$D^\pm$

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

$D^\pm$ MASS

The fit includes $D^\pm$, D^0, $D_s^\pm$, $D^{*\pm}$, D^{*0}, and $D_s^{*\pm}$ mass and mass difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1869.3± 0.5 OUR FIT Error includes scale factor of 1.1.					
1869.4± 0.5 OUR AVERAGE					
1870.0± 0.5±1.0	317	BARLAG	90C	ACCM	π^- Cu 230 GeV
1863 ± 4		DERRICK	84	HRS	e^+e^- 29 GeV
1869.4± 0.6		[1] TRILLING	81	RVUE	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1875 ±10	9	ADAMOVICH	87	EMUL	Photoproduction
1860 ±16	6	ADAMOVICH	84	EMUL	Photoproduction
1868.4± 0.5		[1] SCHINDLER	81	MRK2	e^+e^- 3.77 GeV
1874 ± 5		GOLDHABER	77	MRK1	D^0, D^+ recoil spectra
1868.3± 0.9		[1] PERUZZI	77	MRK1	e^+e^- 3.77 GeV
1874 ±11		PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV
1876 ±15	50	PERUZZI	76	MRK1	$K^\mp\pi^\pm\pi^\pm$

[1] PERUZZI 77 and SCHINDLER 81 errors do not include the 0.13% uncertainty in the absolute SPEAR energy calibration. TRILLING 81 uses the high precision $J/\psi(1S)$ and $\psi(2S)$ measurements of ZHOLENTZ 80 to determine this uncertainty and combines the PERUZZI 77 and SCHINDLER 81 results to obtain the value quoted.

$D^\pm$ MEAN LIFE

Measurements with an error $> 0.1\times10^{-12}$ s are omitted from the average, and those with an error $> 0.2\times10^{-12}$ s have been omitted from the Listings.

VALUE (10^{-12} s)	EVTS	DOCUMENT ID		TECN	COMMENT
1.057±0.015 OUR AVERAGE					
1.048±0.015±0.011	9k	FRABETTI	94D	E687	$D^+ \to K^-\pi^+\pi^+$
1.075±0.040±0.018	2455	FRABETTI	91	E687	γ Be, $D^+ \to K^-\pi^+\pi^+$
1.03 ±0.08 ±0.06	200	ALVAREZ	90	NA14	γ, $D^+ \to K^-\pi^+\pi^+$
$1.05\ {}^{+0.077}_{-0.072}$	317	[2] BARLAG	90C	ACCM	π^- Cu 230 GeV
1.05 ±0.08 ±0.07	363	ALBRECHT	88I	ARG	e^+e^- 10 GeV
1.090±0.030±0.025	2992	RAAB	88	E691	Photoproduction
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.12\ {}^{+0.14}_{-0.11}$	149	AGUILAR-...	87D	HYBR	π^- p and pp
$1.09\ {}^{+0.19}_{-0.15}$	59	BARLAG	87B	ACCM	K^- and π^- 200 GeV
1.14 ±0.16 ±0.07	247	CSORNA	87	CLEO	e^+e^- 10 GeV
1.09 ±0.14	74	[3] PALKA	87B	SILI	π Be 200 GeV
$0.86\ \pm0.13\ {}^{+0.07}_{-0.03}$	48	ABE	86	HYBR	γp 20 GeV

[2] BARLAG 90C estimates the systematic error to be negligible.
[3] PALKA 87B observes this in $D^+ \to \overline{K}^*(892)e\nu$.

D^+ DECAY MODES

D^- modes are charge conjugates of the modes below.

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level

Inclusive modes

Γ_1	e^+ anything		(17.2 ±1.9) %		
Γ_2	K^- anything		(24.2 ±2.8) %		S=1.4
Γ_3	$\overline{K}^0$ anything + K^0 anything		(59 ±7) %		
Γ_4	K^+ anything		(5.8 ±1.4) %		
Γ_5	η anything	[a]	< 13	%	CL=90%
Γ_6	μ^+ anything				
Γ_7	$\mu^+ \mu^-$ anything				

Leptonic and semileptonic modes

Γ_8	$\mu^+ \nu_\mu$		< 7.2	$\times 10^{-4}$	CL=90%
Γ_9	$\overline{K}^0$ "e^+" ν_e	[b]	(6.7 ±0.8) %		
Γ_{10}	$\overline{K}^0 e^+ \nu_e$		(6.6 ±0.9) %		
Γ_{11}	$\overline{K}^0 \mu^+ \nu_\mu$		(7.0 $^{+3.0}_{-2.0}$) %		
Γ_{12}	$\overline{K}^0 \ell^+ \nu_\ell$				
Γ_{13}	$K^- \pi^+ e^+ \nu_e$		(4.2 $^{+0.9}_{-0.7}$) %		
Γ_{14}	$\overline{K}^*(892)^0 e^+ \nu_e$ × B($\overline{K}^{*0} \to K^- \pi^+$)		(3.2 ±0.33) %		
Γ_{15}	$K^- \pi^+ e^+ \nu_e$ nonresonant		< 7	$\times 10^{-3}$	CL=90%
Γ_{16}	$K^- \pi^+ \mu^+ \nu_\mu$		(3.2 ±1.7) %		
	In the fit as $\frac{2}{3}\Gamma_{28} + \Gamma_{18}$, where $\frac{2}{3}\Gamma_{28} = \Gamma_{17}$.				
Γ_{17}	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$ × B($\overline{K}^{*0} \to K^- \pi^+$)		(3.0 ±0.4) %		
Γ_{18}	$K^- \pi^+ \mu^+ \nu_\mu$ nonresonant		(2.7 ±1.1)	$\times 10^{-3}$	
Γ_{19}	$\overline{K}^0 \pi^+ \pi^- e^+ \nu_e$				
Γ_{20}	$K^- \pi^+ \pi^0 e^+ \nu_e$				
Γ_{21}	$(\overline{K}^*(892)\pi)^0 e^+ \nu_e$		< 1.2	%	CL=90%
Γ_{22}	$(\overline{K}\pi\pi)^0 e^+ \nu_e$ non-$\overline{K}^*(892)$		< 9	$\times 10^{-3}$	CL=90%
Γ_{23}	$K^- \pi^+ \pi^0 \mu^+ \nu_\mu$		< 1.4	$\times 10^{-3}$	CL=90%
Γ_{24}	$\pi^0 \ell^+ \nu_\ell$	[c]	(5.7 ±2.2)	$\times 10^{-3}$	
Γ_{25}	$\pi^+ \pi^- e^+ \nu_e$				

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

Γ_{26}	$\overline{K}^*(892)^0$ "e^+" ν_e	[b]	(4.8 ±0.4) %		
Γ_{27}	$\overline{K}^*(892)^0 e^+ \nu_e$		(4.8 ±0.5) %		
Γ_{28}	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$		(4.5 ±0.6) %		S=1.1
Γ_{29}	$\rho^0 e^+ \nu_e$		< 3.7	$\times 10^{-3}$	CL=90%
Γ_{30}	$\rho^0 \mu^+ \nu_\mu$		(2.0 $^{+1.5}_{-1.3}$)	$\times 10^{-3}$	
Γ_{31}	$\phi e^+ \nu_e$		< 2.09	%	CL=90%
Γ_{32}	$\phi \mu^+ \nu_\mu$		< 3.72	%	CL=90%
Γ_{33}	$\eta'(958) \mu^+ \nu_\mu$		< 9	$\times 10^{-3}$	CL=90%

Hadronic modes with one or three K's

Γ_{34}	$\overline{K}^0 \pi^+$		(2.74±0.29) %		
Γ_{35}	$K^- \pi^+ \pi^+$	[d]	(9.1 ±0.6) %		
Γ_{36}	$\overline{K}^*(892)^0 \pi^+$ × B($\overline{K}^{*0} \to K^- \pi^+$)		(1.28±0.13) %		
Γ_{37}	$\overline{K}_0(1430)^0 \pi^+$ × B($\overline{K}^*(1430)^0 \to K^- \pi^+$)		(2.3 ±0.3) %		
Γ_{38}	$\overline{K}^*(1680)^0 \pi^+$ × B($\overline{K}^*(1680)^0 \to K^- \pi^+$)		(3.7 ±0.8)	$\times 10^{-3}$	
Γ_{39}	$K^- \pi^+ \pi^+$ nonresonant		(8.6 ±0.9) %		
Γ_{40}	$\overline{K}^0 \pi^+ \pi^0$	[d]	(9.7 ±3.0) %		S=1.1
Γ_{41}	$\overline{K}^0 \rho^+$		(6.6 ±2.5) %		
Γ_{42}	$\overline{K}^*(892)^0 \pi^+$ × B($\overline{K}^{*0} \to \overline{K}^0 \pi^0$)		(6.4 ±0.6)	$\times 10^{-3}$	
Γ_{43}	$\overline{K}^0 \pi^+ \pi^0$ nonresonant		(1.3 ±1.1) %		
Γ_{44}	$K^- \pi^+ \pi^+ \pi^0$	[d]	(6.4 ±1.1) %		

Γ_{45}	$\overline{K}^*(892)^0\rho^+$ total		(1.4 ±0.9) %	
	× B($\overline{K}^{*0} \to K^-\pi^+$)			
Γ_{46}	$\overline{K}_1(1400)^0\pi^+$		(2.2 ±0.6) %	
	× B($\overline{K}_1(1400)^0 \to K^-\pi^+\pi^0$)			
Γ_{47}	$K^-\rho^+\pi^+$ total		(3.1 ±1.1) %	
Γ_{48}	$\overline{K}^*(892)^0\pi^+\pi^0$ total		(4.5 ±0.9) %	
	× B($\overline{K}^{*0} \to K^-\pi^+$)			
Γ_{49}	$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body		(2.8 ±0.9) %	
	× B($\overline{K}^{*0} \to K^-\pi^+$)			
Γ_{50}	$K^*(892)^-\pi^+\pi^+$ 3-body		(1.4 ±0.6) %	
	× B($K^{*-} \to K^-\pi^0$)			
Γ_{51}	$K^-\pi^+\pi^+\pi^0$ nonresonant	[e]	(1.2 ±0.6) %	
Γ_{52}	$\overline{K}^0\pi^+\pi^+\pi^-$	[d]	(7.0 ±1.0) %	
Γ_{53}	$\overline{K}^0 a_1(1260)^+$		(4.0 ±0.8) %	
	× B($a_1(1260)^+ \to \pi^+\pi^+\pi^-$)			
Γ_{54}	$\overline{K}_1(1400)^0\pi^+$		(2.2 ±0.6) %	
	× B($\overline{K}_1(1400)^0 \to \overline{K}^0\pi^+\pi^-$)			
Γ_{55}	$K^*(892)^-\pi^+\pi^+$ 3-body		(1.4 ±0.6) %	
	× B($K^{*-} \to \overline{K}^0\pi^-$)			
Γ_{56}	$\overline{K}^0\rho^0\pi^+$ total		(4.2 ±0.9) %	
Γ_{57}	$\overline{K}^0\pi^+\pi^+\pi^-$ nonresonant		(8 ±4) × 10^{-3}	
Γ_{58}	$K^-\pi^+\pi^+\pi^+\pi^-$		(8.2 ±1.4) × 10^{-3}	
Γ_{59}	$\overline{K}^*(892)^0\pi^+\pi^+\pi^-$		(6.8 ±1.8) × 10^{-3}	
	× B($\overline{K}^{*0} \to K^-\pi^+$)			
Γ_{60}	$\overline{K}^*(892)^0\rho^0\pi^+$		(5.1 ±2.2) × 10^{-3}	
	× B($\overline{K}^{*0} \to K^-\pi^+$)			
Γ_{61}	$K^-\pi^+\pi^+\pi^0\pi^0$		(2.2 $^{+5.0}_{-0.9}$) %	
Γ_{62}	$\overline{K}^0\pi^+\pi^+\pi^-\pi^0$		(5.4 $^{+3.0}_{-1.4}$) %	
Γ_{63}	$\overline{K}^0\pi^+\pi^+\pi^+\pi^-\pi^-$		(8 ±7) × 10^{-4}	
Γ_{64}	$K^-\pi^+\pi^+\pi^+\pi^-\pi^0$		(2.0 ±1.8) × 10^{-3}	
Γ_{65}	$\overline{K}^0\overline{K}^0K^+$		(1.8 ±0.8) %	

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

Γ_{66}	$\overline{K}^0\rho^+$		(6.6 ±2.5) %	
Γ_{67}	$\overline{K}^0 a_1(1260)^+$		(8.1 ±1.7) %	
Γ_{68}	$\overline{K}^0 a_2(1320)^+$		< 3 × 10^{-3}	CL=90%
Γ_{69}	$\overline{K}^*(892)^0\pi^+$		(1.92±0.19) %	
Γ_{70}	$\overline{K}^*(892)^0\rho^+$ total		(2.1 ±1.4) %	
Γ_{71}	$\overline{K}^*(892)^0\rho^+$ S-wave	[e]	(1.7 ±1.6) %	
Γ_{72}	$\overline{K}^*(892)^0\rho^+$ P-wave		< 1 × 10^{-3}	CL=90%
Γ_{73}	$\overline{K}^*(892)^0\rho^+$ D-wave		(10 ±7) × 10^{-3}	
Γ_{74}	$\overline{K}^*(892)^0\rho^+$ D-wave longitudinal		< 7 × 10^{-3}	CL=90%
Γ_{75}	$\overline{K}_1(1270)^0\pi^+$		< 7 × 10^{-3}	CL=90%
Γ_{76}	$\overline{K}_1(1400)^0\pi^+$		(5.0 ±1.3) %	
Γ_{77}	$\overline{K}^*(1410)^0\pi^+$		< 7 × 10^{-3}	CL=90%
Γ_{78}	$\overline{K}_0^*(1430)^0\pi^+$		(3.4 ±0.4) %	
Γ_{79}	$\overline{K}^*(1680)^0\pi^+$		(1.45±0.31) %	
Γ_{80}	$\overline{K}^*(892)^0\pi^+\pi^0$ total		(6.7 ±1.4) %	
Γ_{81}	$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body		(4.2 ±1.4) %	
Γ_{82}	$K^*(892)^-\pi^+\pi^+$ total			
Γ_{83}	$K^*(892)^-\pi^+\pi^+$ 3-body		(2.1 ±0.9) %	
Γ_{84}	$K^-\rho^+\pi^+$ total		(3.1 ±1.1) %	
Γ_{85}	$K^-\rho^+\pi^+$ 3-body		(1.1 ±0.4) %	

Γ_{86}	$\overline{K}^0\rho^0\pi^+$ total	(4.2 ±0.9) %		CL=90%
Γ_{87}	$\overline{K}^0\rho^0\pi^+$ 3-body	(5 ±5) $\times 10^{-3}$		
Γ_{88}	$\overline{K}^0 f_0(980)\pi^+$	< 5	$\times 10^{-3}$	CL=90%
Γ_{89}	$\overline{K}^*(892)^0\pi^+\pi^+\pi^-$	(1.02±0.27) %		
Γ_{90}	$\overline{K}^*(892)^0\rho^0\pi^+$	(7.7 ±3.3) $\times 10^{-3}$		

Pionic modes

Γ_{91}	$\pi^+\pi^0$	(2.5 ±0.7) $\times 10^{-3}$		
Γ_{92}	$\pi^+\pi^+\pi^-$	(3.2 ±0.6) $\times 10^{-3}$		
Γ_{93}	$\rho^0\pi^+$	< 1.4	$\times 10^{-3}$	CL=90%
Γ_{94}	$\pi^+\pi^+\pi^-$ nonresonant	(2.5 ±0.7) $\times 10^{-3}$		
Γ_{95}	$\pi^+\pi^+\pi^-\pi^0$	(1.9 $^{+1.5}_{-1.2}$) %		
Γ_{96}	$\eta\pi^+ \times$ B($\eta \to \pi^+\pi^-\pi^0$)	(1.8 ±0.6) $\times 10^{-3}$		
Γ_{97}	$\omega\pi^+ \times$ B($\omega \to \pi^+\pi^-\pi^0$)	< 6	$\times 10^{-3}$	CL=90%
Γ_{98}	$\pi^+\pi^+\pi^+\pi^-\pi^-$	(1.0 $^{+0.8}_{-0.7}$) $\times 10^{-3}$		
Γ_{99}	$\pi^+\pi^+\pi^+\pi^-\pi^-\pi^0$	(2.9 $^{+2.9}_{-2.0}$) $\times 10^{-3}$		

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

Γ_{100}	$\rho^0\pi^+$	< 1.4	$\times 10^{-3}$	CL=90%
Γ_{101}	$\eta\pi^+$	(7.5 ±2.5) $\times 10^{-3}$		
Γ_{102}	$\omega\pi^+$	< 7	$\times 10^{-3}$	CL=90%
Γ_{103}	$\eta\rho^+$	< 1.2	%	CL=90%
Γ_{104}	$\eta'(958)\pi^+$	< 9	$\times 10^{-3}$	CL=90%
Γ_{105}	$\eta'(958)\rho^+$	< 1.5	%	CL=90%

Hadronic modes with two K's

Γ_{106}	$\overline{K}^0 K^+$	(7.2 ±1.2) $\times 10^{-3}$		
Γ_{107}	$K^+K^-\pi^+$	(1.13±0.13) %		

In the fit as $\frac{1}{2}\Gamma_{122} + \frac{2}{3}\Gamma_{124} + \Gamma_{110}$, where $\frac{1}{2}\Gamma_{122} = \Gamma_{108}$ and $\frac{2}{3}\Gamma_{124} = \Gamma_{109}$.

Γ_{108}	$\phi\pi^+ \times$ B($\phi \to K^+K^-$)	(3.3 ±0.4) $\times 10^{-3}$		
Γ_{109}	$\overline{K}^*(892)^0 K^+ \times$ B($\overline{K}^{*0} \to K^-\pi^+$)	(3.4 ±0.7) $\times 10^{-3}$		
Γ_{110}	$K^+K^-\pi^+$ nonresonant	(4.6 ±0.9) $\times 10^{-3}$		
Γ_{111}	$K^+K^-\pi^+\pi^0$			
Γ_{112}	$\phi\pi^+\pi^0 \times$ B($\phi \to K^+K^-$)	(1.2 ±0.5) %		
Γ_{113}	$\phi\rho^+ \times$ B($\phi \to K^+K^-$)	< 7	$\times 10^{-3}$	CL=90%
Γ_{114}	$K^+K^-\pi^+\pi^0$ non-ϕ	(1.5 $^{+0.7}_{-0.6}$) %		
Γ_{115}	$K^+\overline{K}^0\pi^+\pi^-$	< 2	%	CL=90%
Γ_{116}	$K^0K^-\pi^+\pi^+$	(1.0 ±0.6) %		
Γ_{117}	$K^*(892)^+\overline{K}^*(892)^0 \times$ B$^2(K^* \to K\pi^+)$	(1.2 ±0.5) %		
Γ_{118}	$K^0K^-\pi^+\pi^+$ non-$K^{*+}\overline{K}^{*0}$	< 7.9	$\times 10^{-3}$	CL=90%
Γ_{119}	$K^+K^-\pi^+\pi^+\pi^-$			
Γ_{120}	$\phi\pi^+\pi^+\pi^- \times$ B($\phi \to K^+K^-$)	< 1	$\times 10^{-3}$	CL=90%
Γ_{121}	$K^+K^-\pi^+\pi^+\pi^-$ nonresonant	< 3	%	CL=90%

Fractions of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

Γ_{122}	$\phi\pi^+$	(6.7 ±0.8) $\times 10^{-3}$		
Γ_{123}	$\overline{K}^0 K^*(892)^+$	(3.0 ±1.4) %		
Γ_{124}	$\overline{K}^*(892)^0 K^+$	(5.1 ±1.0) $\times 10^{-3}$		
Γ_{125}	$\phi\pi^+\pi^0$	(2.3 ±1.0) %		
Γ_{126}	$\phi\rho^+$	< 1.5	%	CL=90%
Γ_{127}	$K^*(892)^+\overline{K}^*(892)^0$	(2.6 ±1.1) %		
Γ_{128}	$\phi\pi^+\pi^+\pi^-$	< 2	$\times 10^{-3}$	CL=90%

Doubly Cabibbo suppressed (*DC*) modes, $\Delta C = 1$ weak neutral current (*C1*) modes, or Lepton Family number (*LF*) or Lepton number (*L*) violating modes

Γ_{129}	$K^+\pi^+\pi^-$	*DC*		< 5	$\times 10^{-3}$	CL=90%
Γ_{130}	$K^+K^+K^-$	*DC*		$(5.2 \pm 2.0) \times 10^{-3}$		
Γ_{131}	ϕK^+	*DC*		$(3.9\ ^{+2.2}_{-1.9}) \times 10^{-4}$		
Γ_{132}	$\pi^+ e^+ e^-$	*C1*		< 2.5	$\times 10^{-3}$	CL=90%
Γ_{133}	$\pi^+ \mu^+ \mu^-$	*C1*		< 2.2	$\times 10^{-4}$	CL=90%
Γ_{134}	$\rho^+ \mu^+ \mu^-$			< 5.6	$\times 10^{-4}$	CL=90%
Γ_{135}	$K^+ e^+ e^-$		[*f*]	< 4.8	$\times 10^{-3}$	CL=90%
Γ_{136}	$K^+ \mu^+ \mu^-$		[*f*]	< 3.2	$\times 10^{-4}$	CL=90%
Γ_{137}	$\pi^+ e^\pm \mu^\mp$	*LF*	[*g*]	< 3.8	$\times 10^{-3}$	CL=90%
Γ_{138}	$\pi^+ e^+ \mu^-$	*LF*		< 3.3	$\times 10^{-3}$	CL=90%
Γ_{139}	$\pi^+ e^- \mu^+$	*LF*		< 3.3	$\times 10^{-3}$	CL=90%
Γ_{140}	$K^+ e^+ \mu^-$	*LF*		< 3.4	$\times 10^{-3}$	CL=90%
Γ_{141}	$K^+ e^- \mu^+$	*LF*		< 3.4	$\times 10^{-3}$	CL=90%
Γ_{142}	$\pi^- e^+ e^+$	*L*		< 4.8	$\times 10^{-3}$	CL=90%
Γ_{143}	$\pi^- \mu^+ \mu^+$	*L*		< 2.2	$\times 10^{-4}$	CL=90%
Γ_{144}	$\pi^- e^+ \mu^+$	*L*		< 3.7	$\times 10^{-3}$	CL=90%
Γ_{145}	$\rho^- \mu^+ \mu^+$	*L*		< 5.6	$\times 10^{-4}$	CL=90%
Γ_{146}	$K^- e^+ e^+$	*L*		< 9.1	$\times 10^{-3}$	CL=90%
Γ_{147}	$K^- \mu^+ \mu^+$	*L*		< 3.2	$\times 10^{-4}$	CL=90%
Γ_{148}	$K^- e^+ \mu^+$	*L*		< 4.0	$\times 10^{-3}$	CL=90%
Γ_{149}	$K^*(892)^- \mu^+ \mu^+$	*L*		< 8.5	$\times 10^{-4}$	CL=90%

Γ_{150} A dummy mode used by the fit. (34 ± 5) %

[*a*] This is a weighted average of $D^\pm$ (44%) and D^0 (56%) branching fractions. See "D^+ and $D^0 \to$ (η anything) / (total D^+ and D^0)" under "D^+ Branching Ratios" in these Full Listings.

[*b*] This value combines the e^+ and μ^+ branching fractions, making a small phase-space adjustment to the μ^+ fraction to be able to use it as an e^+ fraction; hence the "e^+." In fact, some of the e^+ measurements already use μ^+ events in this way.

[*c*] ℓ indicates e or μ mode, not sum over modes.

[*d*] The branching fractions for this mode may differ from the sum of the submodes that contribute to it, due to interference effects. See the relevant papers.

[*e*] The two experiments determining this ratio are in serious disagreement. See the Full Listings.

[*f*] This mode is not a useful test for a ΔC=1 weak neutral current because both quarks must change flavor in this decay.

[*g*] The value is for the sum of the charge states indicated.

CONSTRAINED FIT INFORMATION

An overall fit to 26 branching ratios uses 46 measurements and one constraint to determine 17 parameters. The overall fit has a $\chi^2 = 15.3$ for 30 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_{13}	4									
x_{18}	4	2								
x_{27}	15	29	8							
x_{28}	12	7	31	26						
x_{34}	41	6	5	20	16					
x_{35}	27	17	14	57	45	35				
x_{40}	0	0	0	0	0	0	0			
x_{44}	6	4	3	13	10	8	23	0		
x_{52}	8	5	4	17	14	10	30	0	18	
x_{69}	18	11	9	37	30	23	65	0	15	20
x_{76}	4	3	2	9	7	5	15	0	31	37
x_{83}	2	1	1	5	4	3	9	0	29	13
x_{110}	9	5	5	19	15	11	33	0	7	10
x_{122}	15	10	8	33	26	20	57	0	13	17
x_{124}	9	6	5	20	16	12	35	0	8	10
x_{150}	−33	−27	−12	−40	−34	−30	−53	−59	−46	−45
	x_{10}	x_{13}	x_{18}	x_{27}	x_{28}	x_{34}	x_{35}	x_{40}	x_{44}	x_{52}

x_{76}	10					
x_{83}	6	12				
x_{110}	21	5	3			
x_{122}	38	9	5	19		
x_{124}	23	5	3	11	20	
x_{150}	−37	−46	−33	−19	−32	−20
	x_{69}	x_{76}	x_{83}	x_{110}	x_{122}	x_{124}

D^+ BRANCHING RATIOS

See the "Note on D Meson Branching Fractions" and the "Note on Semileptonic Decays of D and B Mesons," above.

Inclusive modes

$\Gamma(e^+ \text{anything})/\Gamma_{\text{total}}$ **Γ_1/Γ**

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.172±0.019 OUR AVERAGE					
$0.20\ ^{+0.09}_{-0.07}$		AGUILAR-...	87E	HYBR	πp, pp 360, 400 GeV
0.170±0.019±0.007	158	BALTRUSAIT...	85B	MRK3	e^+e^- 3.77 GeV
0.168±0.064	23	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.220^{+0.044}_{-0.022}$		BACINO	80	DLCO	e^+e^- 3.77 GeV

D^+ and $D^0 \rightarrow$ (e^+ anything) / (total D^+ and D^0)

If measured at the $\psi(3770)$, this quantity is a weighted average of D^+ (44%) and D^0 (56%) branching fractions. Only experiments at $E_{\text{cm}} = 3.77$ GeV are included in the average here.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.110±0.011 OUR AVERAGE	Error includes scale factor of 1.1.				
0.117±0.011	295	BALTRUSAIT...	85B	MRK3	e^+e^- 3.77 GeV
0.10 ±0.032		[4] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.072±0.028		FELLER	78	MRK1	e^+e^- 3.772 GeV

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

$0.134 \pm 0.015 \pm 0.010$		[5] ABE	93E VNS	e^+e^- 58 GeV
$0.098 \pm 0.009^{+0.006}_{-0.005}$	240	[6] ALBRECHT	92F ARG	e^+e^- $\approx$ 10 GeV
$0.096 \pm 0.007 \pm 0.015$		[7] ONG	88 MRK2	e^+e^- 29 GeV
$0.116^{+0.011}_{-0.009}$		[7] PAL	86 DLCO	e^+e^- 29 GeV
$0.091 \pm 0.009 \pm 0.013$		[7] AIHARA	85 TPC	e^+e^- 29 GeV
$0.092 \pm 0.022 \pm 0.040$		[7] ALTHOFF	84J TASS	e^+e^- 34.6 GeV
0.091 ± 0.013		[7] KOOP	84 DLCO	See PAL 86
0.08 ± 0.015		[8] BACINO	79 DLCO	e^+e^- 3.772 GeV

[4] Isolates D^+ and $D^0 \rightarrow e^+ X$ and weights for relative production (44%–56%).

[5] ABE 93E also measures forward-backward asymmetries and fragmentation functions for c and b quarks.

[6] ALBRECHT 92F uses the excess of right-sign over wrong-sign leptons in a sample of events tagged by fully reconstructed $D^*(2010)^+ \rightarrow D^0\pi^+$ decays.

[7] Average BR for charm $\rightarrow e^+ X$. Unlike at $E_{cm} = 3.77$ GeV, the admixture of charmed mesons is unknown.

[8] Not independent of BACINO 80 measurements of $\Gamma(e^+ \text{anything})/\Gamma_{total}$ for the D^+ and D^0 separately.

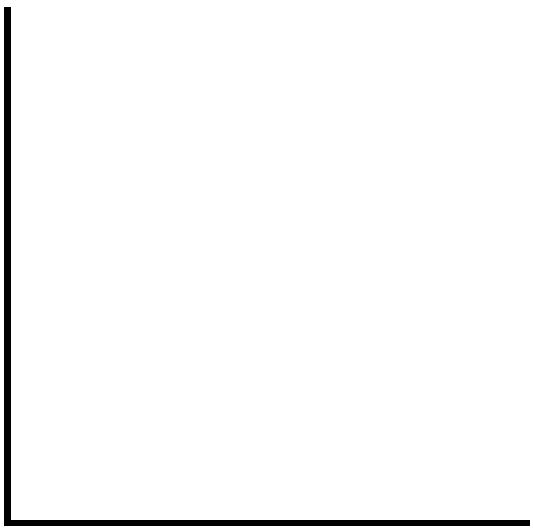
$\Gamma(K^-\text{anything})/\Gamma_{total}$ Γ_2/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.242 ± 0.028 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.		
$0.278^{+0.036}_{-0.031}$		[9] BARLAG	92C ACCM	π^- Cu 230 GeV
$0.271 \pm 0.023 \pm 0.024$		COFFMAN	91 MRK3	e^+e^- 3.77 GeV
0.17 ± 0.07		AGUILAR-...	87E HYBR	πp, pp 360, 400 GeV
0.19 ± 0.05	26	SCHINDLER	81 MRK2	e^+e^- 3.771 GeV
0.10 ± 0.07	3	VUILLEMIN	78 MRK1	e^+e^- 3.772 GeV

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

$0.16^{+0.08}_{-0.07}$		AGUILAR-...	86B HYBR	See AGUILAR-BENITEZ 87E

[9] BARLAG 92C computes the branching fraction using topological normalization.



$\Gamma(K^-\text{anything})/\Gamma_{total}$

$[\Gamma(\overline{K}^0\text{anything}) + \Gamma(K^0\text{anything})]/\Gamma_{total}$ Γ_3/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.59 ± 0.07 OUR AVERAGE				
$0.612 \pm 0.065 \pm 0.043$		COFFMAN	91 MRK3	e^+e^- 3.77 GeV
0.52 ± 0.18	15	SCHINDLER	81 MRK2	e^+e^- 3.771 GeV
0.39 ± 0.29	3	VUILLEMIN	78 MRK1	e^+e^- 3.772 GeV

$\Gamma(K^+ \text{anything})/\Gamma_{\text{total}}$ Γ_4/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.058±0.014 OUR AVERAGE					
0.055±0.013±0.009		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
$0.08\ ^{+0.06}_{-0.05}$		AGUILAR-...	87E	HYBR	πp, pp 360, 400 GeV
0.06 ±0.04	12	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.06 ±0.06	2	VUILLEMIN	78	MRK1	e^+e^- 3.772 GeV

D^+ and $D^0 \to$ (η anything) / (total D^+ and D^0)

If measured at the $\psi(3770)$, this quantity is a weighted average of D^+ (44%) and D^0 (56%) branching fractions. Only the experiment at $E_{\text{cm}} = 3.77$ GeV is used.

VALUE	DOCUMENT ID		TECN	COMMENT
<0.13	PARTRIDGE	81	CBAL	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.02	[10] BRANDELIK	79	DASP	e^+e^- 4.03 GeV

[10] The BRANDELIK 79 result is based on the absence of an η signal at $E_{\text{cm}} = 4.03$ GeV. PARTRIDGE 81 observes a substantially higher η cross section at 4.03 GeV.

$\Gamma(c/\bar{c} \to \mu^+ \text{anything})/\Gamma(c/\bar{c} \to \text{anything})$

This is the average branching ratio for charm $\to \mu^+ X$. The mixture of charmed particles is unknown and may actually contain states other than D mesons.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.081\ ^{+0.010}_{-0.009}$ OUR AVERAGE					
$0.086\pm0.017^{+0.008}_{-0.007}$	69	[11] ALBRECHT	92F	ARG	$e^+e^- \approx 10$ GeV
0.078±0.009±0.012		ONG	88	MRK2	e^+e^- 29 GeV
0.078±0.015±0.02		BARTEL	87	JADE	e^+e^- 34.6 GeV
$0.082\pm0.012^{+0.02}_{-0.01}$		ALTHOFF	84G	TASS	e^+e^- 34.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.089±0.018±0.025		BARTEL	85J	JADE	See BARTEL 87

[11] ALBRECHT 92F uses the excess of right-sign over wrong-sign leptons in a sample of events tagged by fully reconstructed $D^*(2010)^+ \to D^0\pi^+$ decays.

$\Gamma(c/\bar{c} \to e^+e^- \text{anything})/\Gamma(c/\bar{c} \to \text{anything})$

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<2.2\times10^{-3}$	90	0.1	[12] HAAS	88	CLEO	e^+e^- 10 GeV

[12] The normalization uses a continuum charm production estimate.

$\Gamma(c/\bar{c} \to e^+\mu^- \text{anything})/\Gamma(c/\bar{c} \to \text{anything})$

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<3.7\times10^{-3}$	90	0.2	[13] HAAS	88	CLEO	e^+e^- 10 GeV

[13] The normalization uses a continuum charm production estimate.

$\Gamma(c/\bar{c} \to \mu^+\mu^- \text{anything})/\Gamma(c/\bar{c} \to \text{anything})$

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.018	90	0.3	[14] HAAS	88	CLEO	e^+e^- 10 GeV
<0.007	95		[15] ALTHOFF	84G	TASS	e^+e^- 34.5 GeV

[14] The normalization uses a continuum charm production estimate.
[15] Average BR for charm $\to \mu^+\mu^- X$. The mixture of charmed particles is unknown and may actually contain states other than D mesons.

Leptonic and semileptonic modes

$\Gamma(\mu^+\nu_\mu)/\Gamma_{\text{total}}$ Γ_8/Γ

See the "Note on Pseudoscalar-Meson Decay Constants" in the $\pi^\pm$ Listings for the limit inferred on the D^+ decay constant from the limit here on $\Gamma(\mu^+\nu_\mu)/\Gamma_{\text{total}}$.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.00072	90		ADLER	88B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.02	90	0	[16] AUBERT	83	SPEC	μ^+ Fe, 250 GeV

[16] AUBERT 83 obtains an upper limit 0.014 assuming the final state contains equal amounts of (D^+, D^-), $(D^+, \overline{D}^0)$, (D^-, D^0), and $(D^0, \overline{D}^0)$. We quote the limit they get under more general assumptions.

$\Gamma(\overline{K}^0 \text{ "}e^+\text{" } \nu_e)/\Gamma_{\text{total}}$ Γ_9/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 1.03 to be able to use it with the $\overline{K}^0 e^+ \nu_e$ fraction.

VALUE	DOCUMENT ID		COMMENT
0.067±0.008 OUR AVERAGE			
0.066±0.009	PDG	94	Our $\Gamma(\overline{K}^0 e^+ \nu_e)/\Gamma_{\text{total}}$
$0.072^{+0.031}_{-0.021}$	PDG	94	1.03 × our $\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma_{\text{total}}$

$\Gamma(\overline{K}^0 e^+ \nu_e)/\Gamma_{\text{total}}$ Γ_{10}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.066±0.009 OUR FIT					
0.06 $^{+0.022}_{-0.013}$±0.007	13	BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

$\Gamma(\overline{K}^0 e^+ \nu_e)/\Gamma(\overline{K}^0 \pi^+)$ Γ_{10}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
2.39±0.33 OUR FIT					
2.60±0.35±0.26	186	[17] BEAN	93C	CLEO	$e^+e^- \approx \Upsilon(4S)$

[17] 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.

$\Gamma(\overline{K}^0 e^+ \nu_e)/\Gamma(K^- \pi^+ \pi^+)$ Γ_{10}/Γ_{35}

VALUE	DOCUMENT ID		TECN	COMMENT
0.72±0.10 OUR FIT				
0.66±0.09±0.14	ANJOS	91C	E691	γ Be 80–240 GeV

$\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma_{\text{total}}$ Γ_{11}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.07 $^{+0.028}_{-0.016}$±0.012	14	BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

$\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma(\mu^+ \text{anything})$ Γ_{11}/Γ_6

VALUE	EVTS	DOCUMENT ID		COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.76±0.06	84	[18] AOKI	88	π^- emulsion

[18] From topological branching ratios in emulsion with an identified muon.

$\Gamma(K^- \pi^+ e^+ \nu_e)/\Gamma_{\text{total}}$ Γ_{13}/Γ

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$0.042^{+0.009}_{-0.007}$ OUR FIT						
$0.035^{+0.012}_{-0.007}$±0.004		14	[19] BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.057	90		[20] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[19] BAI 91 finds that a fraction $0.79^{+0.15+0.09}_{-0.17-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+ \nu_e$ (24 events) are $\overline{K}^*(892) e^+ \nu_e$.

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

$\Gamma(\overline{K}^*(892)^0 \text{ "}e^+\text{" } \nu_e)/\Gamma_{\text{total}}$ 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 $\overline{K}^*(892)^0 \rightarrow \overline{K}^0 \pi^0$.

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.

$\Gamma(K^- \pi^+ e^+ \nu_e \text{ nonresonant})/\Gamma_{\text{total}}$ 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	γBe $\overline{E}_\gamma \approx$ 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.

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.083±0.029 OUR FIT				
0.083±0.029	[27] FRABETTI	93E	E687	γBe $\overline{E}_\gamma \approx$ 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. • • •					
$0.022^{+0.047}_{-0.006}\pm0.004$	1	[28] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

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

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.044^{+0.052}_{-0.013}\pm0.007$	2	[29] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

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

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

$\Gamma((\overline{K}\pi\pi)^0 e^+\nu_e$ non-$\overline{K}^*(892))/\Gamma_{total}$ 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	γBe $\overline{E}_\gamma \approx$ 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: $|V_{cd}/V_{cs}|^2 \cdot |f_+^\pi(0)/f_+^K(0)|^2 = 0.085 \pm 0.027 \pm 0.014$.

$\Gamma(\pi^+\pi^- e^+\nu_e)/\Gamma_{total}$ 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.

$\Gamma(\rho^0 e^+\nu_e)/\Gamma_{total}$ 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
$0.044^{+0.031}_{-0.025}\pm0.014$	4	[32] KODAMA	93C	E653	π^- emulsion 600 GeV

[32] This KODAMA 93C result is based on a final signal of $4.0^{+2.8}_{-2.3}\pm1.3$ events; the estimates of backgrounds that affect this number are somewhat model dependent.

$\Gamma(\phi e^+\nu_e)/\Gamma_{total}$ 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

$\Gamma(\phi\mu^+\nu_\mu)/\Gamma_{total}$ 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

$\Gamma(\overline{K}^0\pi^+)/\Gamma_{total}$ 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 σ = 4.2 ± 0.6 ± 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 σ = 4.2 ± 0.6 ± 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

$\Gamma(K^-\pi^+\pi^+)/\Gamma_{total}$ 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
$0.063^{+0.028}_{-0.014}\pm0.011$	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 σ = 4.2 ± 0.6 ± 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 σ = 4.2 ± 0.6 ± 0.3 nb.

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

$\Gamma(\overline{K}^*(892)^0\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{69}/Γ_{35}

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.212±0.016 OUR FIT					
0.210±0.015 OUR AVERAGE					
0.206±0.009±0.014		FRABETTI	94G	E687	γBe $\overline{E}_\gamma$=220 GeV
0.255±0.014±0.050		ANJOS	93	E691	γBe 90–260 GeV
0.21 ±0.06 ±0.06		ALVAREZ	91B	NA14	Photoproduction
0.20 ±0.02 ±0.11		ADLER	87	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.053	90	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

$\Gamma(\overline{K}_0^*(1430)^0\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{78}/Γ_{35}

Unseen decay modes of the $\overline{K}_0^*(1430)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.380±0.035 OUR AVERAGE				
0.426±0.033±0.088	FRABETTI	94G	E687	γBe $\overline{E}_\gamma$=220 GeV
0.372±0.029±0.025	ANJOS	93	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^*(1680)^0\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{79}/Γ_{35}

Unseen decay modes of the $\overline{K}^*(1680)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.160±0.032 OUR AVERAGE Error includes scale factor of 1.1.				
0.182±0.023±0.028	FRABETTI	94G	E687	γBe $\overline{E}_\gamma$=220 GeV
0.113±0.015±0.050	ANJOS	93	E691	γBe 90–260 GeV

$\Gamma(K^-\pi^+\pi^+ \text{ nonresonant})/\Gamma(K^-\pi^+\pi^+)$ Γ_{39}/Γ_{35}

VALUE	DOCUMENT ID		TECN	COMMENT
0.95 ±0.07 OUR AVERAGE				
0.998±0.037±0.072	FRABETTI	94G	E687	γBe $\overline{E}_\gamma$=220 GeV
0.838±0.088±0.275	ANJOS	93	E691	γBe 90–260 GeV
0.79 ±0.07 ±0.15	ADLER	87	MRK3	e^+e^- 3.77 GeV

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.097±0.030 OUR FIT Error includes scale factor of 1.1.					
0.107±0.029 OUR AVERAGE					
0.102±0.025±0.016	159	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.19 ±0.12	10	[39] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[39] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.78 ± 0.48. We use the MARK-3 (ADLER 88C) value of σ = 4.2 ± 0.6 ± 0.3 nb.

$\Gamma(\overline{K}^0\rho^+)/\Gamma(\overline{K}^0\pi^+\pi^0)$ Γ_{41}/Γ_{40}

VALUE	DOCUMENT ID		TECN	COMMENT
0.68±0.08±0.12	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+)/\Gamma(\overline{K}^0\pi^+\pi^0)$ Γ_{69}/Γ_{40}

Includes a factor 3 to take into acount $\overline{K}^*(892)^0 \to K^-\pi^+$.

VALUE	DOCUMENT ID		TECN	COMMENT
0.20±0.06 OUR FIT				
0.57±0.18±0.18	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0\pi^+\pi^0\ \text{nonresonant})/\Gamma(\overline{K}^0\pi^+\pi^0)$ Γ_{43}/Γ_{40}

VALUE	DOCUMENT ID		TECN	COMMENT
0.13±0.07±0.08	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^+\pi^0)/\Gamma_{\text{total}}$ Γ_{44}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.064±0.011 OUR FIT					
0.058±0.012±0.012	142	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.034^{+0.056}_{-0.070}$		[40] BARLAG	92C	ACCM	π^- Cu 230 GeV
$0.022^{+0.047}_{-0.006}\pm0.004$	1	[40] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV
$0.063^{+0.014}_{-0.013}\pm0.012$	175	BALTRUSAIT...	86E	MRK3	See COFFMAN 92B

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

$\Gamma(K^-\pi^+\pi^+\pi^0)/\Gamma(K^-\pi^+\pi^+)$ Γ_{44}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.71±0.12 OUR FIT					
0.76±0.11±0.12	91	ANJOS	92C	E691	γBe 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.69±0.10±0.16		ANJOS	89E	E691	See ANJOS 92C
$0.57^{+0.65}_{-0.17}$	1	AGUILAR-...	83B	HYBR	π^-p, 360 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+\ \text{total})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{70}/Γ_{44}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.33±0.165±0.12	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+\ S\text{-wave})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{71}/Γ_{44}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included. The two experiments disagree severely here.

VALUE	DOCUMENT ID		TECN	COMMENT
0.26 ±0.25 OUR AVERAGE Error includes scale factor of 3.1.				
0.15 ±0.075±0.045	ANJOS	92C	E691	γBe 90–260 GeV
0.833±0.116±0.165	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+\ P\text{-wave})/\Gamma_{\text{total}}$ Γ_{72}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.001	90	ANJOS	92C	E691	γBe 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.005	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+\ D\text{-wave})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{73}/Γ_{44}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.15±0.09±0.045	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+\ D\text{-wave longitudinal})/\Gamma_{\text{total}}$ Γ_{74}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.007	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}_1(1400)^0\pi^+)/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{76}/Γ_{44}

Unseen decay modes of the $\overline{K}_1(1400)^0$ are included.

VALUE	DOCUMENT ID	TECN	COMMENT
0.77 ±0.20 OUR FIT			
0.907±0.218±0.180	COFFMAN 92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\rho^+\pi^+ \text{total})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{84}/Γ_{44}

This includes $\overline{K}^*(892)^0\rho^+$, *etc.* The next entry gives the specifically 3-body fraction.

VALUE	DOCUMENT ID	TECN	COMMENT
0.48±0.13±0.09	ANJOS 92C	E691	γBe 90–260 GeV

$\Gamma(K^-\rho^+\pi^+ \text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{85}/Γ_{44}

VALUE	DOCUMENT ID	TECN	COMMENT
0.17 ±0.06 OUR AVERAGE			
0.18 ±0.08 ±0.04	ANJOS 92C	E691	γBe 90–260 GeV
0.159±0.065±0.060	COFFMAN 92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^0 \text{total})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{80}/Γ_{44}

This includes $\overline{K}^*(892)^0\rho^+$, *etc.* The next two entries gives the specifically 3-body fraction. Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID	TECN	COMMENT
1.05±0.11±0.08	ANJOS 92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^0 \text{3-body})/\Gamma_{\text{total}}$ Γ_{81}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.008	90	[41] COFFMAN 92B	MRK3	e^+e^- 3.77 GeV

[41] See, however, the next entry: ANJOS 92C sees a large signal in this channel.

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^0 \text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{81}/Γ_{44}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID	TECN	COMMENT
0.66±0.09±0.17	ANJOS 92C	E691	γBe 90–260 GeV

$\Gamma(K^*(892)^-\pi^+\pi^+ \text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{83}/Γ_{44}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	DOCUMENT ID	TECN	COMMENT
0.32±0.14 OUR FIT Error includes scale factor of 1.1.			
0.24±0.12±0.09	ANJOS 92C	E691	γBe 90–260 GeV

$\Gamma(K^-\pi^+\pi^+\pi^0 \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{51}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.002	90	[42] ANJOS 92C	E691	γBe 90–260 GeV

[42] Whereas ANJOS 92C finds no signal here, COFFMAN 92B finds a fairly large one; see the next entry.

$\Gamma(K^-\pi^+\pi^+\pi^0 \text{ nonresonant})/\Gamma(K^-\pi^+\pi^+\pi^0)$ Γ_{51}/Γ_{44}

VALUE	DOCUMENT ID	TECN	COMMENT
0.184±0.070±0.050	COFFMAN 92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{52}/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.070±0.010 OUR FIT				
0.071±0.016 OUR AVERAGE				
0.066±0.015±0.005	168	ADLER 88C	MRK3	e^+e^- 3.77 GeV
0.12 ±0.05	21	[43] SCHINDLER 81	MRK2	e^+e^- 3.771 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.042^{+0.019}_{-0.017}$		[44] BARLAG 92C	ACCM	π^- Cu 230 GeV
$0.243^{+0.064}_{-0.041}\pm0.041$	11	[44] AGUILAR-... 87F	HYBR	πp, pp 360, 400 GeV

[43] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.51 ± 0.08. We use the MARK-3 (ADLER 88C) value of $\sigma = 4.2 \pm 0.6 \pm 0.3$ nb.

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

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{52}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.78±0.10 OUR FIT					
0.77±0.07±0.11	229	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^0 a_1(1260)^+)/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{67}/Γ_{52}

Unseen decay modes of the $a_1(1260)^+$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
1.15 ±0.19 OUR AVERAGE	Error includes scale factor of 1.1.			
1.66 ±0.28 ±0.40	ANJOS	92C	E691	γBe 90–260 GeV
1.078±0.114±0.140	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0 a_2(1320)^+)/\Gamma_{\text{total}}$ Γ_{68}/Γ

Unseen decay modes of the $a_2(1320)^+$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.003	90	ANJOS	92C	E691	γBe 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.008	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}_1(1270)^0\pi^+)/\Gamma_{\text{total}}$ Γ_{75}/Γ

Unseen decay modes of the $\overline{K}_1(1270)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.007	90	ANJOS	92C	E691	γBe 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.011	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}_1(1400)^0\pi^+)/\Gamma_{\text{total}}$ Γ_{76}/Γ

Unseen decay modes of the $\overline{K}_1(1400)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.009	90	[45] ANJOS	92C	E691	γBe 90–260 GeV

[45] ANJOS 92C sees no evidence for $\overline{K}_1(1400)^0\pi^+$ in either the $\overline{K}^0\pi^+\pi^+\pi^-$ or $K^-\pi^+\pi^+\pi^0$ channels, whereas COFFMAN 92B finds the $\overline{K}_1(1400)^0\pi^+$ branching fraction to be large; see the next entry.

$\Gamma(\overline{K}_1(1400)^0\pi^+)/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{76}/Γ_{52}

Unseen decay modes of the $\overline{K}_1(1400)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.70 ±0.17 OUR FIT				
0.623±0.106±0.180	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(1410)^0\pi^+)/\Gamma_{\text{total}}$ Γ_{77}/Γ

Unseen decay modes of the $\overline{K}^*(1410)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.007	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^-\pi^+\pi^+\text{total})/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{82}/Γ_{52}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.41±0.14	14	ALEEV	94	BIS2	nA 20–70 GeV

$\Gamma(K^*(892)^-\pi^+\pi^+ 3\text{-body})/\Gamma_{\text{total}}$ Γ_{83}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.021±0.009 OUR FIT					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.013	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^-\pi^+\pi^+ 3\text{-body})/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{83}/Γ_{52}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.29±0.13 OUR FIT	Error includes scale factor of 1.1.			
0.50±0.09±0.21	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^0\rho^0\pi^+ \text{total})/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{86}/Γ_{52}

This includes $\overline{K}^0 a_1(1260)^+$. The next two entries gives the specifically 3-body reaction.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.60±0.10±0.17	90	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^0\rho^0\pi^+ \text{3-body})/\Gamma_{\text{total}}$ Γ_{87}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.004	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0\rho^0\pi^+ \text{3-body})/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{87}/Γ_{52}

VALUE	DOCUMENT ID		TECN	COMMENT
0.07±0.04±0.06	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^0 f_0(980)\pi^+)/\Gamma_{\text{total}}$ Γ_{88}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.005	90	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^- \text{ nonresonant})/\Gamma(\overline{K}^0\pi^+\pi^+\pi^-)$ Γ_{57}/Γ_{52}

VALUE	DOCUMENT ID		TECN	COMMENT
0.12±0.06 OUR AVERAGE				
0.10±0.04 ±0.06	ANJOS	92C	E691	γBe 90–260 GeV
0.17±0.056±0.100	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{58}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0037^{+0.0012}_{-0.0010}$	[46] BARLAG	92C	ACCM	π^- Cu 230 GeV

[46] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^-\pi^+\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{58}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.09 ±0.01 ±0.01	113	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+\pi^+\pi^-)$ Γ_{89}/Γ_{58}

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

VALUE	DOCUMENT ID		TECN	COMMENT
1.25±0.12±0.23	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\rho^0\pi^+)/\Gamma(\overline{K}^*(892)^0\pi^+\pi^+\pi^-)$ Γ_{90}/Γ_{89}

VALUE	DOCUMENT ID		TECN	COMMENT
0.75±0.17±0.19	ANJOS	90D	E691	Photoproduction

$\Gamma(K^-\pi^+\pi^+\pi^0\pi^0)/\Gamma_{\text{total}}$ Γ_{61}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.022^{+0.047}_{-0.008}\pm0.004}$	1	[47] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.015		[47] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{62}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.054^{+0.030}_{-0.014}}$ **OUR AVERAGE**					
$0.099^{+0.036}_{-0.070}$		[48] BARLAG	92C	ACCM	π^- Cu 230 GeV
$0.044^{+0.052}_{-0.013}\pm0.007$	2	[48] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

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

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^+\pi^-\pi^-)/\Gamma_{total}$ Γ_{63}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.0008±0.0007	[49] BARLAG	92C	ACCM	π^- Cu 230 GeV

[49] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^-\pi^+\pi^+\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{64}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.0020±0.0018	[50] BARLAG	92C	ACCM	π^- Cu 230 GeV

[50] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\overline{K}^0\overline{K}^0K^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{65}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.20±0.09 OUR AVERAGE	Error includes scale factor of 2.4.				
0.14±0.04±0.02	39	ALBRECHT	94I	ARG	$e^+e^-\approx$ 10 GeV
0.34±0.07	70	AMMAR	91	CLEO	$e^+e^-\approx$ 10.5 GeV

Pionic modes

$\Gamma(\pi^+\pi^0)/\Gamma_{total}$ Γ_{91}/Γ

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.0053	90	1	BALTRUSAIT..85E		MRK3	e^+e^- 3.77 GeV

$\Gamma(\pi^+\pi^0)/\Gamma(\overline{K}^0\pi^+)$ Γ_{91}/Γ_{34}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.30	90	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

$\Gamma(\pi^+\pi^0)/\Gamma(K^-\pi^+\pi^+)$ Γ_{91}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.028±0.006±0.005	34	SELEN	93	CLEO	$e^+e^-\approx\ \Upsilon(4S)$

$\Gamma(\pi^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{92}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0014^{+0.0011}_{-0.0010}$	[51] BARLAG	92C	ACCM	π^- Cu 230 GeV

[51] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{92}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.035±0.006 OUR AVERAGE					
0.032±0.011±0.003	20	ADAMOVICH	93	WA82	π^- 340 GeV
0.035±0.007±0.003		ANJOS	89	E691	Photoproduction
0.042±0.016±0.010	57	BALTRUSAIT..85E		MRK3	e^+e^- 3.77 GeV

$\Gamma(\rho^0\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{93}/Γ_{35}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.015	90	ANJOS	89	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^-\ \text{nonresonant})/\Gamma(K^-\pi^+\pi^+)$ Γ_{94}/Γ_{35}

VALUE	DOCUMENT ID		TECN	COMMENT
0.027±0.007±0.002	ANJOS	89	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{95}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.019^{+0.015}_{-0.012}}$	[52] BARLAG	92C	ACCM	π^- Cu 230 GeV

[52] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\pi^+\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^+)$ Γ_{95}/Γ_{35}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.4	90	ANJOS	89E	E691	Photoproduction

$\Gamma(\eta\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{101}/Γ_{35}

Unseen decay modes of the η are included.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.083±0.023±0.014		99	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV

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

<0.12	90		ANJOS	89E	E691	Photoproduction

$\Gamma(\omega\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{102}/Γ_{35}

Unseen decay modes of the ω are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.08	90	ANJOS	89E	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-)/\Gamma_{\text{total}}$ Γ_{98}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0010^{+0.0008}_{-0.0007}}$	[53] BARLAG	92C	ACCM	π^- Cu 230 GeV

[53] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{98}/Γ_{35}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.019	90	ANJOS	89	E691	Photoproduction

$\Gamma(\eta\rho^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{103}/Γ_{35}

Unseen decay modes of the η are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.13	90	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{99}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0029^{+0.0029}_{-0.0020}}$	[54] BARLAG	92C	ACCM	π^- Cu 230 GeV

[54] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\eta'(958)\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{104}/Γ_{35}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.1	90	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV
<0.1	90	ALVAREZ	91	NA14	Photoproduction
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.13	90	ANJOS	91B	E691	γBe, $\overline{E}_\gamma\approx$ 145 GeV

$\Gamma(\eta'(958)\rho^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{105}/Γ_{35}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.17	90	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV

Hadronic modes with two K's

$\Gamma(\overline{K}^0K^+)/\Gamma(\overline{K}^0\pi^+)$ Γ_{106}/Γ_{34}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.263±0.035 OUR AVERAGE					
0.25 ±0.04 ±0.02	129	FRABETTI	95	E687	γBe $\overline{E}_\gamma\approx$ 200 GeV
0.271±0.065±0.039	69	ANJOS	90C	E691	γBe
0.317±0.086±0.048	31	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV
0.25 ±0.15	6	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

$\Gamma(\overline{K}^0K^*(892)^+)/\Gamma(\overline{K}^0\pi^+)$ Γ_{123}/Γ_{34}

Unseen decay modes of the $K^*(892)^+$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.1±0.3±0.4	67	FRABETTI	95	E687	γBe $\overline{E}_\gamma\approx$ 200 GeV

$\Gamma(K^+K^-\pi^+)/\Gamma_{total}$ $\Gamma_{107}/\Gamma = (\Gamma_{110}+\frac{1}{2}\Gamma_{122}+\frac{2}{3}\Gamma_{124})/\Gamma$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0113±0.0013 OUR FIT					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.008\ ^{+0.017}_{-0.002}\pm0.001$	1	[55] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

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

$\Gamma(\phi\pi^+)/\Gamma_{total}$ Γ_{122}/Γ

Unseen decay modes of the ϕ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0049\ ^{+0.0021}_{-0.0018}$	[56] BARLAG	92C	ACCM	π^- Cu 230 GeV

[56] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\phi\pi^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{122}/Γ_{35}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.074±0.007 OUR FIT					
0.074±0.007 OUR AVERAGE					
0.062±0.017±0.006	19	ADAMOVICH	93	WA82	π^- 340 GeV
0.077±0.011±0.005	128	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV
0.098±0.032±0.014	12	ALVAREZ	90C	NA14	Photoproduction
0.071±0.008±0.007	84	ANJOS	88	E691	Photoproduction
0.084±0.021±0.011	21	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0K^+)/\Gamma_{total}$ Γ_{124}/Γ

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0050\ ^{+0.0022}_{-0.0019}$	[57] BARLAG	92C	ACCM	π^- Cu 230 GeV

[57] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\overline{K}^*(892)^0K^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{124}/Γ_{35}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.056±0.010 OUR FIT					
0.056±0.010 OUR AVERAGE					
0.058±0.009±0.006	73	ANJOS	88	E691	Photoproduction
0.048±0.021±0.011	14	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^+K^-\pi^+$ nonresonant$)/\Gamma_{total}$ Γ_{110}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0032±0.0012	[58] BARLAG	92C	ACCM	π^- Cu 230 GeV

[58] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^+K^-\pi^+$ nonresonant$)/\Gamma(K^-\pi^+\pi^+)$ Γ_{110}/Γ_{35}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.050±0.009 OUR FIT					
0.050±0.009 OUR AVERAGE					
0.049±0.008±0.006	95	ANJOS	88	E691	Photoproduction
0.059±0.026±0.009	37	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV

$\Gamma(\phi\pi^+\pi^0)/\Gamma_{total}$ Γ_{125}/Γ

Unseen decay modes of the ϕ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.023±0.010	[59] BARLAG	92C	ACCM	π^- Cu 230 GeV

[59] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\phi\pi^+\pi^0)/\Gamma(K^-\pi^+\pi^+)$ Γ_{125}/Γ_{35}

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.58	90	ALVAREZ	90C	NA14	Photoproduction
<0.28	90	ANJOS	89E	E691	Photoproduction

$\Gamma(\phi\rho^+)/\Gamma(K^-\pi^+\pi^+)$ Γ_{126}/Γ_{35}

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.16	90	DAOUDI	92	CLEO	$e^+e^-\approx$ 10.5 GeV

$\Gamma(K^+K^-\pi^+\pi^0\text{non-}\phi)/\Gamma_{\text{total}}$ Γ_{114}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.015^{+0.007}_{-0.006}}$	[60] BARLAG	92C	ACCM	π^- Cu 230 GeV

[60] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^+K^-\pi^+\pi^0\text{non-}\phi)/\Gamma(K^-\pi^+\pi^+)$ Γ_{114}/Γ_{35}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.25	90	ANJOS	89E	E691	Photoproduction

$\Gamma(K^+\overline{K}^0\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{115}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.02	90	ALBRECHT	92B	ARG	$e^+e^-\simeq$ 10.4 GeV

$\Gamma(K^0K^-\pi^+\pi^+)/\Gamma_{\text{total}}$ Γ_{116}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.01 ±0.005±0.003	ALBRECHT	92B	ARG	$e^+e^-\simeq$ 10.4 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.003	[61] BARLAG	92C	ACCM	π^- Cu 230 GeV

[61] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^*(892)^+\overline{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{127}/Γ

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.026±0.008±0.007	ALBRECHT	92B	ARG	$e^+e^-\simeq$ 10.4 GeV

$\Gamma(K^0K^-\pi^+\pi^+\text{ non-}K^{*+}\overline{K}^{*0})/\Gamma_{\text{total}}$ Γ_{118}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0079	90	ALBRECHT	92B	ARG	$e^+e^-\simeq$ 10.4 GeV

$\Gamma(\phi\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{128}/Γ

Unseen decay modes of the ϕ are included.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.002	90	0	ANJOS	88	E691	Photoproduction

$\Gamma(\phi\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{128}/Γ_{35}

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.031	90	ALVAREZ	90C	NA14	Photoproduction

$\Gamma(\phi\pi^+\pi^+\pi^-)/\Gamma(\phi\pi^+)$ $\Gamma_{128}/\Gamma_{122}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.6	90	FRABETTI	92	E687	γBe

$\Gamma(K^+K^-\pi^+\pi^+\pi^-\text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{121}/Γ

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.03	90	12	ANJOS	88	E691	Photoproduction

Rare or forbidden modes

$\Gamma(K^+\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{129}/Γ_{35}

A doubly Cabibbo-suppressed decay with no simple spectator process possible.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.05	90	[62] PICCOLO	77	MRK1	e^+e^- 4.03 GeV

[62] Obtained from $\sigma\times$BR values of Table I of PICCOLO 77.

$\Gamma(K^+K^+K^-)/\Gamma(K^-\pi^+\pi^+)$ Γ_{130}/Γ_{35}

A doubly Cabibbo-suppressed decay with no simple spectator process possible.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.057±0.020±0.007	13	ADAMOVICH	93	WA82	π^- 340 GeV

$\Gamma(\phi K^+)/\Gamma(\phi\pi^+)$ $\Gamma_{131}/\Gamma_{122}$

A doubly Cabibbo-suppressed decay with no simple spectator process possible.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.058^{+0.032}_{-0.026}\pm0.007}$	4	[63] ANJOS	92D	E691	γBe $\overline{E}_\gamma = 145$ GeV

[63] The evidence of ANJOS 92D is a small excess of events $(4.5^{+2.4}_{-2.0})$.

$\Gamma(\pi^+e^+e^-)/\Gamma_{\text{total}}$ Γ_{132}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{<2.5\times10^{-3}}$	90		WEIR	90B	MRK2	e^+e^- 29 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<2.6\times10^{-3}$	90	39	[64] HAAS	88	CLEO	e^+e^- 10 GeV

[64] The branching ratios are normalized to $D^0\to K^-\pi^+$, $D^+\to K^-\pi^+\pi^+$, and $D^{*+}\to D^0\pi^+$ using ADLER 88C.

$\Gamma(\pi^+\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{133}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{<2.2\times10^{-4}}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<5.9\times10^{-3}$	90		WEIR	90B	MRK2	e^+e^- 29 GeV
$<2.9\times10^{-3}$	90	36	[65] HAAS	88	CLEO	e^+e^- 10 GeV

[65] The branching ratios are normalized to $D^0\to K^-\pi^+$, $D^+\to K^-\pi^+\pi^+$, and $D^{*+}\to D^0\pi^+$ using ADLER 88C.

$\Gamma(\rho^+\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{134}/Γ

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{<5.6\times10^{-4}}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<4.8\times10^{-3}}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^+\mu^+\mu^-)/\Gamma_{\text{total}}$ Γ_{136}/Γ

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.2\times10^{-4}}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<9.2\times10^{-3}$	90		WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\pi^+e^\pm\mu^\mp)/\Gamma_{\text{total}}$ Γ_{137}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.8\times10^{-3}}$	90	58	[66] HAAS	88	CLEO	e^+e^- 10 GeV

[66] The branching ratios are normalized to $D^0\to K^-\pi^+$, $D^+\to K^-\pi^+\pi^+$, and $D^{*+}\to D^0\pi^+$ using ADLER 88C.

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

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.3\times10^{-3}}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\pi^+e^-\mu^+)/\Gamma_{\text{total}}$ Γ_{139}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.3\times10^{-3}}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^+e^+\mu^-)/\Gamma_{\text{total}}$ Γ_{140}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.4\times10^{-3}}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

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

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.4 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

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

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<4.8 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

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

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.2 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV

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

$<6.8 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\pi^- e^+ \mu^+)/\Gamma_{total}$ Γ_{144}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.7 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\rho^- \mu^+ \mu^+)/\Gamma_{total}$ Γ_{145}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<5.6 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV

$\Gamma(K^- e^+ e^+)/\Gamma_{total}$ Γ_{146}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<9.1 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^- \mu^+ \mu^+)/\Gamma_{total}$ Γ_{147}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.2 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV

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

$<4.3 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^- e^+ \mu^+)/\Gamma_{total}$ Γ_{148}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<4.0 \times 10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^*(892)^- \mu^+ \mu^+)/\Gamma_{total}$ Γ_{149}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<8.5 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV

$D^\pm$ *CP*-VIOLATING DECAY-RATE ASYMMETRIES

$A_{CP}(K^+K^-\pi^\pm) \equiv (\eta(D^+) - \eta(D^-))/(\eta(D^+) + \eta(D^-))$

Here $\eta(D^+) \equiv N(D^+ \to K^-K^+\pi^+)/N(D^+ \to K^-\pi^+\pi^+)$ is the ratio of (efficiency-corrected) numbers of events observed, and similarly for $\eta(D^-)$.

VALUE	DOCUMENT ID		TECN	COMMENT
-0.031 ± 0.068	FRABETTI	94I	E687	γBe $\overline{E}_\gamma$=220 GeV

$A_{CP}(K^\pm K^*(892)^0) \equiv (\eta(D^+) - \eta(D^-))/(\eta(D^+) + \eta(D^-))$

Here $\eta(D^+) \equiv N(D^+ \to K^+\overline{K}^*(892)^0)/N(D^+ \to K^-\pi^+\pi^+)$ is the ratio of (efficiency-corrected) numbers of events observed, and similarly for $\eta(D^-)$.

VALUE	DOCUMENT ID		TECN	COMMENT
-0.12 ± 0.13	FRABETTI	94I	E687	γBe $\overline{E}_\gamma$=220 GeV

$A_{CP}(\phi\pi^\pm) \equiv (\eta(D^+) - \eta(D^-))/(\eta(D^+) + \eta(D^-))$

Here $\eta(D^+) \equiv N(D^+ \to \phi\pi^\pm)/N(D^+ \to K^-\pi^+\pi^+)$ is the ratio of (efficiency-corrected) numbers of events observed, and similarly for $\eta(D^-)$.

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.066 \pm 0.086$	FRABETTI	94I	E687	γBe $\overline{E}_\gamma$=220 GeV

$D^{\pm}$ PRODUCTION CROSS SECTION AT $\psi(3770)$

A compilation of the cross sections for the direct production of $D^{\pm}$ mesons at or near the $\psi(3770)$ peak in e^+e^- production.

VALUE (nanobarns)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4.2 ±0.6 ±0.3	[67] ADLER	88C	MRK3	e^+e^- 3.768 GeV
5.5 ±1.0	[68] PARTRIDGE	84	CBAL	e^+e^- 3.771 GeV
6.00±0.72±1.02	[69] SCHINDLER	80	MRK2	e^+e^- 3.771 GeV
9.1 ±2.0	[70] PERUZZI	77	MRK1	e^+e^- 3.774 GeV

[67] This measurement compares events with one detected D to those with two detected D mesons, to determine the the absolute cross section. ADLER 88C measure the ratio of cross sections (neutral to charged) to be 1.36 ± 0.23 ± 0.14. This measurement does not include the decays of the $\psi(3770)$ not associated with charmed particle production.

[68] This measurement comes from a scan of the $\psi(3770)$ resonance and a fit to the cross section. PARTRIDGE 84 measures 6.4 ± 1.15 nb for the cross section. We take the phase space division of neutral and charged D mesons in $\psi(3770)$ decay to be 1.33, and we assume that the $\psi(3770)$ is an isosinglet to evaluate the cross sections. The noncharm decays (e.g. radiative) of the $\psi(3770)$ are included in this measurement and may amount to a few percent correction.

[69] This measurement comes from a scan of the $\psi(3770)$ resonance and a fit to the cross section. SCHINDLER 80 assume the phase space division of neutral and charged D mesonsin $\psi(3770)$ decay to be 1.33, and that the $\psi(3770)$ is an isosinglet. The noncharm decays (e.g. radiative) of the $\psi(3770)$ are included in this measurement and may amount to a few percent correction.

[70] This measurement comes from a scan of the $\psi(3770)$ resonance and a fit to the cross section. The phase space division of neutral and charged D mesons in $\psi(3770)$ decay is taken to be 1.33, and $\psi(3770)$ is assumed to be an isosinglet. The noncharm decays (e.g. radiative) of the $\psi(3770)$ are included in this measurement and may amount to a few percent correction. We exclude this measurement from the average because of uncertainties in the contamination from τ lepton pairs. Also see RAPIDIS 77.

$D^{\pm}$ REFERENCES

FRABETTI	95	PL B346 199	+Cheung, Cumalat+	(FNAL E687 Collab.)
KODAMA	95	PL B345 85	+Ushida, Mokhtarani+	(FNAL E653 Collab.)
ALBRECHT	94I	ZPHY C64 375	+Hamacher, Hofmann+	(ARGUS Collab.)
ALEEV	94	PAN 57 1370	+Balandin+	(Serpukhov BIS-2 Collab.)
		Translated from YF 57 1443.		
BALEST	94	PRL 72 2328	+Cho, Daoudi, Ford+	(CLEO Collab.)
FRABETTI	94D	PL B323 459	+Cheung, Cumalat+	(FNAL E687 Collab.)
FRABETTI	94G	PL B331 217	+Cheung, Cumalat+	(FNAL E687 Collab.)
FRABETTI	94I	PR D50 R2953	+Cheung, Cumalat+	(FNAL E687 Collab.)
PDG	94	PR D50 1173	Montanet+	(CERN, LBL, BOST, IFIC+)
ABE	93E	PL B313 288	+Amako, Arai, Arima, Asano+	(VENUS Collab.)
ADAMOVICH	93	PL B305 177	+Alexandrov, Antinori+	(CERN WA82 Collab.)
AKERIB	93	PRL 71 3070	+Barish, Chadha, Chan+	(CLEO Collab.)
ALAM	93	PRL 71 1311	+Kim, Nemati, O'Neill+	(CLEO Collab.)
ANJOS	93	PR D48 56	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
BEAN	93C	PL B317 647	+Gronberg, Kutschke, Menary+	(CLEO Collab.)
FRABETTI	93E	PL B307 262	+Grim, Paolone, Yager+	(FNAL E687 Collab.)
KODAMA	93B	PL B313 260	+Ushida, Mokhtarani+	(FNAL E653 Collab.)
KODAMA	93C	PL B316 455	+Ushida, Mokhtarani+	(FNAL E653 Collab.)
SELEN	93	PRL 71 1973	+Sadoff, Ammar, Ball+	(CLEO Collab.)
ALBRECHT	92B	ZPHY C53 361	+Ehrlichmann, Hamacher, Krueger+	(ARGUS Collab.)
ALBRECHT	92F	PL B278 202	+Ehrlichmann, Hamacher+	(ARGUS Collab.)
ANJOS	92	PR D45 R2177	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ANJOS	92C	PR D46 1941	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ANJOS	92D	PRL 69 2892	+Appel, Bean, Bediaga+	(FNAL E691 Collab.)
BARLAG	92C	ZPHY C55 383	+Becker, Bozek, Boehringer+	(ACCMOR Collab.)
Also	90D	ZPHY C48 29	Barlag, Becker, Boehringer, Bosman+	(ACCMOR Collab.)
COFFMAN	92B	PR D45 2196	+DeJongh, Dubois, Eigen+	(Mark III Collab.)
DAOUDI	92	PR D45 3965	+Ford, Johnson, Lingel+	(CLEO Collab.)
FRABETTI	92	PL B281 167	+Bogart, Cheung, Culy+	(FNAL E687 Collab.)
KODAMA	92	PL B274 246	+Ushida, Mokhtarani+	(FNAL E653 Collab.)
KODAMA	92C	PL B286 187	+Ushida, Mokhtarani+	(FNAL E653 Collab.)
ADAMOVICH	91	PL B268 142	+Alexandrov, Antinori, Barberis+	(WA82 Collab.)
ALBRECHT	91	PL B255 634	+Ehrlichmann, Hamacher, Krueger+	(ARGUS Collab.)
ALVAREZ	91	PL B255 639	+Barate, Bloch, Bonamy+	(CERN NA14/2 Collab.)
ALVAREZ	91B	ZPHY C50 11	+Barate, Bloch, Bonamy+	(CERN NA14/2 Collab.)
AMMAR	91	PR D44 3383	+Baringer, Coppage, Davis+	(CLEO Collab.)
ANJOS	91B	PR D43 R2063	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ANJOS	91C	PRL 67 1507	+Appel, Bean, Bracker+	(FNAL-TPS Collab.)
BAI	91	PRL 66 1011	+Bolton, Brown, Bunnell+	(Mark III Collab.)
COFFMAN	91	PL B263 135	+DeJongh, Dubois, Eigen, Hitlin+	(Mark III Collab.)
FRABETTI	91	PL B263 584	+Bogart, Cheung, Culy+	(FNAL E687 Collab.)
ALVAREZ	90	ZPHY C47 539	+Barate, Bloch, Bonamy+	(CERN NA14/2 Collab.)
ALVAREZ	90C	PL B246 261	+Barate, Bloch, Bonamy+	(CERN NA14/2 Collab.)
ANJOS	90C	PR D41 2705	+Appel, Bean+	(FNAL E691 Collab.)
ANJOS	90D	PR D42 2414	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ANJOS	90E	PRL 65 2630	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
BARLAG	90C	ZPHY C46 563	+Becker, Boehringer, Bosman+	(ACCMOR Collab.)
WEIR	90B	PR D41 1384	+Klein, Abrams, Adolphsen, Akerlof+	(Mark II Collab.)
ANJOS	89	PRL 62 125	+Appel, Bean, Bracker+	(FNAL E691 Collab.)

ANJOS	89B	PRL 62 722	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ANJOS	89E	PL B223 267	+Appel, Bean, Bracker+	(FNAL E691 Collab.)
ADLER	88B	PRL 60 1375	+Becker, Blaylock+	(Mark III Collab.)
ADLER	88C	PRL 60 89	+Becker, Blaylock+	(Mark III Collab.)
ALBRECHT	88I	PL B210 267	+Boeckmann, Glaeser+	(ARGUS Collab.)
ANJOS	88	PRL 60 897	+Appel+	(FNAL E691 Collab.)
AOKI	88	PL B209 113	+Arnold, Baroni+	(WA75 Collab.)
HAAS	88	PRL 60 1614	+Hempstead, Jensen+	(CLEO Collab.)
ONG	88	PRL 60 2587	+Weir, Abrams, Amidei+	(Mark II Collab.)
RAAB	88	PR D37 2391	+Anjos, Appel, Bracker+	(FNAL E691 Collab.)
ADAMOVICH	87	EPL 4 887	+Alexandrov, Bolta+	(Photon Emulsion Collab.)
ADLER	87	PL B196 107	+Becker, Blaylock, Bolton+	(Mark III Collab.)
AGUILAR-...	87D	PL B193 140	Aguilar-Benitez, Allison+	(LEBC-EHS Collab.)
Also	88B	ZPHY C40 321	Aguilar-Benitez, Allison, Bailly+	(LEBC-EHS Collab.)
AGUILAR-...	87E	ZPHY C36 551	Aguilar-Benitez, Allison+	(LEBC-EHS Collab.)
Also	88B	ZPHY C40 321	Aguilar-Benitez, Allison, Bailly+	(LEBC-EHS Collab.)
AGUILAR-...	87F	ZPHY C36 559	Aguilar-Benitez, Allison+	(LEBC-EHS Collab.)
Also	88	ZPHY C38 520 erratum		
BARLAG	87B	ZPHY C37 17	+Becker, Boehringer, Bosman+	(ACCMOR Collab.)
BARTEL	87	ZPHY C33 339	+Becker, Felst, Haidt+	(JADE Collab.)
CSORNA	87	PL B191 318	+Mestayer, Panvini, Word+	(CLEO Collab.)
PALKA	87B	ZPHY C35 151	+Bailey, Becker+	(ACCMOR Collab.)
ABE	86	PR D33 1	+	(SLAC Hybrid Facility Photon Collab.)
AGUILAR-...	86B	ZPHY C31 491	Aguilar-Benitez, Allison+	(LEBC-EHS Collab.)
BALTRUSAIT...	86E	PRL 56 2140	Baltrusaitis, Becker, Blaylock, Brown+	(Mark III Collab.)
PAL	86	PR D33 2708	+Atwood, Barish, Bonneaud+	(DELCO Collab.)
AIHARA	85	ZPHY C27 39	+Alston-Garnjost, Badtke, Bakken+	(TPC Collab.)
BALTRUSAIT...	85B	PRL 54 1976	Baltrusaitis, Becker, Blaylock, Brown+	(Mark III Collab.)
BALTRUSAIT...	85E	PRL 55 150	Baltrusaitis, Becker, Blaylock, Brown+	(Mark III Collab.)
BARTEL	85J	PL 163B 277	+Becker, Cords, Felst+	(JADE Collab.)
ADAMOVICH	84	PL 140B 119	+Alexandrov, Bolta, Bravo+	(CERN WA58 Collab.)
ALTHOFF	84G	ZPHY C22 219	+Braunschweig, Kirschfink+	(TASSO Collab.)
ALTHOFF	84J	PL 146B 443	+Branschweig, Kirschfink+	(TASSO Collab.)
DERRICK	84	PRL 53 1971	+Fernandez, Fries, Hyman+	(HRS Collab.)
KOOP	84	PRL 52 970	+Sakuda, Atwood, Baillon+	(DELCO Collab.)
PARTRIDGE	84	Thesis CALT-68-1150		(Crystal Ball Collab.)
AGUILAR-...	83B	PL 123B 98	Aguilar-Benitez, Allison+	(LEBC-EHS Collab.)
AUBERT	83	NP B213 31	+Bassompierre, Becks, Best+	(EMC Collab.)
PARTRIDGE	81	PRL 47 760	+Peck, Porter, Gu+	(Crystal Ball Collab.)
SCHINDLER	81	PR D24 78	+Alam, Boyarski, Breidenbach+	(Mark II Collab.)
TRILLING	81	PRPL 75 57		(LBL, UCB) J
BACINO	80	PRL 45 329	+Ferguson+	(UCLA, SLAC, STAN, UCI, STON)
SCHINDLER	80	PR D21 2716	+Siegrist, Alam, Boyarski+	(Mark II Collab.)
ZHOLENTZ	80	PL 96B 214	+Kurdadze, Lelchuk, Mishnev+	(NOVO)
Also	81	SJNP 34 814	Zholentz, Kurdadze, Lelchuk+	(NOVO)
		Translated from YAF 34 1471.		
BACINO	79	PRL 43 1073	+Ferguson, Nodulman+	(DELCO Collab.)
BRANDELIK	79	PL 80B 412	+Braunschweig, Martyn, Sander+	(DASP Collab.)
FELLER	78	PRL 40 274	+Litke, Madaras, Ronan+	(LBL, SLAC, NWES, HAWA)
VUILLEMIN	78	PRL 41 1149	+Feldman, Feller+	(LBL, SLAC, NWES, HAWA)
GOLDHABER	77	PL 69B 503	+Wiss, Abrams, Alam+	(LBL, SLAC)
PERUZZI	77	PRL 39 1301	+Piccolo, Feldman+	(SLAC, LBL, NWES, HAWA)
PICCOLO	77	PL 70B 260	+Peruzzi, Luth, Nguyen, Wiss, Abrams+	(SLAC, LBL)
RAPIDIS	77	PRL 39 526	+Gobbi, Luke, Barbaro-Galtieri+	(Mark I Collab.)
PERUZZI	76	PRL 37 569	+Piccolo, Feldman, Nguyen, Wiss+	(SLAC, LBL)

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