E L3	Repl. by ACCIARRI 98D
$0.548 \!\pm\! 0.050 \!+\! 0.023 \!-\! 0.019$		³⁹⁰ ALEXANDER	96∨ OPAL	$e^+e^- \rightarrow Z$
0.496 ± 0.046		³⁹¹ AKERS	95J OPAL	Repl. by ACKER- STAFF 97∨
$0.462\substack{+0.040+0.052\\-0.053-0.035}$		³⁷⁷ AKERS	95J OPAL	Repl. by ACKER-
$0.50 \ \pm 0.12 \ \pm 0.06$		³⁸⁰ ABREU	94м DLPH	Sup. by ABREU 97N
$0.508\!\pm\!0.075\!\pm\!0.025$		³⁸³ AKERS	94C OPAL	Repl. by ALEXAN-
$0.57 \pm 0.11 \pm 0.02$	153	³⁸⁴ AKERS	94н OPAL	DER 96V Repl. by ALEXAN- DER 96V
$\begin{array}{rrr} 0.50 & +0.07 & +0.11 \\ & -0.06 & -0.10 \end{array}$		³⁷⁷ BUSKULIC	94b ALEP	Sup. by BUSKULIC 97D
$\begin{array}{rrrr} 0.52 & +0.10 & +0.04 \\ & -0.11 & -0.03 \end{array}$		³⁸⁴ BUSKULIC	93к ALEP	Sup. by BUSKULIC 97D

 371 Measured based on the time evolution of dilepton events in $\Upsilon(4S)$ decays. This is the first result from time-evolution measurements at the $\Upsilon(4S)$.

³⁷² Data analyzed using partially reconsturcted $\overline{B}^0 \rightarrow D^{*+} \ell^{-} \overline{\nu}$ decay and a combination of flavor tags from the rest of the event.

- ³⁷³ Uses di-muon events.
- ³⁷⁴ Uses jet-charge and lepton-flavor tagging

³⁷⁵Uses $\ell^- D^{*+} - \ell$ events.

- 376 Uses π -B in the same side.
- 377 Uses *l-l*.
- 378 Uses ℓ-Q_{hem}.
- 379 Uses ℓ - ℓ with impact parameters.
- $_{380}$ Uses $D^{*\pm}-Q_{hem}$.

³⁸¹Uses $\pi_s^{\pm}\ell$ - Q_{hem} .

- $382 \text{ Uses } \tilde{D^{*\pm}} \ell/Q_{\text{hem}}$
- $383 Uses D^{*\pm} \ell Q_{hem}$.

³⁸⁴ Uses $D^{\pm}-\ell$. ³⁸⁵ ACCIARRI 98D combines results from $\ell-\ell$, $\ell-Q_{\text{hem}}$, and $\ell-\ell$ with impact parameters.

³⁸⁶ ABREU 97N combines results from $D^{*\pm}-Q_{\text{hem}}$, $\ell-Q_{\text{hem}}$, $\pi_s^{\pm}\ell-Q_{\text{hem}}$, and $\ell-\ell$.

³⁸⁷ ACKERSTAFF 97V combines results from ℓ - ℓ , ℓ - Q_{hem} , D^* - ℓ , and $D^{*\pm}$ - Q_{hem} .

³⁸⁸ BUSKULIC 97D combines results from $D^{\pm}-\ell/Q_{hem}$, ℓ - Q_{hem} , and ℓ - ℓ .

 $^{389}\mathrm{ABREU}$ 96Q analysis performed using lepton, kaon, and jet-charge tags.

³⁹⁰ ALEXANDER 96V combines results from $D^{\pm}-\ell$ and $D^{\pm}\ell$ - Q_{hem} .

³⁹¹AKERS 95J combines results fromt charge measurement, $D^{*\pm}\ell$ - Q_{hem} and ℓ - ℓ .

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

The second "OUR EVALUATION" (0.734 \pm 0.022) 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 of *B*- \overline{B} Mixing" in the B^0 Section of these Listings. The averaging

In our "Review of B-B Mixing" in the B° Section of these Listings. The averaging procedure takes into account correlations between the measurements.

The first "OUR EVALUATION" (0.738 \pm 0.020), also provided by the LEP B Oscillation Working Group, includes χ_d measured at $\Upsilon(4S)$.

VALUE

DOCUMENT ID

 0.738 ± 0.020 OUR EVALUATION 0.734 ± 0.022 OUR EVALUATION

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CP VIOLATION PARAMETERS

$\operatorname{Re}(\epsilon_{B^0})/(1+|\epsilon_{B^0}|^2)$

CP Impurity in B_d^0 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.

VALU	IE	DOCUMENT ID		TECN	COMMENT
(0 ±5)×10	-3 OUR AVERAGE			
-	-0.003 ± 0.007	³⁹² BARATE	01 D	ALEP	$e^+e^- \rightarrow Z$
	$0.004\!\pm\!0.018\!\pm\!0.003$	³⁹³ BEHRENS	00 B	CLE2	$e^+e^- ightarrow ~\Upsilon(4S)$
	$0.001\!\pm\!0.014\!\pm\!0.003$	³⁹⁴ ABBIENDI	99J	OPAL	$e^+e^- \rightarrow Z$
	$0.002\!\pm\!0.007\!\pm\!0.003$	³⁹⁵ ACKERSTAFF	97 U	OPAL	$e^+e^- \rightarrow Z$
• •	• We do not use the followi	ng data for averages,	, fits,	limits,	etc. • • •
<	0.045	³⁹⁶ BARTELT	93	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

³⁹² BARATE 01D measured by investigating time-dependent asymmetries in semileptonic and fully inclusive B_d^0 decays.

³⁹³ BEHRENS 00B uses high-momentum lepton tags and partially reconstructed $\overline{B}^0 \rightarrow D^{*+}\pi^-$, ρ^- decays to determine the flavor of the *B* meson.

- ³⁹⁴ 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.
- ³⁹⁵ 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, $\text{Re}(\epsilon_B) = -0.006 \pm 0.010 \pm 0.006$ is found. The indirect *CPT* violation parameter is determined to $\text{Im}(\delta B) = -0.020 \pm 0.016 \pm 0.006$.
- ³⁹⁶ 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 $|\text{Re}(\epsilon_{B0})/(1+|\epsilon_{B0}|^2|$.

$$A_{CP} (B^0 \to K^+ \pi^-)$$

A_{CP} is defined as

$$\frac{B(\overline{B}{}^{0} \rightarrow \overline{f}) - B(B^{0} \rightarrow f)}{B(\overline{B}{}^{0} \rightarrow \overline{f}) + B(B^{0} \rightarrow f)},$$

the *CP*-violation charge asymmetry of inclusive B^0 and \overline{B}^0 decay.

VALUE	DOCUMENT ID		TECN	COMMENT	
$-0.04{\pm}0.16$	³⁹⁷ CHEN	00	CLE2	$e^+e^- ightarrow~\Upsilon($	4 <i>S</i>)
397 A 90%CL range is $-0.30 <$	с́А _{СР} < 0.22.				

$sin(2\beta)$

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 $B^0_d \rightarrow J/\psi(1S) K^0_S$.

	u , , , ,		
VALUE	DOCUMENT ID	TECN	COMMENT
0.9 ±0.4 OUR AVERAGE			
$0.79 \substack{+0.41 \\ -0.44}$	³⁹⁸ AFFOLDER	00C CDF	<i>рр</i> ат 1.8 ТеV
$0.84^{+0.82}_{-1.04}{\pm}0.16$	³⁹⁹ BARATE	00Q ALEP	$e^+e^- \rightarrow Z$
$3.2 \begin{array}{c} +1.8 \\ -2.0 \end{array} \pm 0.5$	⁴⁰⁰ ACKERSTAFF	98z OPAL	$e^+e^- \rightarrow Z$
\bullet \bullet \bullet We do not use the follow	ing data for averages	, fits, limits,	etc. • • •
$1.8 \pm 1.1 \pm 0.3$	⁴⁰¹ ABE	98∪ CDF	Repl. by AF- FOLDER 00C

³⁹⁸ AFFOLDER 00C uses about 400 $B^0 \rightarrow J/\psi(1S) K_S^0$ events. The production flavor of B^0 was determined using three tagging algorithms: a same-side tag, a jet-charge tag, and a soft-lepton tag.

³⁹⁹ BARATE 00Q uses 23 candidates for $B^0 \rightarrow J/\psi(1S) K_S^0$ decays. A combination of jet-charge, vertex-charge, and same-side tagging techniques were used to determine the B^0 production flavor.

400 ACKERSTAFF 98Z uses 24 candidates for $B_d^0 \rightarrow J/\psi(1S) K_S^0$ decay. A combination of jet-charge and vertex-charge techniques were used to tag the B_d^0 production flavor.

⁴⁰¹ ABE 98U uses 198 \pm 17 $B_d^0 \rightarrow J/\psi(1S) K^0$ events. The production flavor of B^0 was determined using the same side tagging technique.

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

$0.91 {\pm} 0.15 {\pm} 0.06$	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
VALUE	DOCUMENT ID		TECN	<u>COMMENT</u>	
$ ho_{{\cal A}_1}^2$ (form factor slope)					
$0.71 {\pm} 0.22 {\pm} 0.07$	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
VALUE	DOCUMENT ID		TECN	COMMENT	
R_2 (form factor ratio \sim .	$A_2/A_1)$				
$1.18 \pm 0.30 \pm 0.12$	DUBOSCQ	96	CLE2	$e^+e^- \rightarrow$	$\Upsilon(4S)$
VALUE	DOCUMENT ID		TECN	COMMENT	
${\it R}_1$ (form factor ratio \sim	$V/A_1)$				

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	060			
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A	550		D. Duskulle (1	
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ALBAJAR ALBAJAR ALBRECHT ALBRECHT BERKELMAN "Decays of	91C 91E 91B 91C 91E 91 <i>B</i> M	PL B262 163 PL B273 540 PL B254 288 PL B255 297 PL B262 148 ARNPS 41 1	 C. Albajar <i>et al.</i> C. Albajar <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> K. Berkelman, S. Stone 	(UA1 Collab.) (UA1 Collab.) (ARGUS Collab.) (ARGUS Collab.) (ARGUS Collab.) (CORN, SYRA)
ALBRECHT ALBRECHT ANTREASYAN BORTOLETTO ELSEN ROSNER	91 90B 90J 90B 90B 90 90 90	PR D43 651 PL B241 278 ZPHY C48 543 ZPHY C48 553 PRL 64 2117 ZPHY C46 349 PR D42 3732	 R. Fulton <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> D. Antreasyan <i>et al.</i> D. Bortoletto <i>et al.</i> E. Elsen <i>et al.</i> U. Bosner 	(CLEO Collab.) (ARGUS Collab.) (ARGUS Collab.) (Crystal Ball Collab.) (CLEO Collab.) (JADE Collab.)
WAGNER ALBRECHT ALBRECHT ALBRECHT ALBRECHT ARTUSO AVERILL	90 89C 89G 89J 89L 89 89	PRL 64 1095 PL B219 121 PL B229 304 PL B229 175 PL B232 554 PRL 62 2233 PR D39 123	 S.R. Wagner <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> H. Albrecht <i>et al.</i> M. Artuso <i>et al.</i> D.A. Averill <i>et al.</i> 	(Mark II Collab.) (ARGUS Collab.) (ARGUS Collab.) (ARGUS Collab.) (ARGUS Collab.) (CLEO Collab.) (HRS Collab.)
AVERY BEBEK BORTOLETTO BORTOLETTO ALBRECHT ALBRECHT	89B 89 89 89B 89B 88F 88K	PL B223 470 PRL 62 8 PRL 62 2436 PRL 63 1667 PL B209 119 PL B215 424	 P. Avery et al. C. Bebek et al. D. Bortoletto et al. D. Bortoletto et al. H. Albrecht et al. H. Albrecht et al. 	(CLEO Collab.) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.) (ARGUS Collab.) (ARGUS Collab.)
ALBRECHT ALBRECHT ALBRECHT ALBRECHT AVERY BEAN BEBEK ALAM	87C 87D 87I 87J 87 87 87B 87 87	PL B185 218 PL B199 451 PL B192 245 PL B197 452 PL B183 429 PRL 58 183 PR D36 1289 PR D34 3279	 H. Albrecht et al. H. Albrecht et al. H. Albrecht et al. H. Albrecht et al. P. Avery et al. A. Bean et al. C. Bebek et al. M.S. Alam et al. 	(ARGUS Collab.) (ARGUS Collab.) (ARGUS Collab.) (ARGUS Collab.) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.)
ALBRECHT PDG CHEN HAAS AVERY GILES BEHRENDS	86F 86 85 85 84 84 83	PL B182 95 PL 170B PR D31 2386 PRL 55 1248 PRL 53 1309 PR D30 2279 PRL 50 881	 H. Albrecht et al. M. Aguilar-Benitez et al. A. Chen et al. J. Haas et al. P. Avery et al. R. Giles et al. S. Behrends et al. 	(ARGUS Collab.) (CERN, CIT+) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.) (CLEO Collab.)

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