Meson Full Listings

$D^{\pm}$

$\Gamma(\overline{K}^*(892)^0$ "e^+" $\nu_e)/\Gamma_{\text{total}}$ Γ_{26}/Γ

We average our $\overline{K}^{*0}e^+\nu_e$ and $\overline{K}^{*0}\mu^+\nu_\mu$ branching fractions, multiplying the latter by a phase-space factor of 1.05 to be able to use it with the $\overline{K}^{*0}e^+\nu_e$ fraction.

VALUE	DOCUMENT ID		COMMENT
0.048 ± 0.004 OUR AVERAGE			
0.048 ± 0.005	PDG	94	Our $\Gamma(\overline{K}^{*0}e^+\nu_e)/\Gamma_{\text{total}}$
0.047 ± 0.006	PDG	94	1.05 × our $\Gamma(\overline{K}^{*0}\mu^+\nu_\mu)/\Gamma_{\text{total}}$

$\Gamma(\overline{K}^*(892)^0 e^+\nu_e)/\Gamma(K^-\pi^+e^+\nu_e)$ Γ_{27}/Γ_{13}

Includes a factor 3/2 to take into account $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$1.16^{+0.21}_{-0.24}$ **OUR FIT**					
1.0 ± 0.3	35	ADAMOVICH	91	OMEG	π^- 340 GeV

$\Gamma(\overline{K}^*(892)^0 e^+\nu_e)/\Gamma(K^-\pi^+\pi^+)$ Γ_{27}/Γ_{35}

Includes a factor 3/2 to take into account $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.53 ± 0.05 OUR FIT					
0.54 ± 0.05 OUR AVERAGE					
0.67 ± 0.09 ± 0.07	710	[21] BEAN	93C	CLEO	$e^+e^- \approx \Upsilon(4S)$
0.62 ± 0.15 ± 0.09	35	ADAMOVICH	91	OMEG	π^- 340 GeV
0.55 ± 0.08 ± 0.10	880	ALBRECHT	91	ARG	$e^+e^- \approx$ 10.4 GeV
0.49 ± 0.04 ± 0.05		[22] ANJOS	89B	E691	Photoproduction

[21] BEAN 93C uses $\overline{K}^{*0}\mu^+\nu_\mu$ as well as $\overline{K}^{*0}e^+\nu_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events.

[22] For measurements of the form factors for this mode, and of the ratio of longitudinal to transverse polarization of the $\overline{K}^*(892)$, see ANJOS 90E.

$\Gamma(K^-\pi^+e^+\nu_e$ nonresonant$)/\Gamma_{\text{total}}$ Γ_{15}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.007	90	[23] ANJOS	89B	E691	Photoproduction

[23] ANJOS 89B assumes a $\Gamma(D^+ \to K^-\pi^+\pi^+)/\Gamma_{\text{total}} = 9.1 \pm 1.3 \pm 0.4\%$.

$\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)/\Gamma_{\text{total}}$ Γ_{28}/Γ

Includes a factor 3/2 to take into account $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.045 ± 0.006 OUR FIT		Error includes scale factor of 1.1.			
0.0325 ± 0.0071 ± 0.0075	224	[24] KODAMA	92C	E653	π^- emulsion 600 GeV

[24] KODAMA 92C measures $\Gamma(D^+ \to \overline{K}^{*0}\mu^+\nu_\mu)/\Gamma(D^0 \to K^-\mu^+\nu_\mu) = 0.43 \pm 0.09 \pm 0.09$ and then uses $\Gamma(D^0 \to K^-\mu^+\nu_\mu) = (7.0 \pm 0.7) \times 10^{10}\,\text{s}^{-1}$ to get the quoted branching fraction. See also the footnote to KODAMA 92C in the next data block.

$\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)/\Gamma(K^-\pi^+\pi^+)$ Γ_{28}/Γ_{35}

Includes a factor 3/2 to take into account $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.49 ± 0.06 OUR FIT		Error includes scale factor of 1.1.			
0.53 ± 0.06 OUR AVERAGE					
0.56 ± 0.04 ± 0.06	875	[25] FRABETTI	93E	E687	γ Be $\overline{E}_\gamma \approx$ 200 GeV
0.46 ± 0.07 ± 0.08	224	[26] KODAMA	92C	E653	π^- emulsion 600 GeV

[25] FRABETTI 93E also gives measurements of the form factors and of the ratio of longitudinal to transverse polarizations of the $\overline{K}^{*0}$.

[26] KODAMA 92C uses the same $\overline{K}^{*0}\mu^+\nu_\mu$ events normalizing instead with $D^0 \to K^-\mu^+\nu_\mu$ events, as reported in the preceding data block. Measurements of form factor ratios and of the ratio of longitudinal to transverse polarizations of the $\overline{K}^{*0}$ are given in KODAMA 92.

$\Gamma(K^-\pi^+\mu^+\nu_\mu$ nonresonant$)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ $\Gamma_{18}/\Gamma_{16} = \Gamma_{18}/(\Gamma_{18}+\frac{2}{3}\Gamma_{28})$

VALUE	DOCUMENT ID		TECN	COMMENT
0.083 ± 0.029 OUR FIT				
0.083 ± 0.029	[27] FRABETTI	93E	E687	γ Be $\overline{E}_\gamma \approx$ 200 GeV

[27] This FRABETTI 93E value is equivalent to < 0.12 at the 90% confidence level.

$\Gamma(\overline{K}^0\pi^+\pi^-e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{19}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.022^{+0.047}_{-0.006} \pm 0.004$	1	[28] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[28] AGUILAR-BENITEZ 87F computes the branching fraction using topological normalization.

$\Gamma(K^-\pi^+\pi^0e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{20}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.044^{+0.052}_{-0.013} \pm 0.007$	2	[29] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[29] AGUILAR-BENITEZ 87F computes the branching fraction using topological normalization.

$\Gamma((\overline{K}^*(892)\pi)^0e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{21}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.012	90	ANJOS	92	E691	Photoproduction

$\Gamma((\overline{K}\pi\pi)^0e^+\nu_e$ non-$\overline{K}^*(892))/\Gamma_{\text{total}}$ Γ_{22}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.009	90	ANJOS	92	E691	Photoproduction

$\Gamma(K^-\pi^+\pi^0\mu^+\nu_\mu)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ $\Gamma_{23}/\Gamma_{16} = \Gamma_{23}/(\Gamma_{18}+\frac{2}{3}\Gamma_{28})$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.042	90	FRABETTI	93E	E687	γ Be $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(\pi^0\ell^+\nu_\ell)/\Gamma(\overline{K}^0\ell^+\nu_\ell)$ Γ_{24}/Γ_{12}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.085 ± 0.027 ± 0.014	53	[30] ALAM	93	CLEO	$e^+e^- \approx \Upsilon(4S)$

[30] ALAM 93 thus directly measures the product of ratios squared of CKM matrix elements and form factors at $q^2=0$: $|V_{cd}/V_{cs}|^2 \cdot |f_+^\pi(0)/f_+^K(0)|^2 = 0.085 \pm 0.027 \pm 0.014$.

$\Gamma(\pi^+\pi^-e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{25}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.057	90	[31] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[31] AGUILAR-BENITEZ 87F computes the branching fraction using topological normalization.

$\Gamma(\rho^0e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{29}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.0037	90	BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

$\Gamma(\rho^0\mu^+\nu_\mu)/\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)$ Γ_{30}/Γ_{28}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.044^{+0.031}_{-0.025} \pm 0.014}$	4	[32] KODAMA	93C	E653	π^- emulsion 600 GeV

[32] This KODAMA 93C result is based on a final signal of $4.0^{+2.8}_{-2.3} \pm 1.3$ events; the estimates of backgrounds that affect this number are somewhat model dependent.

$\Gamma(\phi e^+\nu_e)/\Gamma_{\text{total}}$ Γ_{31}/Γ

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.0209	90	BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

$\Gamma(\phi\mu^+\nu_\mu)/\Gamma_{\text{total}}$ Γ_{32}/Γ

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.0372	90	BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

$\Gamma(\eta'(958)\mu^+\nu_\mu)/\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)$ Γ_{33}/Γ_{28}

Decay modes of the $\eta'(958)$ not included in the search are corrected for.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.20	90	KODAMA	93B	E653	π^- emulsion 600 GeV

Hadronic modes with one or three K's

$\Gamma(\overline{K}^0\pi^+)/\Gamma_{\text{total}}$ Γ_{34}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0274 ± 0.0029 OUR FIT					
0.032 ± 0.004 OUR AVERAGE					
0.032 ± 0.005 ± 0.002	161	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.033 ± 0.009	36	[33] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.033 ± 0.013	17	[34] PERUZZI	77	MRK1	e^+e^- 3.77 GeV

[33] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.14 ± 0.03. We use the MARK-3 (ADLER 88C) value of $\sigma = 4.2 \pm 0.6 \pm 0.3$ nb.

[34] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.14 ± 0.05. We use the MARK-3 (ADLER 88C) value of $\sigma = 4.2 \pm 0.6 \pm 0.3$ nb.

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.302 ± 0.031 OUR FIT					
0.274 ± 0.030 ± 0.031	264	ANJOS	90C	E691	Photoproduction

$\Gamma(K^-\pi^+\pi^+)/\Gamma_{\text{total}}$ Γ_{35}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.091 ± 0.006 OUR FIT					
0.091 ± 0.007 OUR AVERAGE					
0.093 ± 0.006 ± 0.008	1502	[35] BALEST	94	CLEO	$e^+e^- \approx \Upsilon(4S)$
0.091 ± 0.013 ± 0.004	1164	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.091 ± 0.019	239	[36] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.086 ± 0.020	85	[37] PERUZZI	77	MRK1	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.064^{+0.015}_{-0.014}$		[38] BARLAG	92C	ACCM	π^- Cu 230 GeV
$0.063^{+0.028}_{-0.014} \pm 0.011$	8	[38] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[35] BALEST 94 measures the ratio of $D^+ \to K^-\pi^+\pi^+$ and $D^0 \to K^-\pi^+$ branching fractions to be 2.35 ± 0.16 ± 0.16 and uses their absolute measurement of the $D^0 \to K^-\pi^+$ fraction (AKERIB 93).

[36] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.38 ± 0.05. We use the MARK-3 (ADLER 88C) value of $\sigma = 4.2 \pm 0.6 \pm 0.3$ nb.

[37] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.36 ± 0.06. We use the MARK-3 (ADLER 88C) value of $\sigma = 4.2 \pm 0.6 \pm 0.3$ nb.

[38] AGUILAR-BENITEZ 87F and BARLAG 92C compute the branching fraction by topological normalization.