$\Gamma(\bar{p}e^+\nu_e \text{ anything})/\Gamma_{\text{total}}$ Γ_{122}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0016	90	ALBRECHT	90H	ARG	$e^+e^- \to \Upsilon(4S)$

$\Gamma(D^-\ell^+\nu_\ell \text{ anything})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{125}/\Gamma_{124}$

$\ell = e$ or μ.

VALUE	DOCUMENT ID		TECN	COMMENT
0.26±0.07±0.04	[201] FULTON	91	CLEO	$e^+e^- \to \Upsilon(4S)$

[201] FULTON 91 uses $B(D^+ \to K^-\pi^+\pi^+) = (9.1 \pm 1.3 \pm 0.4)\%$ as measured by MARK III.

$\Gamma(\overline{D}^0\ell^+\nu_\ell \text{ anything})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{126}/\Gamma_{124}$

$\ell = e$ or μ.

VALUE	DOCUMENT ID		TECN	COMMENT
0.67±0.09±0.10	[202] FULTON	91	CLEO	$e^+e^- \to \Upsilon(4S)$

[202] FULTON 91 uses $B(D^0 \to K^-\pi^+) = (4.2 \pm 0.4 \pm 0.4)\%$ as measured by MARK III.

$\Gamma(D^{**}\ell^+\nu_\ell)/\Gamma_{\text{total}}$ Γ_{127}/Γ

D^{**} stands for the sum of the $D(1\,^1P_1)$, $D(1\,^3P_0)$, $D(1\,^3P_1)$, $D(1\,^3P_2)$, $D(2\,^1S_0)$, and $D(2\,^1S_1)$ resonances. $\ell = e$ or μ, not sum over e and μ modes.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.027±0.005±0.005	63	[203] ALBRECHT	93	ARG	$e^+e^- \to \Upsilon(4S)$

[203] ALBRECHT 93 assumes the GISW model to correct for unseen modes. Using the BHKT model, the result becomes $0.023 \pm 0.006 \pm 0.004$. Assumes $B(D^{*+} \to D^0\pi^+) = 68.1\%$, $B(D^0 \to K^-\pi^+) = 3.65\%$, $B(D^0 \to K^-\pi^+\pi^-\pi^+) = 7.5\%$. We have taken their average e and μ value.

$\Gamma(D_s^-\ell^+\nu_\ell \text{ anything})/\Gamma_{\text{total}}$ Γ_{128}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.009	90	[204] ALBRECHT	93E	ARG	$e^+e^- \to \Upsilon(4S)$

[204] ALBRECHT 93E reports < 0.012 for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.035$.

$\Gamma(D_s^-\ell^+\nu_\ell K^+ \text{ anything})/\Gamma_{\text{total}}$ Γ_{129}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.006	90	[205] ALBRECHT	93E	ARG	$e^+e^- \to \Upsilon(4S)$

[205] ALBRECHT 93E reports < 0.008 for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.035$.

$\Gamma(D_s^-\ell^+\nu_\ell K^0 \text{ anything})/\Gamma_{\text{total}}$ Γ_{130}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.009	90	[206] ALBRECHT	93E	ARG	$e^+e^- \to \Upsilon(4S)$

[206] ALBRECHT 93E reports < 0.012 for $B(D_s^+ \to \phi\pi^+) = 0.027$. We rescale to our best value $B(D_s^+ \to \phi\pi^+) = 0.035$.

$\Gamma(\ell^+\nu_\ell \text{ noncharmed})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{131}/\Gamma_{124}$

ℓ denotes e or μ, not the sum. These experiments measure this ratio in very limited momentum intervals.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
		107	[207] BARTELT	93B	CLE2	$e^+e^- \to \Upsilon(4S)$
		77	[208] ALBRECHT	91C	ARG	$e^+e^- \to \Upsilon(4S)$
		76	[209] FULTON	90	CLEO	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
		41	[210] ALBRECHT	90	ARG	$e^+e^- \to \Upsilon(4S)$
<0.04	90		[211] BEHRENDS	87	CLEO	$e^+e^- \to \Upsilon(4S)$
<0.04	90		CHEN	84	CLEO	Direct e at $\Upsilon(4S)$
<0.055	90		KLOPFEN...	83B	CUSB	Direct e at $\Upsilon(4S)$

[207] BARTELT 93B (CLEO II) measures an excess of $107 \pm 15 \pm 11$ leptons in the lepton momentum interval 2.3–2.6 GeV/c which is attributed to $b \to u\ell\nu_\ell$. This corresponds to a model-dependent partial branching ratio ΔB_{ub} between $(1.15 \pm 0.16 \pm 0.15) \times 10^{-4}$, as evaluated using the KS model (KOERNER 88), and $(1.54 \pm 0.22 \pm 0.20) \times 10^{-4}$ using the ACCMM model (ARTUSO 93). The corresponding values of $|V_{ub}|/|V_{cb}|$ are 0.056 ± 0.006 and 0.076 ± 0.008, respectively.

[208] ALBRECHT 91C result supersedes ALBRECHT 90. Two events are fully reconstructed providing evidence for the $b \to u$ transition. Using the model of ALTARELLI 82, they obtain $|V_{ub}/V_{cb}| = 0.11 \pm 0.012$ from 77 leptons in the 2.3–2.6 GeV momentum range.

[209] FULTON 90 observe 76 ± 20 excess e and μ (lepton) events in the momentum interval $p = 2.4$–2.6 GeV signaling the presence of the $b \to u$ transition. The average branching ratio, $(1.8 \pm 0.4 \pm 0.3) \times 10^{-4}$, corresponds to a model-dependent measurement of approximately $|V_{ub}/V_{cb}| = 0.1$ using $B(b \to c\ell\nu) = 10.2 \pm 0.2 \pm 0.7\%$.

[210] ALBRECHT 90 observes 41 ± 10 excess e and μ (lepton) events in the momentum interval $p = 2.3$–2.6 GeV signaling the presence of the $b \to u$ transition. The events correspond to a model-dependent measurement of $|V_{ub}/V_{cb}| = 0.10 \pm 0.01$.

[211] The quoted possible limits range from 0.018 to 0.04 for the ratio, depending on which model or momentum range is chosen. We select the most conservative limit they have calculated. This corresponds to a limit on $|V_{ub}|/|V_{cb}| < 0.20$. While the endpoint technique employed is more robust than their previous results in CHEN 84, these results do not provide a numerical improvement in the limit.

$\Gamma(K^+\ell^+\nu_\ell \text{ anything})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{132}/\Gamma_{124}$

ℓ denotes e or μ, not the sum.

VALUE	DOCUMENT ID		TECN	COMMENT
0.54±0.07±0.06	[212] ALAM	87B	CLEO	$e^+e^- \to \Upsilon(4S)$

[212] ALAM 87B measurement relies on lepton-kaon correlations.

$\Gamma(K^-\ell^+\nu_\ell \text{ anything})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{133}/\Gamma_{124}$

ℓ denotes e or μ, not the sum.

VALUE	DOCUMENT ID		TECN	COMMENT
0.10±0.05±0.02	[213] ALAM	87B	CLEO	$e^+e^- \to \Upsilon(4S)$

[213] ALAM 87B measurement relies on lepton-kaon correlations.

$\Gamma(K^0/\overline{K}^0\ell^+\nu_\ell \text{ anything})/\Gamma(\ell^+\nu_\ell \text{ anything})$ $\Gamma_{134}/\Gamma_{124}$

ℓ denotes e or μ, not the sum. Sum over K^0 and $\overline{K}^0$ states.

VALUE	DOCUMENT ID		TECN	COMMENT
0.39±0.06±0.04	[214] ALAM	87B	CLEO	$e^+e^- \to \Upsilon(4S)$

[214] ALAM 87B measurement relies on lepton-kaon correlations.

$\Gamma(\tau^+\nu_\tau \text{ anything})/\Gamma_{\text{total}}$ Γ_{135}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
(4.08 ±0.76 ±0.62) × 10^{-2}	[215] BUSKULIC	93B	ALEP	$e^+e^- \to Z$

[215] B^0, $B^{\pm}$, B_s^0, and B baryon states not separated.

$\Gamma(c/\overline{c})/\Gamma_{\text{total}}$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.98±0.16±0.12	[216] ALAM	87B	CLEO	$e^+e^- \to \Upsilon(4S)$

[216] From the difference between K^- and K^+ widths. 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.

$\Gamma(D^- \text{ anything})/\Gamma_{\text{total}}$ Γ_{136}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.26 ±0.04 OUR AVERAGE					
0.25 ±0.04 ±0.03		[217] BORTOLETTO92		CLEO	$e^+e^- \to \Upsilon(4S)$
0.272±0.063±0.035		[218] ALBRECHT	91H	ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.17 ±0.04 ±0.04	20k	[219] BORTOLETTO87		CLEO	$e^+e^- \to \Upsilon(4S)$

[217] The first error is the combined statistical and systematic error and the second error is due to the uncertainty in the D meson branching ratio. BORTOLETTO 92 measures $B(B \to D^+ \text{anything}) \times B(D^+ \to K^-\pi^+\pi^+) = 0.0226 \pm 0.0030 \pm 0.0018$ and has chosen to normalize by the Mark III branching fractions.

[218] ALBRECHT 91H measures $B(B \to D^{\pm} \text{anything}) \times B(D^+ \to K^-\pi^+\pi^+) = 0.0209 \pm 0.0027 \pm 0.0040$. Uses the PDG 90 $B(D^+ \to K^-\pi^+\pi^+) = 0.077 \pm 0.010$.

[219] BORTOLETTO 87 uses old MARK III (BALTRUSAITIS 86E) branching ratio for $K^-\pi^+\pi^+ = 0.116 \pm 0.014 \pm 0.007$. The product branching ratio for $B(B \to D^+X)\,B(D^+ \to K^-\pi^+\pi^+)$ is $0.019 \pm 0.004 \pm 0.002$. Superseded by BORTOLETTO 92.

$\Gamma(\overline{D}^0 \text{ anything})/\Gamma_{\text{total}}$ Γ_{137}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.54 ±0.06 OUR AVERAGE					
0.55 ±0.04 ±0.08		[220] BORTOLETTO92		CLEO	$e^+e^- \to \Upsilon(4S)$
0.522±0.082±0.035		[221] ALBRECHT	91H	ARG	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.39 ±0.05 ±0.04	21k	[222] BORTOLETTO87		CLEO	$e^+e^- \to \Upsilon(4S)$
0.57 ±0.14 ±0.12		[223] GREEN	83	CLEO	Repl. by BORTOLETTO 87

[220] The first error is the combined statistical and systematic error and the second error is due to the uncertainty in the D meson branching ratio. BORTOLETTO 92 measures $B(B \to D^0 \text{anything}) \times B(D^0 \to K^-\pi^+) = 0.0233 \pm 0.0012 \pm 0.0014$ and has chosen to normalize by the Mark III branching fractions.

[221] ALBRECHT 91H measures $B(B \to D^0/\overline{D}^0 \text{anything}) \times B(D^0 \to K^-\pi^+) = 0.0194 \pm 0.0015 \pm 0.0025$. Uses the PDG 90 $B(D^0 \to K^-\pi^+) = 0.0371 \pm 0.0025$.

[222] BORTOLETTO 87 uses old MARK III (BALTRUSAITIS 86E) branching ratio for $K^-\pi^+ = 0.056 \pm 0.004 \pm 0.003$. The product branching ratio for $B(B \to D^0X)\,B(D^0 \to K^-\pi^+)$ is $0.0210 \pm 0.0015 \pm 0.0021$. Superseded by BORTOLETTO 92.

[223] Corrected by us using assumptions $B(D^0 \to K^-\pi^+) = (0.042 \pm 0.006)$. The product branching ratio is $B(B^0 \to D^0X) \cdot B(D^0 \to K^-\pi^+) = 0.024 \pm 0.006 \pm 0.004$.