$D^{\pm}$

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

$D^{\pm}$ 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
1869.62± 0.20 OUR FIT	Error includes scale factor of 1.1.				
1869.5 ± 0.5 OUR AVERAGE					
1870.0 ± 0.5 ±1.0	317	BARLAG	90C	ACCM	π^- Cu 230 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
1863 ± 4		DERRICK	84	HRS	e^+e^- 29 GeV
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	LGW	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 $> 100 \times 10^{-15}$ s have been omitted from the Listings.

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
1040 ± 7 OUR AVERAGE					
1039.4± 4.3± 7.0	110k	LINK	02F	FOCS	γ nucleus, $\approx$ 180 GeV
1033.6±22.1 $^{+\ 9.9}_{-12.7}$	3777	BONVICINI	99	CLEO	$e^+e^- \approx \Upsilon(4S)$
1048 ±15 ±11	9k	FRABETTI	94D	E687	$D^+ \to K^-\pi^+\pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1075 ±40 ±18	2455	FRABETTI	91	E687	γ Be, $D^+ \to K^-\pi^+\pi^+$
1030 ±80 ±60	200	ALVAREZ	90	NA14	γ, $D^+ \to K^-\pi^+\pi^+$
1050 $^{+77}_{-72}$	317	[2] BARLAG	90C	ACCM	π^- Cu 230 GeV
1050 ±80 ±70	363	ALBRECHT	88I	ARG	e^+e^- 10 GeV
1090 ±30 ±25	2992	RAAB	88	E691	Photoproduction

[2] BARLAG 90C estimates the systematic error to be negligible.

D^+ DECAY MODES

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K^0_S modes, not as $\overline{K}^0$ modes. Nearly always it is a K^0_S that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\,\Gamma(K^0_S) = \Gamma(\overline{K}^0)$.

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Inclusive modes		
Γ_1	e^+ anything	(16.0 ±0.4) %	
Γ_2	μ^+ anything	(17.6 ±3.2) %	
Γ_3	K^- anything	(25.7 ±1.4) %	
Γ_4	$\overline{K}^0$ anything + K^0 anything	(61 ±5) %	
Γ_5	K^+ anything	(5.9 ±0.8) %	
Γ_6	$K^*(892)^-$ anything	(6 ±5) %	
Γ_7	$\overline{K}^*(892)^0$ anything	(23 ±5) %	
Γ_8	$K^*(892)^+$ anything		
Γ_9	$K^*(892)^0$ anything	< 6.6 %	CL=90%
Γ_{10}	η anything	(6.3 ±0.7) %	
Γ_{11}	η' anything	(1.04±0.18) %	
Γ_{12}	ϕ anything	(1.03±0.12) %	
	Leptonic and semileptonic modes		
Γ_{13}	$e^+\nu_e$	< 8.8 $\times 10^{-6}$	CL=90%
Γ_{14}	$\mu^+\nu_\mu$	(3.82±0.33) $\times 10^{-4}$	
Γ_{15}	$\tau^+\nu_\tau$	< 1.2 $\times 10^{-3}$	CL=90%
Γ_{16}	$\overline{K}^0\ell^+\nu_\ell$	[a]	
Γ_{17}	$\overline{K}^0 e^+\nu_e$	(8.50±0.26) %	
Γ_{18}	$\overline{K}^0\mu^+\nu_\mu$	(9.4 ±0.8) %	S=1.1
Γ_{19}	$K^-\pi^+e^+\nu_e$	(4.1 ±0.6) %	S=1.1
Γ_{20}	$\overline{K}^*(892)^0 e^+\nu_e$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.67±0.21) %	
Γ_{21}	$K^-\pi^+e^+\nu_e$ nonresonant	< 7 $\times 10^{-3}$	CL=90%
Γ_{22}	$K^-\pi^+\mu^+\nu_\mu$	(3.9 ±0.5) %	
Γ_{23}	$\overline{K}^*(892)^0\mu^+\nu_\mu$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.6 ±0.3) %	
Γ_{24}	$K^-\pi^+\mu^+\nu_\mu$ nonresonant	(2.1 ±0.5) $\times 10^{-3}$	
Γ_{25}	$(\overline{K}^*(892)\pi)^0 e^+\nu_e$		
Γ_{26}	$(\overline{K}\pi\pi)^0 e^+\nu_e$ non-$\overline{K}^*(892)$		
Γ_{27}	$K^-\pi^+\pi^0\mu^+\nu_\mu$	< 1.6 $\times 10^{-3}$	CL=90%
Γ_{28}	$\pi^0 e^+\nu_e$	(3.73±0.26) $\times 10^{-3}$	
Γ_{29}	$\pi^0\ell^+\nu_\ell$	[a]	

Γ_{30}	$\rho^0 e^+ \nu_e$		$(2.2 \pm 0.4) \times 10^{-3}$		
Γ_{31}	$\rho^0 \mu^+ \nu_\mu$		$(2.5 \pm 0.4) \times 10^{-3}$		
Γ_{32}	$\omega e^+ \nu_e$		$(1.6 {}^{+0.7}_{-0.6}) \times 10^{-3}$		
Γ_{33}	$\phi e^+ \nu_e$		< 2.01 %		CL=90%
Γ_{34}	$\phi \mu^+ \nu_\mu$		< 2.04 %		CL=90%
Γ_{35}	$\eta \ell^+ \nu_\ell$		$< 6 \times 10^{-3}$		CL=90%
Γ_{36}	$\eta'(958) \mu^+ \nu_\mu$		< 1.1 %		CL=90%

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

Γ_{37}	$\overline{K}^*(892)^0 e^+ \nu_e$		(5.51 ± 0.31) %		S=1.2
Γ_{38}	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$		(5.4 ± 0.5) %		S=1.1
Γ_{39}	$\overline{K}_1(1270)^0 \mu^+ \nu_\mu$				
Γ_{40}	$\overline{K}^*(1410)^0 \mu^+ \nu_\mu$				
Γ_{41}	$\overline{K}^*_0(1430)^0 \mu^+ \nu_\mu$		$< 2.5 \times 10^{-4}$		
Γ_{42}	$\overline{K}^*_2(1430)^0 \mu^+ \nu_\mu$				
Γ_{43}	$\overline{K}^*(1680)^0 \mu^+ \nu_\mu$		$< 1.6 \times 10^{-3}$		

Hadronic modes with a $\overline{K}$ or $\overline{K} K \overline{K}$

Γ_{44}	$K^0_S \pi^+$		(1.46 ± 0.04) %		S=1.3
Γ_{45}	$K^0_L \pi^+$		(1.46 ± 0.05) %		
Γ_{46}	$K^- 2\pi^+$	[b]	(9.29 ± 0.25) %		S=1.4
Γ_{47}	$(K^- \pi^+)_{S-\text{wave}} \pi^+$		(7.62 ± 0.25) %		
Γ_{48}	$\overline{K}^*_0(800)^0 \pi^+$, $\overline{K}^*_0(800) \to K^- \pi^+$	[c]			
Γ_{49}	$\overline{K}^*_0(1430)^0 \pi^+$, $\overline{K}^*_0(1430)^0 \to K^- \pi^+$	[c]			
Γ_{50}	$\overline{K}^*(892)^0 \pi^+$, $\overline{K}^*(892)^0 \to K^- \pi^+$		$(9.8 \pm 1.0) \times 10^{-3}$		
Γ_{51}	$\overline{K}^*_2(1430)^0 \pi^+$, $\overline{K}^*_2(1430)^0 \to K^- \pi^+$		$(2.1 \pm 0.4) \times 10^{-4}$		
Γ_{52}	$\overline{K}^*(1680)^0 \pi^+$, $\overline{K}^*(1680)^0 \to K^- \pi^+$	[c]	$(2.3 \pm 1.1) \times 10^{-4}$		
Γ_{53}	$K^- (2\pi^+)_{I=2}$		(1.44 ± 0.26) %		
Γ_{54}	$K^- \pi^+ \pi^+$ nonresonant	[c]			
Γ_{55}	$K^0_S \pi^+ \pi^0$	[b]	(6.8 ± 0.4) %		S=1.6
Γ_{56}	$K^0_S \rho^+$		(4.6 ± 1.0) %		
Γ_{57}	$\overline{K}^*(892)^0 \pi^+$, $\overline{K}^*(892)^0 \to K^0_S \pi^0$		(1.3 ± 0.6) %		
Γ_{58}	$K^0_S \pi^+ \pi^0$ nonresonant		$(9 \pm 7) \times 10^{-3}$		
Γ_{59}	$K^- \pi^+ \pi^+ \pi^0$	[b]	(6.04 ± 0.22) %		S=1.3
Γ_{60}	$\overline{K}^*(892)^0 \rho^+$ total, $\overline{K}^*(892)^0 \to K^- \pi^+$		(1.3 ± 0.8) %		

Γ_{61}	$\overline{K}_1(1400)^0\pi^+$, $\overline{K}_1(1400)^0 \to K^-\pi^+\pi^0$		(1.8 ±0.7) %	
Γ_{62}	$K^-\rho^+\pi^+$ total		(2.9 ±1.0) %	
Γ_{63}	$K^-\rho^+\pi^+$ 3-body		(1.0 ±0.4) %	
Γ_{64}	$\overline{K}^*(892)^0\pi^+\pi^0$ total, $\overline{K}^*(892)^0 \to K^-\pi^+$		(4.2 ±0.6) %	
Γ_{65}	$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body, $\overline{K}^*(892)^0 \to K^-\pi^+$		(2.7 ±0.8) %	
Γ_{66}	$K^*(892)^-\pi^+\pi^+$ 3-body, $K^*(892)^- \to K^-\pi^0$		(5 ±3) $\times 10^{-3}$	
Γ_{67}	$K^-\pi^+\pi^+\pi^0$ nonresonant	[d]	(1.1 ±0.5) %	
Γ_{68}	$K^0_S\pi^+\pi^+\pi^-$	[b]	(3.04±0.11) %	S=1.2
Γ_{69}	$K^0_S a_1(1260)^+$, $a_1(1260)^+ \to \pi^+\pi^+\pi^-$		(1.8 ±0.3) %	
Γ_{70}	$\overline{K}_1(1400)^0\pi^+$, $\overline{K}_1(1400)^0 \to K^0_S\pi^+\pi^-$		(1.8 ±0.7) %	
Γ_{71}	$K^*(892)^-\pi^+\pi^+$ 3-body, $K^*(892)^- \to K^0_S\pi^-$		(5 ±3) $\times 10^{-3}$	
Γ_{72}	$K^0_S\rho^0\pi^+$ total		(1.8 ±0.6) %	
Γ_{73}	$K^0_S\rho^0\pi^+$ 3-body		(2.1 ±2.2) $\times 10^{-3}$	
Γ_{74}	$K^0_S\pi^+\pi^+\pi^-$ nonresonant		(3.6 ±1.9) $\times 10^{-3}$	
Γ_{75}	$K^-3\pi^+\pi^-$	[b]	(5.7 ±0.5) $\times 10^{-3}$	S=1.1
Γ_{76}	$\overline{K}^*(892)^0\pi^+\pi^+\pi^-$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.2 ±0.4) $\times 10^{-3}$	
Γ_{77}	$\overline{K}^*(892)^0\rho^0\pi^+$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(2.3 ±0.4) $\times 10^{-3}$	
Γ_{78}	$\overline{K}^*(892)^0\pi^+\pi^+\pi^-$ no-ρ, $\overline{K}^*(892)^0 \to K^-\pi^+$			
Γ_{79}	$K^-\rho^0\pi^+\pi^+$		(1.71±0.28) $\times 10^{-3}$	
Γ_{80}	$K^-3\pi^+\pi^-$ nonresonant		(4.0 ±2.9) $\times 10^{-4}$	
Γ_{81}	$K^+2K^0_S$		(4.5 ±2.1) $\times 10^{-3}$	
Γ_{82}	$K^+K^-K^0_S\pi^+$		(2.3 ±0.5) $\times 10^{-4}$	

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

Γ_{83}	$K^0_S a_1(1260)^+$		(3.5 ±0.6) %	
Γ_{84}	$K^0_S a_2(1320)^+$		< 1.5 $\times 10^{-3}$	CL=90%
Γ_{85}	$\overline{K}^*(892)^0\rho^+$ total	[d]	(2.0 ±1.2) %	
Γ_{86}	$\overline{K}^*(892)^0\rho^+$ S-wave	[d]	(1.6 ±1.5) %	
Γ_{87}	$\overline{K}^*(892)^0\rho^+$ P-wave		< 1 $\times 10^{-3}$	CL=90%
Γ_{88}	$\overline{K}^*(892)^0\rho^+$ D-wave		(9 ±6) $\times 10^{-3}$	
Γ_{89}	$\overline{K}^*(892)^0\rho^+$ D-wave longitudinal		< 7 $\times 10^{-3}$	CL=90%
Γ_{90}	$\overline{K}_1(1270)^0\pi^+$		< 7 $\times 10^{-3}$	CL=90%

Γ_{91}	$\overline{K}_1(1400)^0\pi^+$		(3.8 ±1.3) %	
Γ_{92}	$\overline{K}^*(1410)^0\pi^+$			
Γ_{93}	$\overline{K}^*(892)^0\pi^+\pi^0$ total		(6.3 ±0.9) %	
Γ_{94}	$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body	[*d*]	(4.0 ±1.2) %	
Γ_{95}	$K^*(892)^-\pi^+\pi^+$ total		—	
Γ_{96}	$K^*(892)^-\pi^+\pi^+$ 3-body		(1.4 ±0.9) %	
Γ_{97}	$K^0_S f_0(980)\pi^+$			
Γ_{98}	$\overline{K}^*(892)^0 a_1(1260)^+$		(9.2 ±1.8) × 10^{-3}	

Pionic modes

Γ_{99}	$\pi^+\pi^0$		(1.25±0.08) × 10^{-3}	
Γ_{100}	$\pi^+\pi^+\pi^-$		(3.24±0.19) × 10^{-3}	
Γ_{101}	$\rho^0\pi^+$		(8.2 ±1.5) × 10^{-4}	
Γ_{102}	$\pi^+(\pi^+\pi^-)_{S-\text{wave}}$		(1.81±0.17) × 10^{-3}	
Γ_{103}	$\sigma\pi^+$, $\sigma \to \pi^+\pi^-$		(1.37±0.12) × 10^{-3}	
Γ_{104}	$f_0(980)\pi^+$, $f_0(980) \to \pi^+\pi^-$		(1.55±0.33) × 10^{-4}	
Γ_{105}	$f_0(1370)\pi^+$, $f_0(1370) \to \pi^+\pi^-$		(8 ±4) × 10^{-5}	
Γ_{106}	$f_2(1270)\pi^+$, $f_2(1270) \to \pi^+\pi^-$		(5.0 ±0.9) × 10^{-4}	
Γ_{107}	$\rho(1450)^0\pi^+$, $\rho(1450)^0 \to \pi^+\pi^-$		< 8 × 10^{-5}	CL=95%
Γ_{108}	$f_0(1500)\pi^+$, $f_0(1500) \to \pi^+\pi^-$		(1.1 ±0.4) × 10^{-4}	
Γ_{109}	$f_0(1710)\pi^+$, $f_0(1710) \to \pi^+\pi^-$		< 5 × 10^{-5}	CL=95%
Γ_{110}	$f_0(1790)\pi^+$, $f_0(1790) \to \pi^+\pi^-$		< 6 × 10^{-5}	CL=95%
Γ_{111}	$(\pi^+\pi^+)_{S-\text{wave}}\pi^-$		< 1.2 × 10^{-4}	CL=95%
Γ_{112}	$\pi^+\pi^+\pi^-$ nonresonant		< 1.1 × 10^{-4}	CL=95%
Γ_{113}	$\pi^+2\pi^0$		(4.6 ±0.4) × 10^{-3}	
Γ_{114}	$\pi^+\pi^+\pi^-\pi^0$		(1.15±0.08) %	
Γ_{115}	$\eta\pi^+$, $\eta \to \pi^+\pi^-\pi^0$		(7.7 ±0.7) × 10^{-4}	
Γ_{116}	$\omega\pi^+$, $\omega \to \pi^+\pi^-\pi^0$		< 3 × 10^{-4}	CL=90%
Γ_{117}	$3\pi^+2\pi^-$		(1.64±0.16) × 10^{-3}	S=1.1

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

Γ_{118}	$\eta\pi^+$		(3.36±0.18) × 10^{-3}	S=1.1
Γ_{119}	$\eta\pi^+\pi^0$		(1.38±0.35) × 10^{-3}	
Γ_{120}	$\eta\rho^+$		< 6 × 10^{-3}	CL=90%

Γ_{121}	$\omega\pi^+$		$< 3.4 \times 10^{-4}$	CL=90%
Γ_{122}	$\eta'(958)\pi^+$		$(4.44\pm0.35) \times 10^{-3}$	
Γ_{123}	$\eta'(958)\pi^+\pi^0$		$(1.6 \pm0.5) \times 10^{-3}$	
Γ_{124}	$\eta'(958)\rho^+$		$< 5 \times 10^{-3}$	CL=90%

Hadronic modes with a $K\overline{K}$ pair

Γ_{125}	$K^+K^0_S$		$(3.05\pm0.13) \times 10^{-3}$	S=1.3
Γ_{126}	$K^+K^-\pi^+$	[b]	$(9.72\pm0.33) \times 10^{-3}$	S=1.5
Γ_{127}	$\phi\pi^+$, $\phi \to K^+K^-$		$(2.71\pm0.11) \times 10^{-3}$	S=1.4
Γ_{128}	$K^+\overline{K}^*(892)^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$(2.50^{+0.10}_{-0.15}) \times 10^{-3}$	
Γ_{129}	$K^+\overline{K}^*_0(1430)^0$, $\overline{K}^*_0(1430)^0 \to K^-\pi^+$		$(1.83\pm0.35) \times 10^{-3}$	
Γ_{130}	$K^+\overline{K}^*_2(1430)^0$, $\overline{K}^*_2 \to K^-\pi^+$		$(1.7 ^{+1.2}_{-0.8}) \times 10^{-4}$	
Γ_{131}	$K^+\overline{K}^*_0(800)$, $\overline{K}^*_0 \to K^-\pi^+$		$(6.8 ^{+3.5}_{-2.1}) \times 10^{-4}$	
Γ_{132}	$a_0(1450)^0\pi^+$, $a^0_0 \to K^+K^-$		$(4.5 ^{+7.0}_{-1.8}) \times 10^{-4}$	
Γ_{133}	$\phi(1680)\pi^+$, $\phi \to K^+K^-$		$(5.0 ^{+4.0}_{-1.9}) \times 10^{-5}$	
Γ_{134}	$K^+K^-\pi^+$ nonresonant			
Γ_{135}	$K^0_SK^0_S\pi^+$		—	
Γ_{136}	$K^*(892)^+K^0_S$, $K^*(892)^+ \to K^0_S\pi^+$		$(5.3 \pm2.3) \times 10^{-3}$	
Γ_{137}	$K^+K^-\pi^+\pi^0$		—	
Γ_{138}	$\phi\pi^+\pi^0$, $\phi \to K^+K^-$		(1.1 ± 0.5) %	
Γ_{139}	$\phi\rho^+$, $\phi \to K^+K^-$		$< 7 \times 10^{-3}$	CL=90%
Γ_{140}	$K^+K^-\pi^+\pi^0$ non-ϕ		$(1.5 ^{+0.7}_{-0.6})$ %	
Γ_{141}	$K^+K^0_S\pi^+\pi^-$		$(1.71\pm0.18) \times 10^{-3}$	
Γ_{142}	$K^0_SK^-\pi^+\pi^+$		$(2.34\pm0.18) \times 10^{-3}$	
Γ_{143}	$K^0_SK^-\pi^+\pi^+$(non-$K^{*+}\overline{K}^{*0}$)			
Γ_{144}	$K^+K^-\pi^+\pi^+\pi^-$		$(2.3 \pm1.2) \times 10^{-4}$	

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

Γ_{145}	$\phi\pi^+$		$(5.53\pm0.24) \times 10^{-3}$	S=1.4
Γ_{146}	$\phi\pi^+\pi^0$		(2.3 ± 1.0) %	
Γ_{147}	$\phi\rho^+$		< 1.5 %	CL=90%
Γ_{148}	$K^+\overline{K}^*(892)^0$		$(3.80^{+0.15}_{-0.23}) \times 10^{-3}$	
Γ_{149}	$K^*(892)^+K^0_S$		(1.6 ± 0.7) %	
Γ_{150}	$K^*(892)^+\overline{K}^*(892)^0$			

Doubly Cabibbo-suppressed modes

Γ_{151}	$K^+\pi^0$			$(2.37\pm0.32)\times10^{-4}$	
Γ_{152}	$K^+\pi^+\pi^-$			$(6.3\pm0.7)\times10^{-4}$	
Γ_{153}	$K^+\rho^0$			$(2.4\pm0.6)\times10^{-4}$	
Γ_{154}	$K^*(892)^0\pi^+$, $K^*(892)^0\to K^+\pi^-$			$(2.9\pm0.6)\times10^{-4}$	
Γ_{155}	$K^+f_0(980)$, $f_0(980)\to\pi^+\pi^-$			$(5.6\pm3.4)\times10^{-5}$	
Γ_{156}	$K_2^*(1430)^0\pi^+$, $K_2^*(1430)^0\to K^+\pi^-$			$(5.0\pm3.4)\times10^{-5}$	
Γ_{157}	$K^+\pi^+\pi^-$ nonresonant				
Γ_{158}	$K^+K^+K^-$			$(8.8\pm2.0)\times10^{-5}$	

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

Γ_{159}	$\pi^+e^+e^-$	*C1*		$<7.4\times10^{-6}$	CL=90%
Γ_{160}	$\pi^+\phi$, $\phi\to e^+e^-$		[e]	$(2.7\ ^{+4.0}_{-1.8})\times10^{-6}$	
Γ_{161}	$\pi^+\mu^+\mu^-$	*C1*		$<3.9\times10^{-6}$	CL=90%
Γ_{162}	$\pi^+\phi$, $\phi\to\mu^+\mu^-$		[e]	$(1.8\pm0.8)\times10^{-6}$	
Γ_{163}	$\rho^+\mu^+\mu^-$	*C1*		$<5.6\times10^{-4}$	CL=90%
Γ_{164}	$K^+e^+e^-$		[f]	$<6.2\times10^{-6}$	CL=90%
Γ_{165}	$K^+\mu^+\mu^-$		[f]	$<9.2\times10^{-6}$	CL=90%
Γ_{166}	$\pi^+e^\pm\mu^\mp$	*LF*	[g]	$<3.4\times10^{-5}$	CL=90%
Γ_{167}	$\pi^+e^+\mu^-$				
Γ_{168}	$\pi^+e^-\mu^+$				
Γ_{169}	$K^+e^\pm\mu^\mp$	*LF*	[g]	$<6.8\times10^{-5}$	CL=90%
Γ_{170}	$K^+e^+\mu^-$				
Γ_{171}	$K^+e^-\mu^+$				
Γ_{172}	$\pi^-e^+e^+$	*L*		$<3.6\times10^{-6}$	CL=90%
Γ_{173}	$\pi^-\mu^+\mu^+$	*L*		$<4.8\times10^{-6}$	CL=90%
Γ_{174}	$\pi^-e^+\mu^+$	*L*		$<5.0\times10^{-5}$	CL=90%
Γ_{175}	$\rho^-\mu^+\mu^+$	*L*		$<5.6\times10^{-4}$	CL=90%
Γ_{176}	$K^-e^+e^+$	*L*		$<4.5\times10^{-6}$	CL=90%
Γ_{177}	$K^-\mu^+\mu^+$	*L*		$<1.3\times10^{-5}$	CL=90%
Γ_{178}	$K^-e^+\mu^+$	*L*		$<1.3\times10^{-4}$	CL=90%
Γ_{179}	$K^*(892)^-\mu^+\mu^+$	*L*		$<8.5\times10^{-4}$	CL=90%

Γ_{180}	A dummy mode used by the fit.	(36.7 ± 1.6) %	S=1.1

[a] An ℓ indicates an e or a μ mode, not a sum over these modes.

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

[*c*] These subfractions of the $K^- \pi^+ \pi^+$ mode are uncertain: see the Particle Listings.

[*d*] The two experiments measuring this fraction are in serious disagreement. See the Particle Listings.

[*e*] This is *not* a test for the ΔC=1 weak neutral current, but leads to the $\pi^+ e^+ e^-$ final state.

[*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 or particle/antiparticle states indicated.

CONSTRAINED FIT INFORMATION

An overall fit to 33 branching ratios uses 50 measurements and one constraint to determine 20 parameters. The overall fit has a χ^2 = 37.5 for 31 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle \delta x_i \delta x_j \right\rangle / (\delta x_i \cdot \delta x_j)$, 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_{17}	x_{18}	x_{19}	x_{30}	x_{37}	x_{38}	x_{44}	x_{46}	x_{55}	x_{59}
x_{18}	0									
x_{19}	0	0								
x_{30}	0	0	0							
x_{37}	0	3	9	5						
x_{38}	0	58	0	0	3					
x_{44}	0	7	0	0	2	7				
x_{46}	0	31	1	0	8	31	22			
x_{55}	0	−11	0	0	−3	−11	53	−34		
x_{59}	0	20	0	0	6	21	4	65	−17	
x_{68}	0	2	0	0	1	2	72	6	60	−28
x_{75}	0	9	0	0	2	9	6	29	−10	19
x_{117}	0	8	0	0	2	8	6	27	−9	17
x_{118}	0	6	0	0	2	6	4	19	−7	12
x_{122}	0	2	0	0	1	2	1	7	−3	5
x_{125}	0	5	0	0	1	5	19	17	3	10
x_{126}	0	26	1	0	7	26	11	82	−37	60
x_{127}	0	21	0	0	6	21	9	67	−31	49
x_{145}	0	19	0	0	5	20	9	62	−29	46
x_{180}	−17	−75	−38	−4	−27	−66	−32	−49	−11	−39
	x_{17}	x_{18}	x_{19}	x_{30}	x_{37}	x_{38}	x_{44}	x_{46}	x_{55}	x_{59}

x_{75}	2								
x_{117}	2	77							
x_{118}	1	5	5						
x_{122}	0	2	2	2					
x_{125}	12	5	5	3	1				
x_{126}	−3	24	22	17	8	13			
x_{127}	−2	19	18	15	10	11	82		
x_{145}	−2	18	17	15	10	10	76	93	
x_{180}	−23	−18	−16	−10	−5	−12	−39	−33	−31
	x_{68}	x_{75}	x_{117}	x_{118}	x_{122}	x_{125}	x_{126}	x_{127}	x_{145}

D^+ BRANCHING RATIOS

Some now-obsolete measurements have been omitted from these Listings.

—— c-quark decays ——

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

For the Summary Table, we only use the average of e^+ and μ^+ measurements from $Z^0 \to c\overline{c}$ decays; see the second data block below.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.103 \pm 0.009 {}^{+0.009}_{-0.008}$	378	[3] ABBIENDI	99K	OPAL	$Z^0 \to c\overline{c}$

[3] ABBIENDI 99K uses the excess of right-sign over wrong-sign leptons opposite reconstructed $D^*(2010)^+ \to D^0 \pi^+$ decays in $Z^0 \to c\overline{c}$.

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

For the Summary Table, we only use the average of e^+ and μ^+ measurements from $Z^0 \to c\overline{c}$ decays; see the next data block.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.082±0.005 OUR AVERAGE					
$0.073 \pm 0.008 \pm 0.002$	73	KAYIS-TOPAK...	05	CHRS	ν_μ emulsion
$0.095 \pm 0.007 {}^{+0.014}_{-0.013}$	2829	ASTIER	00D	NOMD	$\nu_\mu \text{Fe} \to \mu^- \mu^+ X$
$0.090 \pm 0.007 {}^{+0.007}_{-0.006}$	476	[4] ABBIENDI	99K	OPAL	$Z^0 \to c\overline{c}$
$0.086 \pm 0.017 {}^{+0.008}_{-0.007}$	69	[5] ALBRECHT	92F	ARG	$e^+ e^- \approx$ 10 GeV
$0.078 \pm 0.009 \pm 0.012$		ONG	88	MRK2	$e^+ e^-$ 29 GeV
$0.078 \pm 0.015 \pm 0.02$		BARTEL	87	JADE	$e^+ e^-$ 34.6 GeV
$0.082 \pm 0.012 {}^{+0.02}_{-0.01}$		ALTHOFF	84G	TASS	$e^+ e^-$ 34.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.093 \pm 0.009 \pm 0.009$	88	KAYIS-TOPAK...	02	CHRS	See KAYIS-TOPAKSU 05
$0.089 \pm 0.018 \pm 0.025$		BARTEL	85J	JADE	See BARTEL 87

[4] ABBIENDI 99K uses the excess of right-sign over wrong-sign leptons opposite reconstructed $D^*(2010)^+ \rightarrow D^0\pi^+$ decays in $Z^0 \rightarrow c\overline{c}$.
[5] 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.

$\Gamma(c \rightarrow \ell^+ \text{anything})/\Gamma(c \rightarrow \text{anything})$

This is an average (not a sum) of e^+ and μ^+ measurements.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.096 ±0.004 OUR AVERAGE					
0.0958±0.0042±0.0028	1828	[6] ABREU	00O	DLPH	$Z^0 \rightarrow c\overline{c}$
0.095 ±0.006 $^{+0.007}_{-0.006}$	854	[7] ABBIENDI	99K	OPAL	$Z^0 \rightarrow c\overline{c}$

[6] ABREU 00O uses leptons opposite fully reconstructed $D^*(2010)^+$, D^+, or D^0 mesons.
[7] ABBIENDI 99K uses the excess of right-sign over wrong-sign leptons opposite reconstructed $D^*(2010)^+ \rightarrow D^0\pi^+$ decays in $Z^0 \rightarrow c\overline{c}$.

$\Gamma(c \rightarrow D^*(2010)^+ \text{anything})/\Gamma(c \rightarrow \text{anything})$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.255±0.015±0.008	2371	[8] ABREU	00O	DLPH	$Z^0 \rightarrow c\overline{c}$

[8] ABREU 00O uses slow pions opposite fully reconstructed $D^*(2010)^+$, D^+, or D^0 mesons as a signal of $D^*(2010)^-$ production.

Inclusive modes

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.160 ±0.004 OUR AVERAGE					
0.152 ±0.009 ±0.008	521 ± 32	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
0.1613±0.0020±0.0033	8798±105	[9] ADAM	06A	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.170 ±0.019 ±0.007	158	BALTRUSAIT...	85B	MRK3	e^+e^- 3.77 GeV

[9] Using the D^+ and D^0 lifetimes, ADAM 06A finds that the ratio of the D^+ and D^0 inclusive e^+ widths is 0.985 ± 0.028 ± 0.015, consistent with the isospin-invariance prediction of 1.

$\Gamma(\mu^+ \text{anything})/\Gamma_{\text{total}}$ — Γ_2/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
17.6±2.7±1.8	100 ± 12	[10] ABLIKIM	08L	BES2	$e^+e^- \approx \psi(3772)$

[10] ABLIKIM 08L finds the ratio of $D^+ \rightarrow \mu^+X$ and $D^0 \rightarrow \mu^+X$ branching fractions to be 2.59 ± 0.70 ± 0.25, in accord with the ratio of D^+ and D^0 lifetimes, 2.54 ± 0.02.

$\Gamma(K^- \text{anything})/\Gamma_{\text{total}}$ — Γ_3/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.257±0.014 OUR AVERAGE					
0.247±0.013±0.012	631 ± 33	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
0.278$^{+0.036}_{-0.031}$		BARLAG	92C	ACCM	π^- Cu 230 GeV
0.271±0.023±0.024		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$\left[\Gamma(\overline{K}^0 \text{anything}) + \Gamma(K^0 \text{anything})\right]/\Gamma_{\text{total}}$ — Γ_4/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.61 ±0.05 OUR AVERAGE					
0.605±0.055±0.033	244 ± 22	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV
0.612±0.065±0.043		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^+ \text{anything})/\Gamma_{\text{total}}$ — Γ_5/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.059±0.008 OUR AVERAGE					
0.061±0.009±0.004	189 ± 27	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
0.055±0.013±0.009		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^- \text{anything})/\Gamma_{\text{total}}$ — Γ_6/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.057±0.052±0.007	7.2 ± 6.5	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV

$\Gamma(\overline{K}^*(892)^0 \text{anything})/\Gamma_{\text{total}}$ — Γ_7/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.232±0.045±0.030	189 ± 36	ABLIKIM	05P	BES	$e^+e^- \approx$ 3773 MeV

$\Gamma(K^*(892)^+ \text{anything})/\Gamma_{\text{total}}$ — Γ_8/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.203	90	[11] ABLIKIM	06U	BES2	e^+e^- at 3773 MeV

[11] One-third of the $K^*(892)^+$ would decay to $K^+\pi^0$, and one-third of this ABLIKIM 06U limit is < 0.068, which is larger than the measured K^+X branching fraction.

$\Gamma(K^*(892)^0 \text{anything})/\Gamma_{\text{total}}$ — Γ_9/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.066	90	ABLIKIM	05P	BES	$e^+e^- \approx$ 3773 MeV

$\Gamma(\eta \text{ anything})/\Gamma_{\text{total}}$ — Γ_{10}/Γ

This ratio includes η particles from η' decays.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.3±0.5±0.5	1972±142	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta' \text{ anything})/\Gamma_{\text{total}}$ — Γ_{11}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.04±0.16±0.09	82 ± 13	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\phi \text{ anything})/\Gamma_{\text{total}}$ — Γ_{12}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.03±0.10±0.07	248 ± 21	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$

Leptonic and semileptonic modes

$\Gamma(e^+\nu_e)/\Gamma_{total}$ — Γ_{13}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.8 × 10^{-6}	90	EISENSTEIN	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.4 \times 10^{-5}$	90	ARTUSO	05A	CLEO	See EISENSTEIN 08

$\Gamma(\mu^+\nu_\mu)/\Gamma_{total}$ — Γ_{14}/Γ

See the note on "Decay Constants of Charged Pseudoscalar Mesons" in the D_s^+ Listings.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.82± 0.32±0.09	150 ± 12	[12] EISENSTEIN	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$12.2\ ^{+11.1}_{-\ 5.3}\ \pm 1.0$	3	[13] ABLIKIM	05D	BES	$e^+e^- \approx$ 3.773 GeV
$4.40\pm\ 0.66^{+0.09}_{-0.12}$	47 ± 7	[14] ARTUSO	05A	CLEO	See EISENSTEIN 08
$3.5\ \pm\ 1.4\ \pm 0.6$	7	[15] BONVICINI	04A	CLEO	Incl. in ARTUSO 05A
$8\ ^{+16}_{-\ 5}\ ^{+5}_{-2}$	1	[16] BAI	98B	BES	$e^+e^- \rightarrow D^{*+}D^-$

[12] EISENSTEIN 08, using the D^+ lifetime and assuming $|V_{cd}| = |V_{us}|$, gets $f_{D^+} =$ (205.8 ± 8.5 ± 2.5) MeV from this measurement.

[13] ABLIKIM 05D finds a background-subtracted 2.67 ± 1.74 $D^+ \rightarrow \mu^+\nu_\mu$ events, and from this obtains $f_{D^+} = 371^{+129}_{-119} \pm 25$ MeV.

[14] ARTUSO 05A obtains $f_{D^+} = 222.6 \pm 16.7^{+2.8}_{-3.4}$ MeV from this measurement.

[15] BONVICINI 04A finds eight events with an estimated background of one, and from the branching fraction obtains $f_{D^+} = 202 \pm 41 \pm 17$ MeV.

[16] BAI 98B obtains $f_{D^+} = (300^{+180}_{-150}{}^{+80}_{-40})$ MeV from this measurement.

$\Gamma(\tau^+\nu_\tau)/\Gamma_{total}$ — Γ_{15}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-3}	90	EISENSTEIN	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.1 \times 10^{-3}$	90	RUBIN	06A	CLEO	See EISENSTEIN 08

$\Gamma(\overline{K}^0 e^+\nu_e)/\Gamma_{total}$ — Γ_{17}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
8.50±0.26 OUR FIT					
8.54±0.26 OUR AVERAGE					
8.53±0.13±0.23		[17,18] DOBBS	08	CLEO	e^+e^- at $\psi(3770)$
8.95±1.59±0.67	34 ± 6	[19] ABLIKIM	05A	BES	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8.71±0.38±0.37	545 ± 24	HUANG	05B	CLEO	See DOBBS 08

[17] DOBBS 08 establishes $\left|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}\right| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K} e^+ \nu_e$ and $\pi e^+ \nu_e$.

[18] DOBBS 08 finds $\Gamma(D^0 \to K^- e^+ \nu_e)$ / $\Gamma(D^+ \to \overline{K}^0 e^+ \nu_e) = 1.06 \pm 0.02 \pm 0.03$; isospin invariance predicts the ratio is 1.0.

[19] The ABLIKIM 05A result together with the $D^0 \to K^- e^+ \nu_e$ branching fraction of ABLIKIM 04C and Particle Data Group lifetimes gives $\Gamma(D^0 \to K^- e^+ \nu_e)$ / $\Gamma(D^+ \to \overline{K}^0 e^+ \nu_e) = 1.08 \pm 0.22 \pm 0.07$; isospin invariance predicts the ratio is 1.0.

$\Gamma(\overline{K}^0 e^+ \nu_e)/\Gamma(K_S^0 \pi^+)$ — Γ_{17}/Γ_{44}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
5.81±0.24 OUR FIT	Error includes scale factor of 1.1.			
5.20±0.70±0.52	186	[20] BEAN 93C	CLEO	$e^+ e^- \approx \Upsilon(4S)$

[20] 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. The value given is twice that in BEAN 93C because we are using $K_S^0 \pi^+$ and not $\overline{K}^0 \pi^+$, in the denominator.

$\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma_{total}$ — Γ_{18}/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.094±0.008 OUR FIT	Error includes scale factor of 1.1.			
0.103±0.023±0.008	29 ± 6	ABLIKIM 07	BES2	$e^+ e^-$ at 3773 MeV

$\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma(K^- 2\pi^+)$ — Γ_{18}/Γ_{46}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.01 ±0.08 OUR FIT	Error includes scale factor of 1.1.			
1.019±0.076±0.065	555 ± 39	LINK 04E	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\overline{K}^0 \mu^+ \nu_\mu)/\Gamma(\mu^+ \text{anything})$ — Γ_{18}/Γ_2

VALUE	EVTS	DOCUMENT ID	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.76±0.06	84	[21] AOKI 88	π^- emulsion

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

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

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
4.1 ±0.6 OUR FIT	Error includes scale factor of 1.1.			
3.5 $^{+0.7}_{-0.6}$ OUR AVERAGE				
3.50±0.75±0.27	29 ± 6	ABLIKIM 06O	BES2	$e^+ e^-$ at 3773 MeV
3.5 $^{+1.2}_{-0.7}$ ±0.4	14	BAI 91	MRK3	$e^+ e^- \approx$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0 e^+ \nu_e)/\Gamma_{total}$ Γ_{37}/Γ

Unseen decay modes of $\overline{K}^*(892)^0$ are included. See the end of the D^+ Listings for measurements of $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$ form-factor ratios.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.51±0.31 OUR FIT Error includes scale factor of 1.2.					
5.52±0.34 OUR AVERAGE					
5.06±1.21±0.40	28 ± 7	ABLIKIM	06O	BES2	$e^+ e^-$ at 3773 MeV
5.56±0.27±0.23	422 ± 21	[22] HUANG	05B	CLEO	$e^+ e^-$ at $\psi(3770)$

[22] HUANG 05B finds $\Gamma(D^0 \rightarrow K^{*-} e^+ \nu_e)$ / $\Gamma(D^+ \rightarrow \overline{K}^{*0} e^+ \nu_e) = 0.98 \pm 0.08 \pm 0.04$; isospin invariance predicts the ratio is 1.0.

$\Gamma(\overline{K}^*(892)^0 e^+ \nu_e)/\Gamma(K^- \pi^+ e^+ \nu_e)$ Γ_{37}/Γ_{19}

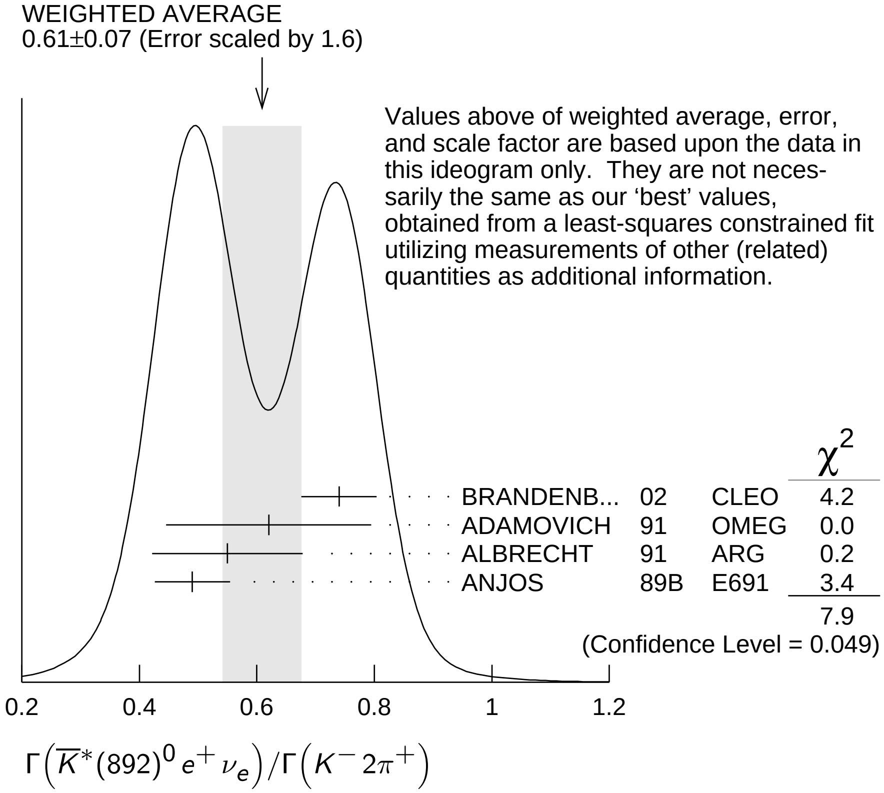
Unseen decay modes of the $\overline{K}^*(892)^0$ are included. See the end of the D^+ Listings for measurements of $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$ form-factor ratios.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.36±0.22 OUR FIT Error includes scale factor of 1.2.					
1.0 ±0.3	35	ADAMOVICH	91	OMEG	π^- 340 GeV

$\Gamma(\overline{K}^*(892)^0 e^+ \nu_e)/\Gamma(K^- 2\pi^+)$ Γ_{37}/Γ_{46}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included. See the end of the D^+ Listings for measurements of $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$ form-factor ratios.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.59±0.04 OUR FIT Error includes scale factor of 1.3.					
0.61±0.07 OUR AVERAGE Error includes scale factor of 1.6. See the ideogram below.					
0.74±0.04±0.05		BRANDENB...	02	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		ANJOS	89B	E691	Photoproduction



$\Gamma\left(K^- \pi^+ e^+ \nu_e \text{ nonresonant}\right)/\Gamma_{total}$ — Γ_{21}/Γ

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

$\Gamma\left(K^- \pi^+ \mu^+ \nu_\mu\right)/\Gamma\left(\overline{K}^0 \mu^+ \nu_\mu\right)$ — Γ_{22}/Γ_{18}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.417±0.030±0.023	555 ± 39	LINK	04E	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma\left(\overline{K}^*(892)^0 \mu^+ \nu_\mu\right)/\Gamma\left(\overline{K}^0 \mu^+ \nu_\mu\right)$ — Γ_{38}/Γ_{18}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included. See the end of the D^+ Listings for measurements of $D^+ \to \overline{K}^*(892)^0 \ell^+ \nu_\ell$ form-factor ratios.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.58 ±0.05 OUR FIT					
0.594±0.043±0.033	555 ± 39	LINK	04E	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma\left(\overline{K}^*(892)^0 \mu^+ \nu_\mu\right)/\Gamma\left(K^- 2\pi^+\right)$ — Γ_{38}/Γ_{46}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included. See the end of the D^+ Listings for measurements of $D^+ \to \overline{K}^*(892)^0 \ell^+ \nu_\ell$ form-factor ratios.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.58 ±0.05 OUR FIT Error includes scale factor of 1.1.					
0.57 ±0.06 OUR AVERAGE Error includes scale factor of 1.2.					
0.72 ±0.10 ±0.05		BRANDENB...	02	CLEO	$e^+ e^- \approx \Upsilon(4S)$
0.56 ±0.04 ±0.06	875	FRABETTI	93E	E687	γBe $\overline{E}_\gamma \approx$ 200 GeV
0.46 ±0.07 ±0.08	224	KODAMA	92C	E653	π^- emulsion 600 GeV

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

$0.602\pm0.010\pm0.021$	12k	[23] LINK	02J	FOCS	γ nucleus, ≈ 180 GeV

[23] This LINK 02J result includes the effects of an interference of a small S-wave $K^-\pi^+$ amplitude with the dominant $\overline{K}^{*0}$ amplitude. (The interference effect is reported in LINK 02E.) This result is redundant with results of LINK 04E elsewhere in these Listings.

$\Gamma(K^-\pi^+\mu^+\nu_\mu$ nonresonant$)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ — Γ_{24}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0530\pm0.0074^{+0.0099}_{-0.0096}}$	14k	LINK	05I	FOCS	γ nucleus, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(\pi^0 e^+\nu_e)/\Gamma_{total}$ — Γ_{28}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.373\pm0.022\pm0.013}$		[24,25] DOBBS	08	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.44\ \pm0.06\ \pm0.03$	63 ± 9	HUANG	05B	CLEO	See DOBBS 08

[24] DOBBS 08 establishes $\left|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}\right| = 0.188\pm0.008\pm0.002$ from the D^+ and D^0 decays to $\overline{K}e^+\nu_e$ and $\pi e^+\nu_e$.

[25] DOBBS 08 finds $\Gamma(D^0\to\pi^-e^+\nu_e)\ /\ \Gamma(D^+\to\pi^0e^+\nu_e) = 2.03\pm0.14\pm0.08$; isospin invariance predicts the ratio is 2.0.

$\Gamma(\pi^0\ell^+\nu_\ell)/\Gamma(\overline{K}^0\ell^+\nu_\ell)$ — Γ_{29}/Γ_{16}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.046\pm0.014\pm0.017$	100	[26] BARTELT	97	CLEO	$e^+e^-\approx\Upsilon(4S)$
$0.085\pm0.027\pm0.014$	53	[27] ALAM	93	CLEO	See BARTELT 97

[26] BARTELT 97 thus directly measures the product of ratios squared of CKM matrix elements and form factors at q^2=0: $|V_{cd}/V_{cs}|^2\ \cdot\ |f_+^\pi(0)/f_+^K(0)|^2 = 0.046\pm0.014\pm0.017$.

[27] ALAM 93 thus directly measures the product of ratios squared of CKM matrix elements and form factors at q^2=0: $|V_{cd}/V_{cs}|^2\ \cdot\ |f_+^\pi(0)/f_+^K(0)|^2 = 0.085\pm0.027\pm0.014$.

$\Gamma(\rho^0 e^+\nu_e)/\Gamma_{total}$ — Γ_{30}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0022\pm0.0004}$ **OUR FIT**					
$\mathbf{0.0021\pm0.0004\pm0.0001}$	27 ± 6	[28] HUANG	05B	CLEO	e^+e^- at $\psi(3770)$

[28] HUANG 05B finds $\Gamma(D^0\to\rho^-e^+\nu_e)\ /\ 2\ \Gamma(D^+\to\rho^0e^+\nu_e) = 1.2^{+0.4}_{-0.3}\pm0.1$; isospin invariance predicts the ratio is 1.0.

$\Gamma(\rho^0 e^+\nu_e)/\Gamma(\overline{K}^*(892)^0 e^+\nu_e)$ — Γ_{30}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.039\pm0.007}$ **OUR FIT**					
$\mathbf{0.045\pm0.014\pm0.009}$	49	[29] AITALA	97	E791	π^- nucleus, 500 GeV

[29] AITALA 97 explicitly subtracts $D^+\to\eta' e^+\nu_e$ and other backgrounds to get this result.

$\Gamma(\rho^0 \mu^+ \nu_\mu)/\Gamma(\overline{K}^*(892)^0 \mu^+ \nu_\mu)$ — Γ_{31}/Γ_{38}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.045±0.007 OUR AVERAGE Error includes scale factor of 1.1.					
0.041±0.006±0.004	320 ± 44	LINK	06B	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
0.051±0.015±0.009	54	[30] AITALA	97	E791	π^- nucleus, 500 GeV
0.079±0.019±0.013	39	[31] FRABETTI	97	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV

[30] AITALA 97 explicitly subtracts $D^+ \to \eta' \mu^+ \nu_\mu$ and other backgrounds to get this result.

[31] Because the reconstruction efficiency for photons is low, this FRABETTI 97 result also includes any $D^+ \to \eta' \mu^+ \nu_\mu \to \gamma \rho^0 \mu^+ \nu_\mu$ events in the numerator.

$\Gamma(\omega e^+ \nu_e)/\Gamma_{total}$ — Γ_{32}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.0016^{+0.0007}_{-0.0006}$±0.0001	$7.6^{+3.3}_{-2.7}$	HUANG	05B	CLEO	$e^+ e^-$ at $\psi(3770)$

$\Gamma(\phi e^+ \nu_e)/\Gamma_{total}$ — Γ_{33}/Γ

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0201	90	ABLIKIM	06P	BES2	$e^+ e^-$ at 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0209	90	BAI	91	MRK3	$e^+ e^- \approx$ 3.77 GeV

$\Gamma(\phi \mu^+ \nu_\mu)/\Gamma_{total}$ — Γ_{34}/Γ

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0204	90	ABLIKIM	06P	BES2	$e^+ e^-$ at 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0372	90	BAI	91	MRK3	$e^+ e^- \approx$ 3.77 GeV

$\Gamma(\eta \ell^+ \nu_\ell)/\Gamma(\pi^0 \ell^+ \nu_\ell)$ — Γ_{35}/Γ_{29}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.5	90	BARTELT	97	CLEO	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\eta'(958) \mu^+ \nu_\mu)/\Gamma(\overline{K}^*(892)^0 \mu^+ \nu_\mu)$ — Γ_{36}/Γ_{38}

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

$\Gamma((\overline{K}^*(892)\pi)^0 e^+ \nu_e)/\Gamma_{total}$ — Γ_{25}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	ANJOS	92	E691	Photoproduction

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.009	90	ANJOS	92	E691	Photoproduction

$\Gamma(K^-\pi^+\pi^0\mu^+\nu_\mu)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ Γ_{27}/Γ_{22}

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

$\Gamma(\overline{K}_1(1270)^0\mu^+\nu_\mu)/\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)$ Γ_{39}/Γ_{38}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.78	95	ABE	99P	CDF	$\overline{p}p$ 1.8 TeV

$\Gamma(\overline{K}^*(1410)^0\mu^+\nu_\mu)/\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)$ Γ_{40}/Γ_{38}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.60	95	ABE	99P	CDF	$\overline{p}p$ 1.8 TeV

$\Gamma(\overline{K}^*_0(1430)^0\mu^+\nu_\mu)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ Γ_{41}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
<0.0064	90	LINK	05I	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\overline{K}^*_2(1430)^0\mu^+\nu_\mu)/\Gamma(\overline{K}^*(892)^0\mu^+\nu_\mu)$ Γ_{42}/Γ_{38}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.19	95	ABE	99P	CDF	$\overline{p}p$ 1.8 TeV

$\Gamma(\overline{K}^*(1680)^0\mu^+\nu_\mu)/\Gamma(K^-\pi^+\mu^+\nu_\mu)$ Γ_{43}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
<0.04	90	LINK	05I	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

—— Hadronic modes with a $\overline{K}$ or $\overline{K}K\overline{K}$ ——

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

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.46 ±0.04 OUR FIT Error includes scale factor of 1.3.					
1.526±0.022±0.038		[32] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.55 ±0.05 ±0.06	2230 ± 60	[32] HE	05	CLEO	See DOBBS 07
1.6 ±0.3 ±0.1	161	ADLER	88C	MRK3	e^+e^- 3.77 GeV

[32] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

$\Gamma(K^0_S\pi^+)/\Gamma(K^-2\pi^+)$ — Γ_{44}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.158 ±0.005 OUR FIT Error includes scale factor of 2.3.					
0.1530±0.0023±0.0016	10.6k	LINK	02B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.174 ±0.012 ±0.011	473	[33] BISHAI	97	CLEO	$e^+e^- \approx \Upsilon(4S)$
0.137 ±0.015 ±0.016	264	ANJOS	90C	E691	Photoproduction

[33] See BISHAI 97 for an isospin analysis of $D^+ \to \overline{K}\pi$ amplitudes.

$\Gamma(K^0_L\pi^+)/\Gamma_{total}$ — Γ_{45}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.460±0.040±0.035	2023 ± 54	[34] HE	08	CLEO	e^+e^- at $\psi(3770)$

[34] The difference of CLEO $D^+ \to K^0_S\pi^+$ and $K^0_L\pi^+$ branching fractions over the sum (DOBBS 07 and HE 08) is +0.022 ± 0.016 ± 0.018.

$\Gamma(K^-2\pi^+)/\Gamma_{total}$ — Γ_{46}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.29±0.25 OUR FIT Error includes scale factor of 1.4.					
9.14±0.10±0.17		[35] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
9.5 ±0.2 ±0.3	15.1k±130	[35] HE	05	CLEO	See DOBBS 07
9.3 ±0.6 ±0.8	1502	[36] BALEST	94	CLEO	$e^+e^- \approx \Upsilon(4S)$
6.4 $^{+1.5}_{-1.4}$		[37] BARLAG	92C	ACCM	π^- Cu 230 GeV
9.1 ±1.3 ±0.4	1164	ADLER	88C	MRK3	e^+e^- 3.77 GeV
9.1 ±1.9	239	[38] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[35] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[36] 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).

[37] BARLAG 92C computes the branching fraction by topological normalization.

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

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$\Gamma((K^-\pi^+)_{S-wave}\pi^+)/\Gamma(K^-2\pi^+)$ — Γ_{47}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis. The $K^-\pi^+$ S-wave includes a broad scalar κ ($\overline{K}^*_0(800)$), the $\overline{K}^*_0(1430)^0$, and non-resonant background.

VALUE	DOCUMENT ID		TECN	COMMENT
0.820 ±0.015 OUR AVERAGE Error includes scale factor of 1.2.				
0.838 ±0.038	[39] BONVICINI	08A	CLEO	QMIPWA fit, 141k evts
0.8323±0.0150±0.0008	[40] LINK	07B	FOCS	K-matrix fit, 50.5k±248 evts
0.786 ±0.014 ±0.018	AITALA	06	E791	Dalitz fit, 15.1k events

[39] The BONVICINI 08A QMIPWA (quasi-model-independent partial-wave analysis) fit uses a binned $K^- \pi^+$ S-wave amplitude but keeps the Breit-Wigner $\overline{K}_0^*(1430)^0$.

[40] This LINK 07B fit uses a K matrix. The $K^- \pi^+$ S-wave fit fraction given above breaks down into (207.3 ± 25.5 ± 12.4)% isospin-1/2 and (40.5 ± 9.6 ± 3.2)% isospin-3/2 — with large interference between the two. The isospin-1/2 component includes the κ (or $\overline{K}_0^*(800)^0$) and $\overline{K}_0^*(1430)^0$.

$\Gamma(\overline{K}_0^*(800)^0 \pi^+ , \overline{K}_0^*(800) \to K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{48}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.478±0.121±0.053	AITALA	02	E791	See AITALA 06

$\Gamma(\overline{K}_0^*(1430)^0 \pi^+ , \overline{K}_0^*(1430)^0 \to K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{49}/Γ_{46}

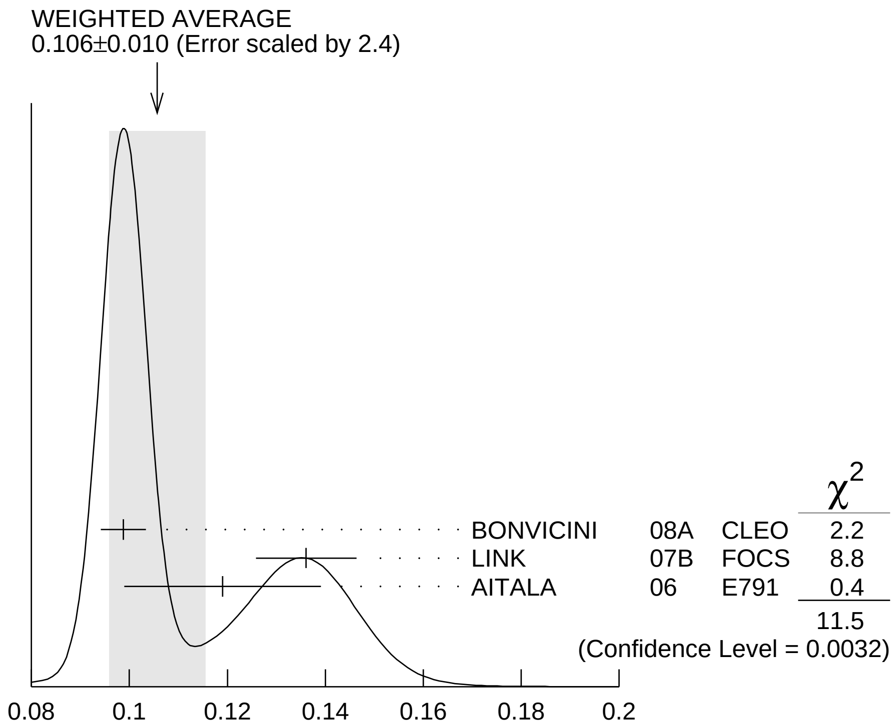
This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.125±0.014±0.005	AITALA	02	E791	See AITALA 06
0.284±0.022±0.059	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.248±0.019±0.017	ANJOS	93	E691	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0 \pi^+ , \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{50}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.106 ±0.010 OUR AVERAGE Error includes scale factor of 2.4. See the ideogram below.				
0.0988±0.0046	BONVICINI	08A	CLEO	QMIPWA fit, 141k evts
0.1361±0.0098±0.0030	LINK	07B	FOCS	K-matrix fit, 50.5k±248 evts
0.119 ±0.002 ±0.020	AITALA	06	E791	Dalitz fit, 15.1k events
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.123 ±0.010 ±0.009	AITALA	02	E791	See AITALA 06
0.137 ±0.006 ±0.009	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.170 ±0.009 ±0.034	ANJOS	93	E691	γ Be 90–260 GeV
0.14 ±0.04 ±0.04	ALVAREZ	91B	NA14	Photoproduction
0.13 ±0.01 ±0.07	ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV



$\Gamma\left(\overline{K}^*(892)^0\pi^+, \overline{K}^*(892)^0 \to K^-\pi^+\right)/\Gamma\left(K^-2\pi^+\right)$ Γ_{50}/Γ_{46}

$\Gamma\left(\overline{K}^*(1410)^0\pi^+\right)/\Gamma\left(K^-2\pi^+\right)$ Γ_{92}/Γ_{46}

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
not seen	BONVICINI	08A	CLEO	QMIPWA fit, 141k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4.8±2.1±1.7	LINK	07B	FOCS	K-matrix fit, 50.5k±248 evts

$\Gamma\left(\overline{K}_2^*(1430)^0\pi^+, \overline{K}_2^*(1430)^0 \to K^-\pi^+\right)/\Gamma\left(K^-2\pi^+\right)$ Γ_{51}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.23 ±0.04 OUR AVERAGE	Error includes scale factor of 1.2.			
0.204±0.040	BONVICINI	08A	CLEO	QMIPWA fit, 141k evts
0.39 ±0.09 ±0.05	LINK	07B	FOCS	K-matrix fit, 50.5k±248 evts
0.2 ±0.1 ±0.1	AITALA	06	E791	Dalitz fit, 15.1k events
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.5 ±0.1 ±0.2	AITALA	02	E791	See AITALA 06

$\Gamma\left(\overline{K}^*(1680)^0\pi^+, \overline{K}^*(1680)^0 \to K^-\pi^+\right)/\Gamma\left(K^-2\pi^+\right)$ Γ_{52}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.24 ±0.12 OUR AVERAGE				
0.196±0.118	BONVICINI	08A	CLEO	QMIPWA fit, 141k evts
1.90 ±0.63 ±0.43	LINK	07B	FOCS	K-matrix fit, 50.5k±248 evts
1.2 ±0.6 ±1.2	AITALA	06	E791	Dalitz fit, 15.1k events
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.5 ±0.7 ±0.3	AITALA	02	E791	See AITALA 06
4.7 ±0.6 ±0.7	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
3.0 ±0.4 ±1.3	ANJOS	93	E691	γ Be 90–260 GeV

$\Gamma(K^-(2\pi^+)_{I=2})/\Gamma(K^-2\pi^+)$ — Γ_{53}/Γ_{46}

VALUE	DOCUMENT ID		TECN	COMMENT
0.155±0.028	BONVICINI	08A	CLEO	QMIPWA fit, 141k evts

$\Gamma(K^-\pi^+\pi^+ \text{ nonresonant})/\Gamma(K^-2\pi^+)$ — Γ_{54}/Γ_{46}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.130±0.058±0.044	AITALA	02	E791	See AITALA 06
0.998±0.037±0.072	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.838±0.088±0.275	ANJOS	93	E691	γ Be 90–260 GeV
0.79 ±0.07 ±0.15	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^0_S\pi^+\pi^0)/\Gamma_{\text{total}}$ — Γ_{55}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.8 ±0.4 OUR FIT Error includes scale factor of 1.6.					
6.99±0.09±0.25		[41] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.2 ±0.2 ±0.4	5090±100	[41] HE	05	CLEO	See DOBBS 07
5.1 ±1.3 ±0.8	159	ADLER	88C	MRK3	e^+e^- 3.77 GeV

[41] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

$\Gamma(K^0_S\rho^+)/\Gamma(K^0_S\pi^+\pi^0)$ — Γ_{56}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

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

$\Gamma(\overline{K}^*(892)^0\pi^+, \overline{K}^*(892)^0 \to K^0_S\pi^0)/\Gamma(K^0_S\pi^+\pi^0)$ — Γ_{57}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.19±0.06±0.06	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^0_S\pi^+\pi^0 \text{ nonresonant})/\Gamma(K^0_S\pi^+\pi^0)$ — Γ_{58}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

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_{59}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.04±0.22 OUR FIT Error includes scale factor of 1.3.					
5.98±0.08±0.16		[42] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.0 ±0.2 ±0.2	4840±100	[42] HE	05	CLEO	See DOBBS 07
5.8 ±1.2 ±1.2	142	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV
6.3 $^{+1.4}_{-1.3}$ ±1.2	175	BALTRUSAIT...	86E	MRK3	See COFFMAN 92B

[42] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

$\Gamma(K^-\pi^+\pi^+\pi^0)/\Gamma(K^-2\pi^+)$ — Γ_{59}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.76±0.11±0.12	91	ANJOS	92C	E691	γ Be 90–260 GeV
0.69±0.10±0.16		ANJOS	89E	E691	See ANJOS 92C

$\Gamma(\overline{K}^*(892)^0\rho^+ \text{total})/\Gamma(K^-\pi^+\pi^+\pi^0)$ — Γ_{85}/Γ_{59}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.33±0.165±0.12	[43] ANJOS	92C	E691	γ Be 90–260 GeV

[43] See, however, the next entry, where the two experiments disagree completely.

$\Gamma(\overline{K}^*(892)^0\rho^+ \text{ S-wave})/\Gamma(K^-\pi^+\pi^+\pi^0)$ — Γ_{86}/Γ_{59}

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

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	γ Be 90–260 GeV
0.833±0.116±0.165	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+ \text{ P-wave})/\Gamma_{\text{total}}$ — Γ_{87}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.001	90	ANJOS	92C	E691	γ Be 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

$\Gamma(\overline{K}^*(892)^0\rho^+ \text{ D-wave})/\Gamma(K^-\pi^+\pi^+\pi^0)$ — Γ_{88}/Γ_{59}

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	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\rho^+ \text{ D-wave longitudinal})/\Gamma_{\text{total}}$ — Γ_{89}/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_{91}/Γ_{59}

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
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_{62}/Γ_{59}

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	γ Be 90–260 GeV

$\Gamma(K^-\rho^+\pi^+ \text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^0)$ — Γ_{63}/Γ_{59}

VALUE	DOCUMENT ID		TECN	COMMENT
0.17 ±0.06 OUR AVERAGE				
0.18 ±0.08 ±0.04	ANJOS	92C	E691	γ Be 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_{93}/Γ_{59}

This includes $\overline{K}^*(892)^0\rho^+$, *etc.* The next two entries give 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	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^0 \text{3-body})/\Gamma_{total}$ — Γ_{94}/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	[44] COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

[44] 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_{94}/Γ_{59}

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	γ Be 90–260 GeV

$\Gamma(K^*(892)^-\pi^+\pi^+ \text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^0)$ — Γ_{96}/Γ_{59}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.24±0.12±0.09	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^-\pi^+\pi^+\pi^0 \text{ nonresonant})/\Gamma_{total}$ — Γ_{67}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.002	90	[45] ANJOS	92C	E691	γ Be 90–260 GeV

[45] 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_{67}/Γ_{59}

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

$\Gamma(K^0_S\pi^+\pi^+\pi^-)/\Gamma_{total}$ — Γ_{68}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.04 ±0.11 OUR FIT Error includes scale factor of 1.2.					
3.122±0.046±0.096		[46] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.2 ±0.1 ±0.2	3210 ± 85	[46] HE	05	CLEO	See DOBBS 07
2.1 $^{+1.0}_{-0.9}$		[47] BARLAG	92C	ACCM	π^- Cu 230 GeV
3.3 ±0.8 ±0.2	168	ADLER	88C	MRK3	e^+e^- 3.77 GeV

[46] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[47] BARLAG 92C computes the branching fraction by topological normalization.

$\Gamma(K^0_S \pi^+\pi^+\pi^-)/\Gamma(K^- 2\pi^+)$ — Γ_{68}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.39\pm0.04\pm0.06$	229 ± 17	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(K^0_S a_1(1260)^+)/\Gamma(K^0_S \pi^+\pi^+\pi^-)$ — Γ_{83}/Γ_{68}

Unseen decay modes of the $a_1(1260)^+$ are included, assuming that the $a_1(1260)^+$ decays entirely to $\rho\pi$ [or at least to $(\pi\pi)_{I=1}\ \pi$].

VALUE	DOCUMENT ID		TECN	COMMENT
1.15 ±0.19 OUR AVERAGE	Error includes scale factor of 1.1.			
$1.66 \pm0.28 \pm0.40$	ANJOS	92C	E691	γBe 90–260 GeV
$1.078\pm0.114\pm0.140$	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^0_S a_2(1320)^+)/\Gamma_{total}$ — Γ_{84}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0015	90	ANJOS	92C	E691	γBe 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.004	90	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}_1(1270)^0 \pi^+)/\Gamma_{total}$ — Γ_{90}/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

$\Gamma(\overline{K}_1(1400)^0 \pi^+)/\Gamma_{total}$ — Γ_{91}/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	[48] ANJOS	92C	E691	γBe 90–260 GeV

[48] 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.

$\Gamma(\overline{K}_1(1400)^0 \pi^+)/\Gamma(K^0_S \pi^+\pi^+\pi^-)$ — Γ_{91}/Γ_{68}

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

VALUE	DOCUMENT ID		TECN	COMMENT
1.246±0.212±0.360	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^*(1410)^0 \pi^+)/\Gamma_{total}$ — Γ_{92}/Γ

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

$\Gamma(K^*(892)^- \pi^+ \pi^+ \text{total})/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ $\qquad \Gamma_{95}/\Gamma_{68}$

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. • • •					
0.82±0.28	14	ALEEV	94	BIS2	$n N$ 20–70 GeV

$\Gamma(K^*(892)^- \pi^+ \pi^+ \text{3-body})/\Gamma_{\text{total}}$ $\qquad \Gamma_{96}/\Gamma$

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. • • •					
<0.013	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^*(892)^- \pi^+ \pi^+ \text{3-body})/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ $\qquad \Gamma_{96}/\Gamma_{68}$

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

VALUE	DOCUMENT ID		TECN	COMMENT
1.00±0.18±0.42	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^0_S \rho^0 \pi^+ \text{total})/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ $\qquad \Gamma_{72}/\Gamma_{68}$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.60±0.10±0.17	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^0_S \rho^0 \pi^+ \text{3-body})/\Gamma_{\text{total}}$ $\qquad \Gamma_{73}/\Gamma$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.002	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^0_S \rho^0 \pi^+ \text{3-body})/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ $\qquad \Gamma_{73}/\Gamma_{68}$

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

$\Gamma(K^0_S f_0(980) \pi^+)/\Gamma_{\text{total}}$ $\qquad \Gamma_{97}/\Gamma$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0025	90	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^0_S \pi^+ \pi^+ \pi^- \text{ nonresonant})/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ $\qquad \Gamma_{74}/\Gamma_{68}$

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

$\Gamma(K^- 3\pi^+ \pi^-)/\Gamma(K^- 2\pi^+)$ — Γ_{75}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.061±0.005 OUR FIT Error includes scale factor of 1.1.					
0.062±0.008 OUR AVERAGE Error includes scale factor of 1.3.					
0.058±0.002±0.006	2923	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
0.077±0.008±0.010	239	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.09 ±0.01 ±0.01	113	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-, \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^- 3\pi^+ \pi^-)$ — Γ_{76}/Γ_{75}

VALUE	DOCUMENT ID		TECN	COMMENT
0.21±0.04±0.06	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \pi^+, \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^- 3\pi^+ \pi^-)$ — Γ_{77}/Γ_{75}

VALUE	DOCUMENT ID		TECN	COMMENT
0.40±0.03±0.06	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \pi^+, \overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{77}/Γ_{46}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.016±0.007±0.004	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-$ no-ρ, $\overline{K}^*(892)^0 \to K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{78}/Γ_{46}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.032±0.010±0.008	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(K^- \rho^0 \pi^+ \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{79}/Γ_{46}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.034±0.009±0.005	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(K^- \rho^0 \pi^+ \pi^+)/\Gamma(K^- 3\pi^+ \pi^-)$ — Γ_{79}/Γ_{75}

VALUE	DOCUMENT ID		TECN	COMMENT
0.30±0.04±0.01	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\overline{K}^*(892)^0 a_1(1260)^+)/\Gamma(K^- 2\pi^+)$ — Γ_{98}/Γ_{46}

Unseen decay modes of the $\overline{K}^*(892)^0$ and $a_1(1260)^+$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.099±0.008±0.018	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^- 3\pi^+ \pi^-$ nonresonant$)/\Gamma(K^- 3\pi^+ \pi^-)$ — Γ_{80}/Γ_{75}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.07 ±0.05±0.01		LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.026	90	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(K^+ 2K^0_S)/\Gamma(K^- 2\pi^+)$ — Γ_{81}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.049±0.022 OUR AVERAGE	Error includes scale factor of 2.4.				
0.035±0.010±0.005	39 ± 9	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV
0.085±0.018	70 ± 12	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

$\Gamma(K^+ K^- K^0_S \pi^+)/\Gamma(K^0_S \pi^+ \pi^+ \pi^-)$ — Γ_{82}/Γ_{68}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
7.7±1.5±0.9	35 ± 7	LINK	01C	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

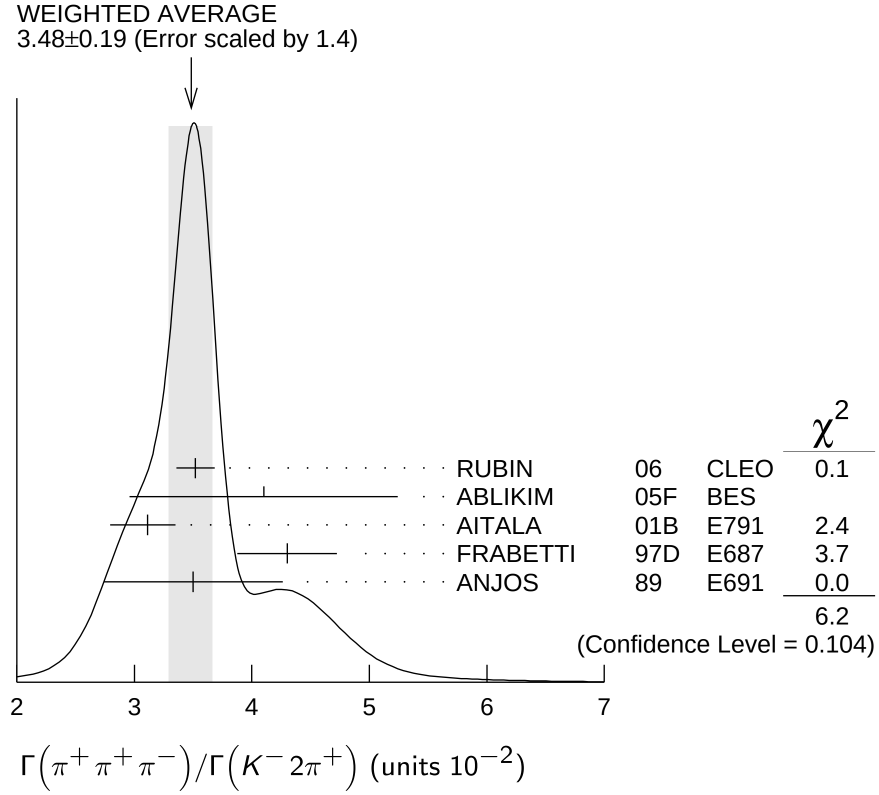
Pionic modes

$\Gamma(\pi^+ \pi^0)/\Gamma(K^- 2\pi^+)$ — Γ_{99}/Γ_{46}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.34±0.07 OUR AVERAGE					
1.33±0.11±0.09	1229 ± 99	AUBERT,B	06F	BABR	$e^+ e^- \approx \Upsilon(4S)$
1.33±0.07±0.06	914 ± 46	RUBIN	06	CLEO	$e^+ e^-$ at $\psi(3770)$
1.44±0.19±0.10	171 ± 22	ARMS	04	CLEO	$e^+ e^- \approx$ 10 GeV

$\Gamma(\pi^+ \pi^+ \pi^-)/\Gamma(K^- 2\pi^+)$ — Γ_{100}/Γ_{46}

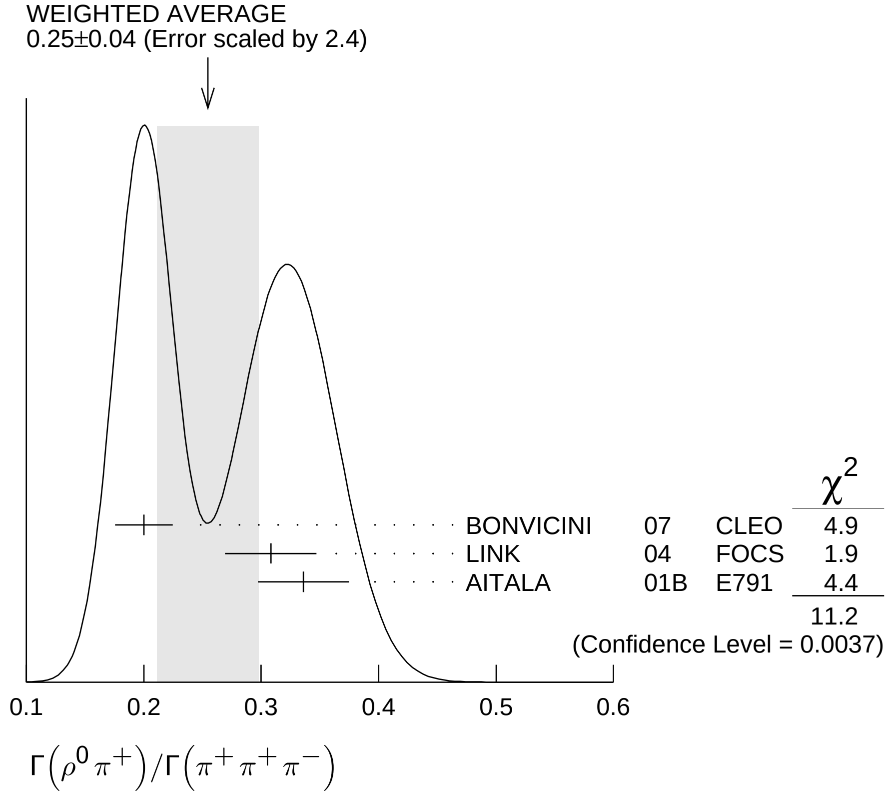
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.48±0.19 OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.				
3.52±0.11±0.12	3303 ± 95	RUBIN	06	CLEO	$e^+ e^-$ at $\psi(3770)$
4.1 ±1.1 ±0.3	85 ± 22	ABLIKIM	05F	BES	$e^+ e^- \approx \psi(3770)$
$3.11\pm0.18^{+0.16}_{-0.26}$	1172	AITALA	01B	E791	π^- nucleus, 500 GeV
4.3 ±0.3 ±0.3	236	FRABETTI	97D	E687	γ Be $\approx$ 200 GeV
3.5 ±0.7 ±0.3	83	ANJOS	89	E691	Photoproduction



$\Gamma(\rho^0\pi^+)/\Gamma(\pi^+\pi^+\pi^-)$ $\Gamma_{101}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.25 ±0.04 OUR AVERAGE	Error includes scale factor of 2.4. See the ideogram below.			
0.200 ±0.023 ±0.009	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
0.3082±0.0314±0.0230	LINK	04	FOCS	Dalitz fit, 1527 ± 51 evts
0.336 ±0.032 ±0.022	AITALA	01B	E791	Dalitz fit, 1172 evts



$\Gamma(\pi^+(\pi^+\pi^-)_{S-\text{wave}})/\Gamma(\pi^+\pi^+\pi^-)$ $\Gamma_{102}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis. See also the next three data blocks.

VALUE	DOCUMENT ID		TECN	COMMENT
0.5600±0.0324±0.0214	[49] LINK	04	FOCS	Dalitz fit, 1527 ± 51 evts

[49] LINK 04 borrows a K-matrix parametrization from ANISOVICH 03 of the full π-π S-wave isoscalar scattering amplitude to describe the $\pi^+\pi^-$ S-wave component of the $\pi^+\pi^+\pi^-$ state. The fit fraction given above is a sum over five f_0 mesons, the $f_0(980)$, $f_0(1300)$, $f_0(1200\text{–}1600)$, $f_0(1500)$, and $f_0(1750)$. See LINK 04 for details and discussion.

$\Gamma(\sigma\pi^+, \sigma\to\pi^+\pi^-)/\Gamma(\pi^+\pi^+\pi^-)$ $\Gamma_{103}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.422±0.027 OUR AVERAGE				
0.418±0.014±0.025	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
0.463±0.090±0.021	AITALA	01B	E791	Dalitz fit, 1172 evts

$\Gamma(f_0(980)\pi^+, f_0(980)\to\pi^+\pi^-)/\Gamma(\pi^+\pi^+\pi^-)$ $\Gamma_{104}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.048±0.010 OUR AVERAGE	Error includes scale factor of 1.3.			
0.041±0.009±0.003	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
0.062±0.013±0.004	AITALA	01B	E791	Dalitz fit, 1172 evts

$\Gamma\big(f_0(1370)\pi^+ , f_0(1370) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^+\pi^-\big)$ $\Gamma_{105}/\Gamma_{100}$

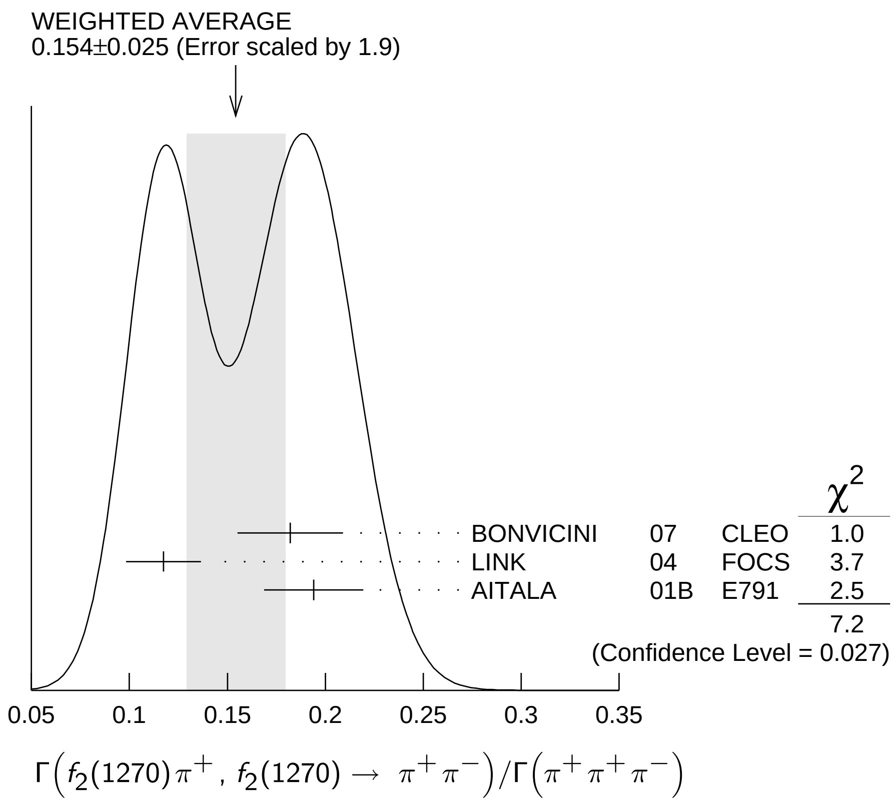
This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.024±0.013 OUR AVERAGE				
0.026±0.018±0.006	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
0.023±0.015±0.008	AITALA	01B	E791	Dalitz fit, 1172 evts

$\Gamma\big(f_2(1270)\pi^+ , f_2(1270) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^+\pi^-\big)$ $\Gamma_{106}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.154 ±0.025 OUR AVERAGE Error includes scale factor of 1.9. See the ideogram below.				
0.182 ±0.026 ±0.007	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
0.1174±0.0190±0.0029	LINK	04	FOCS	Dalitz fit, 1527 ± 51 evts
0.194 ±0.025 ±0.004	AITALA	01B	E791	Dalitz fit, 1172 evts



$\Gamma\big(\rho(1450)^0\pi^+ , \rho(1450)^0 \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^+\pi^-\big)$ $\Gamma_{107}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.024	95	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.007±0.007±0.003		AITALA	01B	E791	Dalitz fit, 1172 evts

$\Gamma\big(f_0(1500)\pi^+ , f_0(1500) \to \pi^+\pi^-\big)/\Gamma\big(\pi^+\pi^+\pi^-\big)$ $\Gamma_{108}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.034±0.010±0.008	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts

$\Gamma(f_0(1710)\pi^+, f_0(1710) \to \pi^+\pi^-)/\Gamma(\pi^+\pi^+\pi^-)$ — $\Gamma_{109}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.016	95	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts

$\Gamma(f_0(1790)\pi^+, f_0(1790) \to \pi^+\pi^-)/\Gamma(\pi^+\pi^+\pi^-)$ — $\Gamma_{110}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.02	95	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts

$\Gamma((\pi^+\pi^+)_{S-\text{wave}}\pi^-)/\Gamma(\pi^+\pi^+\pi^-)$ — $\Gamma_{111}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.037	95	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts

$\Gamma(\pi^+\pi^+\pi^-$ nonresonant$)/\Gamma(\pi^+\pi^+\pi^-)$ — $\Gamma_{112}/\Gamma_{100}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.035	95	BONVICINI	07	CLEO	Dalitz fit, ≈ 2240 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.078±0.060±0.027		AITALA	01B	E791	Dalitz fit, 1172 evts

$\Gamma(\pi^+2\pi^0)/\Gamma(K^-2\pi^+)$ — Γ_{113}/Γ_{46}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.0±0.3±0.3	1535 ± 89	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\pi^+\pi^+\pi^-\pi^0)/\Gamma(K^-2\pi^+)$ — Γ_{114}/Γ_{46}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
12.4±0.5±0.6	5701 ± 205	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^+)/\Gamma_{\text{total}}$ — Γ_{118}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN
33.6±1.8 OUR FIT	Error includes scale factor of 1.1.			
34.3±1.4±1.7	1033 ± 42	ARTUSO	08	CLEO

$\Gamma(\eta\pi^+)/\Gamma(\phi\pi^+)$ — $\Gamma_{118}/\Gamma_{145}$

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.61±0.04 OUR FIT	Error includes scale factor of 1.1.				
0.49±0.08	275	JESSOP	98	CLEO	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta\pi^+)/\Gamma(K^-2\pi^+)$ — Γ_{118}/Γ_{46}

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.62±0.20 OUR FIT	Error includes scale factor of 1.1.				
3.81±0.26±0.21	377 ± 26	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8.3 ±2.3 ±1.4	99	DAOUDI	92	CLEO	See JESSOP 98

$\Gamma(\omega\pi^+)/\Gamma_{total}$ Γ_{121}/Γ

Unseen decay modes of the ω are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.4 × 10^{-4}	90	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(3\pi^+2\pi^-)/\Gamma(K^-2\pi^+)$ Γ_{117}/Γ_{46}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.77±0.17 OUR FIT					
1.73±0.20±0.17	732 ± 77	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.3 ±0.4 ±0.2	58	FRABETTI	97C	E687	γBe, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(3\pi^+2\pi^-)/\Gamma(K^-3\pi^+\pi^-)$ Γ_{117}/Γ_{75}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.289±0.019 OUR FIT					
0.290±0.017±0.011	835	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(\eta\pi^+\pi^0)/\Gamma_{total}$ Γ_{119}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN
13.8±3.1±1.6	149 ± 34	ARTUSO	08	CLEO

$\Gamma(\eta\rho^+)/\Gamma(\phi\pi^+)$ $\Gamma_{120}/\Gamma_{145}$

Unseen decay modes of the η are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.11	90	JESSOP	98	CLEO	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta'(958)\pi^+)/\Gamma_{total}$ Γ_{122}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN
44.4±3.5 OUR FIT				
44.2±2.5±2.9	352 ± 20	ARTUSO	08	CLEO

$\Gamma(\eta'(958)\pi^+)/\Gamma(\phi\pi^+)$ $\Gamma_{122}/\Gamma_{145}$

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.80±0.07 OUR FIT					
0.82±0.14	126	JESSOP	98	CLEO	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta'(958)\pi^+\pi^0)/\Gamma_{total}$ Γ_{123}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN
15.7±4.3±2.5	33 ± 9	ARTUSO	08	CLEO

$\Gamma(\eta'(958)\rho^+)/\Gamma(\phi\pi^+)$ $\Gamma_{124}/\Gamma_{145}$

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.86	90	JESSOP	98	CLEO	$e^+e^- \approx \Upsilon(4S)$

Hadronic modes with a $K\overline{K}$ pair

$\Gamma(K^+ K^0_S)/\Gamma_{total}$ — Γ_{125}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.05±0.13 OUR FIT Error includes scale factor of 1.3.					
3.14±0.09±0.08	1971 ± 51	BONVICINI	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(K^+ K^0_S)/\Gamma(K^0_S \pi^+)$ — Γ_{125}/Γ_{44}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.208 ±0.009 OUR FIT Error includes scale factor of 1.3.					
0.206 ±0.014 OUR AVERAGE					
0.222 ±0.037 ±0.013	63 ± 10	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
0.1892±0.0155±0.0073	278 ± 21	ARMS	04	CLEO	$e^+e^- \approx$ 10 GeV
0.25 ±0.04 ±0.02	129	FRABETTI	95	E687	γ Be $\overline{E}_\gamma \approx$ 200 GeV
0.271 ±0.065 ±0.039	69	ANJOS	90C	E691	γ Be
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
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.1996±0.0119±0.0096	949	[50] LINK	02B	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
0.222 ±0.041 ±0.019	70	[51] BISHAI	97	CLEO	See ARMS 04

[50] This LINK 02B result is redundant with a result in the next datablock.
[51] This BISHAI 97 result is redundant with results elsewhere in the Listings.

$\Gamma(K^+ K^0_S)/\Gamma(K^- 2\pi^+)$ — Γ_{125}/Γ_{46}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.28±0.15 OUR FIT Error includes scale factor of 1.4.					
3.02±0.18±0.15	949	LINK	02B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.86±0.69±0.37	70	[52] BISHAI	97	CLEO	See ARMS 04

[52] See BISHAI 97 for an isospin analysis of $D^+ \rightarrow K\overline{K}$ amplitudes.

$\Gamma(K^+ K^- \pi^+)/\Gamma_{total}$ — Γ_{126}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.972±0.033 OUR FIT Error includes scale factor of 1.5.					
0.935±0.017±0.024		[53] DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.97 ±0.04 ±0.04	1250 ± 40	[53] HE	05	CLEO	See DOBBS 07

[53] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

$\Gamma(K^+ K^- \pi^+)/\Gamma(K^- 2\pi^+)$ — Γ_{126}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.1045±0.0020 OUR FIT Error includes scale factor of 1.2.					
0.1058±0.0029 OUR AVERAGE Error includes scale factor of 1.4.					
0.117 ±0.013 ±0.007	181 ± 20	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
0.107 ±0.001 ±0.002	43k	AUBERT	05S	BABR	$e^+e^- \approx \Upsilon(4S)$
0.093 ±0.010 $^{+0.008}_{-0.006}$		JUN	00	SELX	Σ^- nucleus, 600 GeV
0.0976±0.0042±0.0046		FRABETTI	95B	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(\phi\pi^+, \phi \to K^+K^-)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{127}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{27.9^{+0.6}_{-0.8}}$ **OUR FIT** Error includes scale factor of 1.3.				
$\mathbf{27.8\pm0.4^{+0.2}_{-0.5}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
29.2±3.1±3.0	FRABETTI	95B	E687	Dalitz fit, 915 evts

$\Gamma(\phi\pi^+, \phi \to K^+K^-)/\Gamma(\phi\pi^+)$ — $\Gamma_{127}/\Gamma_{145}$

VALUE	*DOCUMENT ID*	
0.490±0.007 OUR FIT Error includes scale factor of 1.2.		
0.491±0.006	[54] PDG	06

[54] This is, of course, just the $\phi \to K^+K^-$ branching fraction, but we need it to connect other modes in the fit.

$\Gamma(K^+\overline{K}^*(892)^0, \overline{K}^*(892)^0 \to K^-\pi^+)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{128}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{25.7\pm0.5^{+0.4}_{-1.2}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
30.1±2.0±2.5	FRABETTI	95B	E687	Dalitz fit, 915 evts

$\Gamma(K^+\overline{K}^*_0(1430)^0, \overline{K}^*_0(1430)^0 \to K^-\pi^+)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{129}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{18.8\pm1.2^{+3.3}_{-3.4}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
37.0±3.5±1.8	FRABETTI	95B	E687	Dalitz fit, 915 evts

$\Gamma(K^+\overline{K}^*_2(1430)^0, \overline{K}^*_2 \to K^-\pi^+)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{130}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{1.7\pm0.4^{+1.2}_{-0.7}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts

$\Gamma(K^+\overline{K}^*_0(800), \overline{K}^*_0 \to K^-\pi^+)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{131}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{7.0\pm0.8^{+3.5}_{-2.0}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts

$\Gamma(a_0(1450)^0\pi^+, a_0^0 \to K^+K^-)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{132}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{4.6\pm0.6^{+7.2}_{-1.8}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts

$\Gamma(\phi(1680)\pi^+,\ \phi \to K^+K^-)/\Gamma(K^+K^-\pi^+)$ — $\Gamma_{133}/\Gamma_{126}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.51 \pm 0.11 ^{+0.37}_{-0.16}}$	RUBIN	08	CLEO	Dalitz fit, 19,458±163 evts

$\Gamma(K^*(892)^+ K^0_S)/\Gamma(K^0_S\pi^+)$ — Γ_{149}/Γ_{44}

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	γ Be $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(\phi\pi^+\pi^0)/\Gamma_{total}$ — Γ_{146}/Γ

Unseen decay modes of the ϕ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.023±0.010	[55] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(\phi\rho^+)/\Gamma(K^-2\pi^+)$ — Γ_{147}/Γ_{46}

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

$\Gamma(K^+K^-\pi^+\pi^0\ \text{non-}\phi)/\Gamma_{total}$ — Γ_{140}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.015^{+0.007}_{-0.006}}$	[56] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(K^+K^-\pi^+\pi^0\ \text{non-}\phi)/\Gamma(K^-2\pi^+)$ — Γ_{140}/Γ_{46}

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

$\Gamma(K^+K^0_S\pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^+\pi^-)$ — Γ_{141}/Γ_{68}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.62±0.39±0.40	469 ± 32	LINK	01C	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^0_S K^-\pi^+\pi^+)/\Gamma(K^0_S\pi^+\pi^+\pi^-)$ — Γ_{142}/Γ_{68}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
7.68±0.41±0.32	670 ± 35	LINK	01C	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^+K^-\pi^+\pi^+\pi^-)/\Gamma(K^-3\pi^+\pi^-)$ — Γ_{144}/Γ_{75}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.040±0.009±0.019	38	LINK	03D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

Doubly Cabibbo-suppressed modes

$\Gamma(K^+\pi^0)/\Gamma_{total}$ — Γ_{151}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.37±0.32 OUR AVERAGE					
2.52±0.47±0.26	189 ± 37	AUBERT,B	06F	BABR	$e^+e^- \approx \Upsilon(4S)$
2.28±0.36±0.17	148 ± 23	DYTMAN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(K^+\pi^+\pi^-)/\Gamma(K^-2\pi^+)$ — Γ_{152}/Γ_{46}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0068±0.0008 OUR AVERAGE					
0.0065±0.0008±0.0004	189 ± 24	LINK	04F	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
0.0077±0.0017±0.0008	59 ± 13	AITALA	97C	E791	π^- A, 500 GeV
0.0072±0.0023±0.0017	21	FRABETTI	95E	E687	γBe, $\overline{E}_\gamma$= 220 GeV

$\Gamma(K^+\rho^0)/\Gamma(K^+\pi^+\pi^-)$ — $\Gamma_{153}/\Gamma_{152}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.39 ±0.09 OUR AVERAGE				
0.3943±0.0787±0.0815	LINK	04F	FOCS	Dalitz fit, 189 evts
0.37 ±0.14 ±0.07	AITALA	97C	E791	Dalitz fit, 59 evts

$\Gamma(K^+f_0(980), f_0(980)\to\pi^+\pi^-)/\Gamma(K^+\pi^+\pi^-)$ — $\Gamma_{155}/\Gamma_{152}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0892±0.0333±0.0412	LINK	04F	FOCS	Dalitz fit, 189 evts

$\Gamma(K^*(892)^0\pi^+, K^*(892)^0\to K^+\pi^-)/\Gamma(K^+\pi^+\pi^-)$ — $\Gamma_{154}/\Gamma_{152}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.47 ±0.08 OUR AVERAGE				
0.5220±0.0684±0.0638	LINK	04F	FOCS	Dalitz fit, 189 evts
0.35 ±0.14 ±0.01	AITALA	97C	E791	Dalitz fit, 59 evts

$\Gamma(K_2^*(1430)^0\pi^+, K_2^*(1430)^0\to K^+\pi^-)/\Gamma(K^+\pi^+\pi^-)$ — $\Gamma_{156}/\Gamma_{152}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0803±0.0372±0.0391	LINK	04F	FOCS	Dalitz fit, 189 evts

$\Gamma(K^+\pi^+\pi^-$ nonresonant$)/\Gamma(K^+\pi^+\pi^-)$ — $\Gamma_{157}/\Gamma_{152}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.36±0.14±0.07	[57] AITALA	97C	E791	Dalitz fit, 59 evts

[57] LINK 04F, with three times as many events, finds no need for a nonresonant amplitude.

$\Gamma(K^+K^+K^-)/\Gamma(K^-2\pi^+)$ — Γ_{158}/Γ_{46}

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
9.49±2.17±0.22	65	[58] LINK	02I	FOCS	γ nucleus, $\approx$ 180 GeV

[58] LINK 02I finds little evidence for ϕK^+ or $f_0(980)K^+$ submodes.

Rare or forbidden modes

$\Gamma(\pi^+ e^+ e^-)/\Gamma_{total}$ — Γ_{159}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<7.4 \times 10^{-6}$	90		[59] HE	05A	CLEO	$e^+ e^-$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<5.2 \times 10^{-5}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$<1.1 \times 10^{-4}$	90		FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<6.6 \times 10^{-5}$	90		AITALA	96	E791	$\pi^- N$ 500 GeV
$<2.5 \times 10^{-3}$	90		WEIR	90B	MRK2	$e^+ e^-$ 29 GeV
$<2.6 \times 10^{-3}$	90	39	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[59] This HE 05A limit is for the $e^+ e^-$ mass in the continuum away from the $\phi(1020)$. See the next data block.

$\Gamma(\pi^+ \phi, \phi \to e^+ e^-)/\Gamma_{total}$ — Γ_{160}/Γ

This is *not* a test for the $\Delta C = 1$ weak neutral current, but leads to the $\pi^+ e^+ e^-$ final state.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$(2.7^{+3.6}_{-1.8} \pm 0.2) \times 10^{-6}$	2	[60] HE	05A	CLEO	$e^+ e^-$ at $\psi(3770)$

[60] This HE 05A result is consistent with the known $D^+ \to \phi \pi^+$ and $\phi \to e^+ e^-$ fractions.

$\Gamma(\pi^+ \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{161}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.9 \times 10^{-6}$	90		[61] ABAZOV	08D	D0	$p\overline{p}$, $E_{cm} = 1.96$ TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<8.8 \times 10^{-6}$	90		LINK	03F	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
$<1.5 \times 10^{-5}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$<8.9 \times 10^{-5}$	90		FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<1.8 \times 10^{-5}$	90		AITALA	96	E791	$\pi^- N$ 500 GeV
$<2.2 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<5.9 \times 10^{-3}$	90		WEIR	90B	MRK2	$e^+ e^-$ 29 GeV
$<2.9 \times 10^{-3}$	90	36	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[61] This ABAZOV 08D limit is for the $\mu^+ \mu^-$ mass in the continuum away from the $\phi(1020)$. See the next data block.

$\Gamma(\pi^+ \phi, \phi \to \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{162}/Γ

This is *not* a test for the $\Delta C = 1$ weak neutral current, but leads to the $\pi^+ \mu^+ \mu^-$ final state.

VALUE	DOCUMENT ID		TECN	COMMENT
$(1.8 \pm 0.5 \pm 0.6) \times 10^{-6}$	[62] ABAZOV	08D	D0	$p\overline{p}$, $E_{cm} = 1.96$ TeV

[62] This ABAZOV 08D value is consistent with the known $D^+ \to \phi \pi^+$ and $\phi \to \mu^+ \mu^-$ fractions.

$\Gamma(\rho^+\mu^+\mu^-)/\Gamma_{total}$ Γ_{163}/Γ

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

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

$\Gamma(K^+e^+e^-)/\Gamma_{total}$ Γ_{164}/Γ

Both quarks would have to change flavor for this decay to occur.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.2 × 10^{-6}	90	HE	05A	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.0\times10^{-4}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
$<2.0\times10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<4.8\times10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^+\mu^+\mu^-)/\Gamma_{total}$ Γ_{165}/Γ

Both quarks would have to change flavor for this decay to occur.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<9.2 × 10^{-6}	90	LINK	03F	FOCS	γ nucleus,$\overline{E}_\gamma\approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.4\times10^{-5}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
$<9.7\times10^{-5}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.2\times10^{-4}$	90	KODAMA	95	E653	π^- emulsion 600 GeV
$<9.2\times10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\pi^+e^\pm\mu^\mp)/\Gamma_{total}$ Γ_{166}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.4 × 10^{-5}	90	AITALA	99G	E791	$\pi^- N$ 500 GeV

$\Gamma(\pi^+e^+\mu^-)/\Gamma_{total}$ Γ_{167}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.1\times10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.3\times10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(\pi^+e^-\mu^+)/\Gamma_{total}$ Γ_{168}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.3\times10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.3\times10^{-3}$	90	WEIR	90B	MRK2	e^+e^- 29 GeV

$\Gamma(K^+e^\pm\mu^\mp)/\Gamma_{total}$ Γ_{169}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.8 × 10^{-5}	90	AITALA	99G	E791	$\pi^- N$ 500 GeV

$\Gamma(K^+ e^+ \mu^-)/\Gamma_{total}$ — Γ_{170}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.3 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.4 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(K^+ e^- \mu^+)/\Gamma_{total}$ — Γ_{171}/Γ

A test of lepton-family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.2 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.4 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(\pi^- e^+ e^+)/\Gamma_{total}$ — Γ_{172}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.6 \times 10^{-6}$	90	HE	05A	CLEO	$e^+ e^-$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<9.6 \times 10^{-5}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
$<1.1 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<4.8 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(\pi^- \mu^+ \mu^+)/\Gamma_{total}$ — Γ_{173}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<4.8 \times 10^{-6}$	90		LINK	03F	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.7 \times 10^{-5}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$<8.7 \times 10^{-5}$	90		FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<2.2 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<6.8 \times 10^{-3}$	90		WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(\pi^- e^+ \mu^+)/\Gamma_{total}$ — Γ_{174}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.0 \times 10^{-5}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.1 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.7 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(\rho^- \mu^+ \mu^+)/\Gamma_{total}$ — Γ_{175}/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_{176}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<4.5 \times 10^{-6}$	90	HE	05A	CLEO	$e^+ e^-$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.2 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<9.1 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(K^- \mu^+ \mu^+)/\Gamma_{total}$ — Γ_{177}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.3 \times 10^{-5}$	90		LINK	03F	FOCS	γ nucleus,$\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.2 \times 10^{-4}$	90		FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
$<3.2 \times 10^{-4}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<4.3 \times 10^{-3}$	90		WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(K^- e^+ \mu^+)/\Gamma_{total}$ — Γ_{178}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.3 \times 10^{-4}$	90	FRABETTI	97B	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.0 \times 10^{-3}$	90	WEIR	90B	MRK2	$e^+ e^-$ 29 GeV

$\Gamma(K^*(892)^- \mu^+ \mu^+)/\Gamma_{total}$ — Γ_{179}/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

This is the difference between D^+ and D^- partial widths for these modes divided by the sum of the widths.

$A_{CP}(\mu^\pm \nu)$ in $D^+ \rightarrow \mu^+ \nu_\mu$, $D^- \rightarrow \mu^- \overline{\nu}_\mu$

VALUE	DOCUMENT ID		TECN	COMMENT
$+0.08 \pm 0.08$	EISENSTEIN	08	CLEO	$e^+ e^-$ at $\psi(3770)$

$A_{CP}(K^0_S \pi^\pm)$ in $D^\pm \rightarrow K^0_S \pi^\pm$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
-0.009 ± 0.009 OUR AVERAGE					
$-0.006 \pm 0.010 \pm 0.003$		DOBBS	07	CLEO	$e^+ e^-$ at $\psi(3770)$
$-0.016 \pm 0.015 \pm 0.009$	10.6k	[63] LINK	02B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

[63] LINK 02B measures $N(D^+ \rightarrow K^0_S \pi^+)/N(D^+ \rightarrow K^- \pi^+ \pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(K^{\mp}2\pi^{\pm})$ in $D^+ \to K^-2\pi^+$, $D^- \to K^+2\pi^-$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.005±0.004±0.009	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

$A_{CP}(K^{\mp}\pi^{\pm}\pi^{\pm}\pi^0)$ in $D^+ \to K^-\pi^+\pi^+\pi^0$, $D^- \to K^+\pi^-\pi^-\pi^0$

VALUE	DOCUMENT ID		TECN	COMMENT
+0.010±0.009±0.009	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

$A_{CP}(K_S^0\pi^{\pm}\pi^0)$ in $D^+ \to K_S^0\pi^+\pi^0$, $D^- \to K_S^0\pi^-\pi^0$

VALUE	DOCUMENT ID		TECN	COMMENT
+0.003±0.009±0.003	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

$A_{CP}(K_S^0\pi^{\pm}\pi^+\pi^-)$ in $D^+ \to K_S^0\pi^+\pi^+\pi^-$, $D^- \to K_S^0\pi^-\pi^-\pi^+$

VALUE	DOCUMENT ID		TECN	COMMENT
+0.001±0.011±0.006	DOBBS	07	CLEO	e^+e^- at $\psi(3770)$

$A_{CP}(K_S^0K^{\pm})$ in $D^{\pm} \to K_S^0K^{\pm}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.071±0.061±0.012	949	[64] LINK	02B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
+0.069±0.060±0.015	949	[65] LINK	02B	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV

[64] LINK 02B measures $N(D^+ \to K_S^0K^+)/N(D^+ \to K_S^0\pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

[65] LINK 02B measures $N(D^+ \to K_S^0K^+)/N(D^+ \to K^-\pi^+\pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(K^+K^-\pi^{\pm})$ in $D^{\pm} \to K^+K^-\pi^{\pm}$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.3 ±0.6 OUR AVERAGE					
−0.03±0.84±0.29		RUBIN	08	CLEO	e^+e^-, 3774 MeV
−0.1 ±1.5 ±0.8		DOBBS	07	CLEO	e^+e^- at $\psi(3770)$
+1.4 ±1.0 ±0.8	43k±321	[66] AUBERT	05S	BABR	$e^+e^- \approx \Upsilon(4S)$
+0.6 ±1.1 ±0.5	14k	[67] LINK	00B	FOCS	
−1.4 ±2.9		[67] AITALA	97B	E791	$-0.062 < A_{CP} < +0.034$ (90% CL)
−3.1 ±6.8		[67] FRABETTI	94I	E687	$-0.14 < A_{CP} < +0.081$ (90% CL)

[66] AUBERT 05S measures $N(D^+ \to K^+K^-\pi^+)/N(D_s^+ \to K^+K^-\pi^+)$, the ratio of the numbers of events observed, and similarly for the D^-.

[67] FRABETTI 94I, AITALA 98C, and LINK 00B measure $N(D^+ \to K^-K^+\pi^+)/N(D^+ \to K^-\pi^+\pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(K^{\pm} K^{*0})$ in $D^+ \to K^+ \overline{K}^{*0}$, $D^- \to K^- K^{*0}$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.1± 1.3 OUR AVERAGE					
− 0.4± 2.0±0.6		RUBIN	08	CLEO	Fit-fraction asymmetry
+ 0.9± 1.7±0.7	11k±122	[68] AUBERT	05S	BABR	$e^+ e^- \approx \Upsilon(4S)$
− 1.0± 5.0		[69] AITALA	97B	E791	$-0.092 < A_{CP} < +0.072$ (90% CL)
−12 ±13		[69] FRABETTI	94I	E687	$-0.33 < A_{CP} < +0.094$ (90% CL)

[68] AUBERT 05S measures $N(D^+ \to K^+ \overline{K}^{*0})/N(D_s^+ \to K^+ K^- \pi^+)$, the ratio of the numbers of events observed, and similarly for the D^-.

[69] FRABETTI 94I and AITALA 97B measure $N(D^+ \to K^+ \overline{K}^*(892)^0)/N(D^+ \to K^- \pi^+ \pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(\phi \pi^{\pm})$ in $D^{\pm} \to \phi \pi^{\pm}$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−0.9±1.1 OUR AVERAGE					
$-1.8 \pm 1.6^{+0.2}_{-0.4}$		RUBIN	08	CLEO	Fit-fraction asymmetry
+0.2±1.5±0.6	10k±136	[70] AUBERT	05S	BABR	$e^+ e^- \approx \Upsilon(4S)$
−2.8±3.6		[71] AITALA	97B	E791	$-0.087 < A_{CP} < +0.031$ (90% CL)
+6.6±8.6		[71] FRABETTI	94I	E687	$-0.075 < A_{CP} < +0.21$ (90% CL)

[70] AUBERT 05S measures $N(D^+ \to \phi \pi^+)/N(D_s^+ \to K^+ K^- \pi^+)$, the ratio of the numbers of events observed, and similarly for the D^-.

[71] FRABETTI 94I and AITALA 97B measure $N(D^+ \to \phi \pi^+)/N(D^+ \to K^- \pi^+ \pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(K^{\pm} K_0^*(1430)^0)$ in $D^+ \to K^+ \overline{K}_0^*(1430)^0$, $D^- \to K^- K_0^*(1430)^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$\mathbf{+8 \pm 6^{+4}_{-2}}$	RUBIN	08	CLEO	Fit-fraction asymmetry

$A_{CP}(K^{\pm} K_2^*(1430)^0)$ in $D^+ \to K^+ \overline{K}_2^*(1430)^0$, $D^- \to K^- K_2^*(1430)^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$\mathbf{+43 \pm 19^{+5}_{-18}}$	RUBIN	08	CLEO	Fit-fraction asymmetry

$A_{CP}(K^{\pm} K_0^*(800))$ in $D^+ \to K^+ \overline{K}_0^*(800)$, $D^- \to K^- K_0^*(800)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$\mathbf{-12 \pm 11^{+14}_{-6}}$	RUBIN	08	CLEO	Fit-fraction asymmetry

$A_{CP}(a_0(1450)^0 \pi^{\pm})$ in $D^{\pm} \to a_0(1450)^0 \pi^{\pm}$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$\mathbf{-19 \pm 12^{+8}_{-11}}$	RUBIN	08	CLEO	Fit-fraction asymmetry

$A_{CP}(\phi(1680)\pi^{\pm})$ in $D^{\pm} \rightarrow \phi(1680)\pi^{\pm}$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−9±22±14	RUBIN	08	CLEO	Fit-fraction asymmetry

$A_{CP}(\pi^+\pi^-\pi^{\pm})$ in $D^{\pm} \rightarrow \pi^+\pi^-\pi^{\pm}$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.017±0.042	[72] AITALA	97B	E791	$-0.086 < A_{CP} < +0.052$ (90% CL)

[72] AITALA 97B measure $N(D^+ \rightarrow \pi^+\pi^-\pi^+)/N(D^+ \rightarrow K^-\pi^+\pi^+)$, the ratio of numbers of events observed, and similarly for the D^-.

$A_{CP}(K^0_S K^{\pm}\pi^+\pi^-)$ in $D^{\pm} \rightarrow K^0_S K^{\pm}\pi^+\pi^-$

This is the difference between D^+ and D^- partial widths for these modes divided by the sum of the widths.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.042±0.064±0.022	523 ± 32	LINK	05E	FOCS	γ A, $\overline{E}_{\gamma} \approx$ 180 GeV

D^+-D^- T-VIOLATING DECAY-RATE ASYMMETRIES

$A_{Tviol}(K^0_S K^{\pm}\pi^+\pi^-)$ in $D^{\pm} \rightarrow K^0_S K^{\pm}\pi^+\pi^-$

$C_T \equiv \vec{p}_{K^+} \cdot (\vec{p}_{\pi^+} \times \vec{p}_{\pi^-})$ is a T-odd correlation of the K^+, π^+, and π^- momenta for the D^+. $\overline{C}_T \equiv \vec{p}_{K^-} \cdot (\vec{p}_{\pi^-} \times \vec{p}_{\pi^+})$ is the corresponding quantity for the D^-. $A_T \equiv [\Gamma(C_T > 0) - \Gamma(C_T < 0)] \,/\, [\Gamma(C_T > 0) + \Gamma(C_T < 0)]$ would, in the absence of strong phases, test for T violation in D^+ decays (the Γ's are partial widths). With $\overline{A}_T \equiv [\Gamma(-\overline{C}_T > 0) - \Gamma(-\overline{C}_T < 0)] \,/\, [\Gamma(-\overline{C}_T > 0) + \Gamma(-\overline{C}_T < 0)]$, the asymmetry $A_{Tviol} \equiv \frac{1}{2}(A_T - \overline{A}_T)$ tests for T violation even with nonzero strong phases.

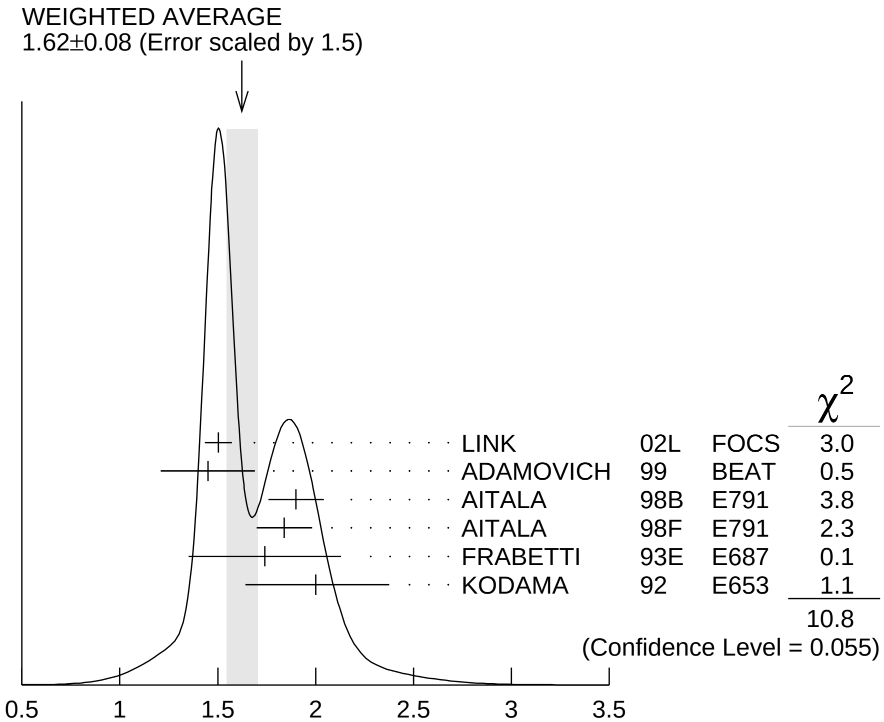
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.023±0.062±0.022	523 ± 32	LINK	05E	FOCS	γ A, $\overline{E}_{\gamma} \approx$ 180 GeV

$D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_{\ell}$ FORM FACTORS

$r_v \equiv V(0)/A_1(0)$ in $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_{\ell}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.62 ±0.08 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.			
1.504±0.057±0.039	15k	[73] LINK	02L	FOCS	$\overline{K}^*(892)^0 \mu^+ \nu_{\mu}$
1.45 ±0.23 ±0.07	763	ADAMOVICH	99	BEAT	$\overline{K}^*(892)^0 \mu^+ \nu_{\mu}$
1.90 ±0.11 ±0.09	3000	[74] AITALA	98B	E791	$\overline{K}^*(892)^0 e^+ \nu_e$
1.84 ±0.11 ±0.09	3034	AITALA	98F	E791	$\overline{K}^*(892)^0 \mu^+ \nu_{\mu}$
1.74 ±0.27 ±0.28	874	FRABETTI	93E	E687	$\overline{K}^*(892)^0 \mu^+ \nu_{\mu}$
2.00 $^{+0.34}_{-0.32}$ ±0.16	305	KODAMA	92	E653	$\overline{K}^*(892)^0 \mu^+ \nu_{\mu}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.0 ±0.6 ±0.3	183	ANJOS	90E	E691	$\overline{K}^*(892)^0 e^+ \nu_e$

[73] LINK 02L includes the effects of interference with an *S*-wave background. This much improves the goodness of fit, but does not much shift the values of the form factors.
[74] This is slightly different from the AITALA 98B value: see ref. [5] in AITALA 98F.



$r_V \equiv V(0)/A_1(0)$ in $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$

$r_2 \equiv A_2(0)/A_1(0)$ in $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.83 ±0.05 OUR AVERAGE					
0.875±0.049±0.064	15k	[75] LINK	02L	FOCS	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
1.00 ±0.15 ±0.03	763	ADAMOVICH	99	BEAT	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
0.71 ±0.08 ±0.09	3000	AITALA	98B	E791	$\overline{K}^*(892)^0 e^+ \nu_e$
0.75 ±0.08 ±0.09	3034	AITALA	98F	E791	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
0.78 ±0.18 ±0.10	874	FRABETTI	93E	E687	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
0.82 $^{+0.22}_{-0.23}$ ±0.11	305	KODAMA	92	E653	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0 ±0.5 ±0.2	183	ANJOS	90E	E691	$\overline{K}^*(892)^0 e^+ \nu_e$

[75] LINK 02L includes the effects of interference with an *S*-wave background. This much improves the goodness of fit, but does not much shift the values of the form factors.

$r_3 \equiv A_3(0)/A_1(0)$ in $D^+ \rightarrow \overline{K}^*(892)^0 \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.04±0.33±0.29	3034	AITALA	98F	E791	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$

Γ_L/Γ_T in $D^+ \to \overline{K}^*(892)^0 \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.13±0.08 OUR AVERAGE					
1.09±0.10±0.02	763	ADAMOVICH	99	BEAT	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
1.20±0.13±0.13	874	FRABETTI	93E	E687	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
1.18±0.18±0.08	305	KODAMA	92	E653	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.8\ {}^{+0.6}_{-0.4}\ \pm0.3$	183	ANJOS	90E	E691	$\overline{K}^*(892)^0 e^+ \nu_e$

Γ_+/Γ_- in $D^+ \to \overline{K}^*(892)^0 \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.22±0.06 OUR AVERAGE Error includes scale factor of 1.6.					
0.28±0.05±0.02	763	ADAMOVICH	99	BEAT	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
0.16±0.05±0.02	305	KODAMA	92	E653	$\overline{K}^*(892)^0 \mu^+ \nu_\mu$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.15{}^{+0.07}_{-0.05}\pm0.03$	183	ANJOS	90E	E691	$\overline{K}^*(892)^0 e^+ \nu_e$

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Also		PL B495 443 (erratum)	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ABBIENDI	99K	EPJ C8 573	G. Abbiendi *et al.*	(OPAL Collab.)
ABE	99P	PR D60 092005	F. Abe *et al.*	(CDF Collab.)
ADAMOVICH	99	EPJ C6 35	M. Adamovich *et al.*	(CERN BEATRICE Collab.)
AITALA	99G	PL B462 401	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	99	PRL 82 4586	G. Bonvicini *et al.*	(CLEO Collab.)
AITALA	98B	PRL 80 1393	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98C	PL B421 405	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98F	PL B440 435	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BAI	98B	PL B429 188	J.Z. Bai *et al.*	(BEPC BES Collab.)
JESSOP	98	PR D58 052002	C.P. Jessop *et al.*	(CLEO Collab.)
AITALA	97	PL B397 325	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	97B	PL B403 377	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	97C	PL B404 187	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BARTELT	97	PL B405 373	J. Bartelt *et al.*	(CLEO Collab.)
BISHAI	97	PRL 78 3261	M. Bishai *et al.*	(CLEO Collab.)
FRABETTI	97	PL B391 235	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	97B	PL B398 239	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	97C	PL B401 131	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	97D	PL B407 79	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
AITALA	96	PRL 76 364	E.M. Aitala *et al.*	(FNAL E791 Collab.)
FRABETTI	95	PL B346 199	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	95B	PL B351 591	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	95E	PL B359 403	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	95	PL B345 85	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	94I	ZPHY C64 375	H. Albrecht *et al.*	(ARGUS Collab.)
ALEEV	94	PAN 57 1370	A.N. Aleev *et al.*	(Serpukhov BIS-2 Collab.)
		Translated from YF 57 1443.		
BALEST	94	PRL 72 2328	R. Balest *et al.*	(CLEO Collab.)
FRABETTI	94D	PL B323 459	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94G	PL B331 217	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94I	PR D50 R2953	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
AKERIB	93	PRL 71 3070	D.S. Akerib *et al.*	(CLEO Collab.)
ALAM	93	PRL 71 1311	M.S. Alam *et al.*	(CLEO Collab.)
ANJOS	93	PR D48 56	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BEAN	93C	PL B317 647	A. Bean *et al.*	(CLEO Collab.)
FRABETTI	93E	PL B307 262	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	93B	PL B313 260	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	92F	PL B278 202	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	92	PR D45 R2177	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	92C	PR D46 1941	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	92C	ZPHY C55 383	S. Barlag *et al.*	(ACCMOR Collab.)
Also		ZPHY C48 29	S. Barlag *et al.*	(ACCMOR Collab.)
COFFMAN	92B	PR D45 2196	D.M. Coffman *et al.*	(Mark III Collab.)
DAOUDI	92	PR D45 3965	M. Daoudi *et al.*	(CLEO Collab.)

KODAMA	92	PL B274 246	K. Kodama *et al.*	(FNAL E653 Collab.)
KODAMA	92C	PL B286 187	K. Kodama *et al.*	(FNAL E653 Collab.)
ADAMOVICH	91	PL B268 142	M.I. Adamovich *et al.*	(WA82 Collab.)
ALBRECHT	91	PL B255 634	H. Albrecht *et al.*	(ARGUS Collab.)
ALVAREZ	91B	ZPHY C50 11	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
AMMAR	91	PR D44 3383	R. Ammar *et al.*	(CLEO Collab.)
BAI	91	PRL 66 1011	Z. Bai *et al.*	(Mark III Collab.)
COFFMAN	91	PL B263 135	D.M. Coffman *et al.*	(Mark III Collab.)
FRABETTI	91	PL B263 584	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
ANJOS	90C	PR D41 2705	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	90D	PR D42 2414	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	90E	PRL 65 2630	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	90C	ZPHY C46 563	S. Barlag *et al.*	(ACCMOR Collab.)
WEIR	90B	PR D41 1384	A.J. Weir *et al.*	(Mark II Collab.)
ANJOS	89	PRL 62 125	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	89B	PRL 62 722	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ANJOS	89E	PL B223 267	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ADLER	88C	PRL 60 89	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	88I	PL B210 267	H. Albrecht *et al.*	(ARGUS Collab.)
AOKI	88	PL B209 113	S. Aoki *et al.*	(WA75 Collab.)
HAAS	88	PRL 60 1614	P. Haas *et al.*	(CLEO Collab.)
ONG	88	PRL 60 2587	R.A. Ong *et al.*	(Mark II Collab.)
RAAB	88	PR D37 2391	J.R. Raab *et al.*	(FNAL E691 Collab.)
ADAMOVICH	87	EPL 4 887	M.I. Adamovich *et al.*	(Photon Emulsion Collab.)
ADLER	87	PL B196 107	J. Adler *et al.*	(Mark III Collab.)
BARTEL	87	ZPHY C33 339	W. Bartel *et al.*	(JADE Collab.)
BALTRUSAIT...	86E	PRL 56 2140	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BALTRUSAIT...	85B	PRL 54 1976	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BALTRUSAIT...	85E	PRL 55 150	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BARTEL	85J	PL 163B 277	W. Bartel *et al.*	(JADE Collab.)
ADAMOVICH	84	PL 140B 119	M.I. Adamovich *et al.*	(CERN WA58 Collab.)
ALTHOFF	84G	ZPHY C22 219	M. Althoff *et al.*	(TASSO Collab.)
DERRICK	84	PRL 53 1971	M. Derrick *et al.*	(HRS Collab.)
SCHINDLER	81	PR D24 78	R.H. Schindler *et al.*	(Mark II Collab.)
TRILLING	81	PRPL 75 57	G.H. Trilling	(LBL, UCB) J
ZHOLENTZ	80	PL 96B 214	A.A. Zholents *et al.*	(NOVO)
Also		SJNP 34 814	A.A. Zholents *et al.*	(NOVO)
		Translated from YAF 34 1471.		
GOLDHABER	77	PL 69B 503	G. Goldhaber *et al.*	(Mark I Collab.)
PERUZZI	77	PRL 39 1301	I. Peruzzi *et al.*	(LGW Collab.)
PICCOLO	77	PL 70B 260	M. Piccolo *et al.*	(Mark I Collab.)
PERUZZI	76	PRL 37 569	I. Peruzzi *et al.*	(Mark I Collab.)

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