$\Gamma(D^*(2010)^- \text{anything})/\Gamma_{total}$ — Γ_{138}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.232±0.033 OUR AVERAGE		Error includes scale factor of 1.1.			
0.209±0.036±0.004		[224] BORTOLETTO	92	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.28 ±0.05 ±0.01		[225] ALBRECHT	91H	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.22 ±0.04 $^{+0.07}_{-0.04}$	5200	[226] BORTOLETTO	87	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.27 ±0.06 $^{+0.08}_{-0.06}$	510	[227] CSORNA	85	CLEO	Repl. by BORTOLETTO 87

[224] BORTOLETTO 92 reports $0.25 \pm 0.03 \pm 0.04$ for $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.57 \pm 0.06$. We rescale to our best value $B(D^*(2010)^+ \rightarrow D^0\pi^+) = (68.1 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. They also use the Mark III $B(D^0 \rightarrow K^-\pi^+)$ branching fraction.

[225] ALBRECHT 91H reports $0.348 \pm 0.060 \pm 0.035$ for $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.55 \pm 0.04$. We rescale to our best value $B(D^*(2010)^+ \rightarrow D^0\pi^+) = (68.1 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Uses the PDG 90 $B(D^0 \rightarrow K^-\pi^+) = 0.0371 \pm 0.0025$.

[226] BORTOLETTO 87 uses old MARK III (BALTRUSAITIS 86E) branching ratios $B(D^0 \rightarrow K^-\pi^+) = 0.056 \pm 0.004 \pm 0.003$ and also assumes $B(D^*(2010)^+ \rightarrow D^0\pi^+) = 0.60^{+0.08}_{-0.15}$. The product branching ratio for $B(B \rightarrow D^*(2010)^+)$ $B(D^*(2010)^+ \rightarrow D^0\pi^+)$ is $0.13 \pm 0.02 \pm 0.012$. Superseded by BORTOLETTO 92.

[227] $V-A$ momentum spectrum used to extrapolate below $p = 1$ GeV. We correct the value assuming $B(D^0 \rightarrow K^-\pi^+) = 0.042 \pm 0.006$ and $B(D^{*+} \rightarrow D^0\pi^+) = 0.6^{+0.08}_{-0.15}$. The product branching fraction is $B(B \rightarrow D^{*+}X) \cdot B(D^{*+} \rightarrow \pi^+ D^0) \cdot B(D^0 \rightarrow K^-\pi^+) = (68 \pm 15 \pm 9) \times 10^{-4}$.

$\Gamma(D_s^{\pm} \text{anything})/\Gamma_{total}$ — Γ_{139}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.089±0.011 OUR AVERAGE					
0.084±0.014±0.010		[228] ALBRECHT	92G	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.088±0.013±0.010	257	[229] BORTOLETTO	90	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
0.109±0.029±0.013		[230] HAAS	86	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.120±0.031±0.014		[231] ALBRECHT	87H	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

[228] ALBRECHT 92G reports $[B(B \rightarrow D_s^{\pm}\text{anything}) \times B(D_s^+ \rightarrow \phi\pi^+)] = 0.00292 \pm 0.00039 \pm 0.00031$. We divide by our best value $B(D_s^+ \rightarrow \phi\pi^+) = (3.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[229] BORTOLETTO 90 reports $[B(B \rightarrow D_s^{\pm}\text{anything}) \times B(D_s^+ \rightarrow \phi\pi^+)] = 0.00306 \pm 0.00047$. We divide by our best value $B(D_s^+ \rightarrow \phi\pi^+) = (3.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[230] HAAS 86 reports $[B(B \rightarrow D_s^{\pm}\text{anything}) \times B(D_s^+ \rightarrow \phi\pi^+)] = 0.0038 \pm 0.0010$. We divide by our best value $B(D_s^+ \rightarrow \phi\pi^+) = (3.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. $64 \pm 22\%$ decays are 2-body.

[231] ALBRECHT 87H reports $[B(B \rightarrow D_s^{\pm}\text{anything}) \times B(D_s^+ \rightarrow \phi\pi^+)] = 0.0042 \pm 0.0009 \pm 0.0006$. We divide by our best value $B(D_s^+ \rightarrow \phi\pi^+) = (3.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. $46 \pm 16\%$ of $B \rightarrow D_s X$ decays are 2-body. Superseded by ALBRECHT 92G.

$\Gamma(D_s D,\ D_s^* D,\ D_s D^*,\ \text{or}\ D_s^* D^*)/\Gamma(D_s^{\pm} \text{anything})$ — $\Gamma_{140}/\Gamma_{139}$

Sum over modes.

VALUE	DOCUMENT ID		TECN	COMMENT
0.57±0.08 OUR AVERAGE				
0.58±0.07±0.09	ALBRECHT	92G	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
0.56±0.10	BORTOLETTO	90	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

$\Gamma(D^*(2010)\gamma)/\Gamma_{total}$ — Γ_{141}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-3}	90	[232] LESIAK	92	CBAL	$e^+e^- \rightarrow \Upsilon(4S)$

[232] LESIAK 92 set a limit on the inclusive process $B(b \rightarrow s\gamma) < 2.8 \times 10^{-3}$ at 90% CL for the range of masses of 892–2045 MeV, independent of assumptions about s-quark hadronization.

$\Gamma(D_s^+\pi^-,\ D_s^{*+}\pi^-,\ D_s^+\rho^-,\ D_s^{*+}\rho^-,\ D_s^+\pi^0,\ D_s^{*+}\pi^0,\ D_s^+\eta,\ D_s^{*+}\eta,\ D_s^+\rho^0,\ D_s^{*+}\rho^0,\ D_s^+\omega,\ D_s^{*+}\omega)/\Gamma_{total}$ — Γ_{142}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0005	90	[233] ALEXANDER	93B	CLE2	$e^+e^- \rightarrow \Upsilon(4S)$

[233] ALEXANDER 93B reports $< 4.8 \times 10^{-4}$ for $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$. We rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 0.035$. This branching ratio limit provides a model-dependent upper limit $|V_{ub}|/|V_{cb}| < 0.16$ at CL=90%.

$\Gamma(J/\psi(1S)\text{anything})/\Gamma_{total}$ — Γ_{143}/Γ

VALUE (units 10^{-2})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
1.30±0.17 OUR AVERAGE						
1.3 ±0.4 ±0.1		27	[234] MASCHMANN	90	CBAL	$e^+e^- \rightarrow \Upsilon(4S)$
1.23±0.27±0.05		120	[235] ALBRECHT	87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
1.35±0.24±0.06		52	[236] ALAM	86	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.16±0.16±0.14		121	[237] ADRIANI	93J	L3	$e^+e^- \rightarrow Z$
1.3 ±0.2 ±0.2			[238] ADRIANI	92	L3	$e^+e^- \rightarrow Z$
1.21±0.13±0.08			BUSKULIC	92G	ALEP	$e^+e^- \rightarrow Z$
1.4 $^{+0.6}_{-0.5}$		7	[239] ALBRECHT	85H	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
1.1 ±0.21±0.23		46	[240] HAAS	85	CLEO	Repl. by ALAM 86
<4.9	90		MATTEUZZI	83	MRK2	E^{ee}_{cm}= 29 GeV

[234] MASCHMANN 90 reports $1.12 \pm 0.33 \pm 0.25$ for $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$. We rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.99 \pm 0.25) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[235] ALBRECHT 87D reports $1.07 \pm 0.16 \pm 0.22$ for $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$. We rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.99 \pm 0.25) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. ALBRECHT 87D find the branching ratio for J/ψ not from $\psi(2S)$ to be 0.0081 ± 0.0023.

[236] ALAM 86 reports $1.09 \pm 0.16 \pm 0.21$ for $B(J/\psi(1S) \rightarrow \mu^+\mu^-) = 0.074 \pm 0.012$. We rescale to our best value $B(J/\psi(1S) \rightarrow \mu^+\mu^-) = (5.97 \pm 0.25) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[237] ADRIANI 93J is an inclusive measurement from b decays at the Z. Uses $J/\psi(1S) \rightarrow \mu^+\mu^-$ and $J/\psi(1S) \rightarrow e^+e^-$ channels.

[238] ADRIANI 92 measurement is an inclusive result for $B(Z \rightarrow J/\psi(1S)X) = (4.1 \pm 0.7 \pm 0.3) \times 10^{-3}$ which is used to extract the b-hadron contribution to $J/\psi(1S)$ production. Superseded by ADRIANI 93J.

[239] Statistical and systematic errors were added in quadrature. ALBRECHT 85H also report a CL = 90% limit of 0.007 for $B \rightarrow J/\psi(1S) + X$ where $m_X < 1$ GeV.

[240] Dimuon and dielectron events used.

$\Gamma(\psi(2S)\text{anything})/\Gamma_{total}$ — Γ_{144}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0046±0.0017±0.0011	8	ALBRECHT	87D	ARG	$e^+e^- \rightarrow \Upsilon(4S)$

$\Gamma(\chi_{c1}(1P)\text{anything})/\Gamma_{total}$ — Γ_{145}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0105±0.0035±0.0025		[241] ALBRECHT	92E	ARG	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.024 ±0.009 ±0.002	19	[242] ADRIANI	93J	L3	$e^+e^- \rightarrow Z$

[241] ALBRECHT 92E assumes no $\chi_{c2}(1P)$ production.

[242] ADRIANI 93J is an inclusive measurement and assumes χ_{c1} come from b decays at Z. Uses $J/\psi(1S) \rightarrow \mu^+\mu^-$ channel.

$\Gamma(\chi_{c1}(1P)\text{anything})/\Gamma(J/\psi(1S)\text{anything})$ — $\Gamma_{145}/\Gamma_{143}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.92±0.82	121	[243] ADRIANI	93J	L3	$e^+e^- \rightarrow Z$

[243] ADRIANI 93J is a ratio of inclusive measurements from b decays at the Z using only the $J/\psi(1S) \rightarrow \mu^+\mu^-$ channel since some systematics cancel.

$\Gamma(K^{\pm}\text{anything})/\Gamma_{total}$ — Γ_{146}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.85±0.07±0.09	ALAM	87B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	[244] BRODY	82	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$
seen	[245] GIANNINI	82	CUSB	$e^+e^- \rightarrow \Upsilon(4S)$

[244] Assuming $\Upsilon(4S) \rightarrow B\overline{B}$, a total of $3.38 \pm 0.34 \pm 0.68$ kaons per $\Upsilon(4S)$ decay is found (the second error is systematic). In the context of the standard B-decay model, this leads to a value for (b-quark $\rightarrow$ c-quark)/(b-quark $\rightarrow$ all) of $1.09 \pm 0.33 \pm 0.13$.

[245] GIANNINI 82 at CESR-CUSB observed 1.58 ± 0.35 K^0 per hadronic event much higher than 0.82 ± 0.10 below threshold. Consistent with predominant $b \rightarrow cX$ decay.

$\Gamma(K^+\text{anything})/\Gamma_{total}$ — Γ_{147}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.66±0.05±0.07	[246] ALAM	87B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[246] ALAM 87B measurement relies on lepton-kaon correlations. It does not consider the possibility of $B\overline{B}$ mixing. We have thus removed it from the average.

$\Gamma(K^-\text{anything})/\Gamma_{total}$ — Γ_{148}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.19±0.05±0.02	[247] ALAM	87B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$

[247] ALAM 87B measurement relies on lepton-kaon correlations. It does not consider the possibility of $B\overline{B}$ mixing. We have thus removed it from the average.

$\Gamma(K^0/\overline{K}^0\text{anything})/\Gamma_{total}$ — Γ_{149}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.63±0.06±0.06	ALAM	87B	CLEO	$e^+e^- \rightarrow \Upsilon(4S)$