D^0

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

D^0 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*
1864.5± 0.5 OUR FIT	Error includes scale factor of 1.1.				
1864.1± 1.0 OUR AVERAGE					
1864.6± 0.3±1.0	641	BARLAG	90C	ACCM	π^- Cu 230 GeV
1852 ± 7	16	ADAMOVICH	87	EMUL	Photoproduction
1861 ± 4		DERRICK	84	HRS	e^+e^- 29 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1856 ±36	22	ADAMOVICH	84B	EMUL	Photoproduction
1847 ± 7	1	FIORINO	81	EMUL	$\gamma N \rightarrow \overline{D}^0 +$
1863.8± 0.5		[1] SCHINDLER	81	MRK2	e^+e^- 3.77 GeV
1864.7± 0.6		[1] TRILLING	81	RVUE	e^+e^- 3.77 GeV
1863.0± 2.5	238	ASTON	80E	OMEG	$\gamma p \rightarrow \overline{D}^0$
1860 ± 2	143	[2] AVERY	80	SPEC	$\gamma N \rightarrow D^{*+}$
1869 ± 4	35	[2] AVERY	80	SPEC	$\gamma N \rightarrow D^{*+}$
1854 ± 6	94	[2] ATIYA	79	SPEC	$\gamma N \rightarrow D^0 \overline{D}^0$
1850 ±15	64	BALTAY	78C	HBC	$\nu N \rightarrow K^0 \pi\pi$
1863 ± 3		GOLDHABER	77	MRK1	D^0, D^+ recoil spectra
1863.3± 0.9		[1] PERUZZI	77	MRK1	e^+e^- 3.77 GeV
1868 ±11		PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV
1865 ±15	234	GOLDHABER	76	MRK1	$K\pi$ and $K3\pi$

[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. TRILLING 81 enters the fit in the $D^\pm$ mass, and PERUZZI 77 and SCHINDLER 81 enter in the $m_{D^\pm} - m_{D^0}$, below.

[2] Error does not include possible systematic mass scale shift, estimated to be less than 5 MeV.

$m_{D^\pm} - m_{D^0}$

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)	*DOCUMENT ID*		*TECN*	*COMMENT*
4.78±0.10 OUR FIT	Error includes scale factor of 1.1.			
4.74±0.28 OUR AVERAGE				
4.7 ±0.3	[3] SCHINDLER	81	MRK2	e^+e^- 3.77 GeV
5.0 ±0.8	[3] PERUZZI	77	MRK1	e^+e^- 3.77 GeV

[3] See the footnote on TRILLING 81 in the D^0 and $D^\pm$ sections on the mass.

D^0 MEAN LIFE

Measurements with an error $> 20 \times 10^{-15}$ s have been omitted from the average.

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
411.7± 2.7 OUR AVERAGE					
407.9± 6.0± 4.3	10k	KUSHNIR...	01	SELX	$D^0 \to K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$
413 ± 3 ± 4	35k	AITALA	99E	E791	$K^- \pi^+$
408.5± 4.1$^{+3.5}_{-3.4}$	25k	BONVICINI	99	CLE2	$e^+ e^- \approx \Upsilon(4S)$
413 ± 4 ± 3	16k	FRABETTI	94D	E687	$K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$
424 ±11 ± 7	5118	FRABETTI	91	E687	$K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
417 ±18 ±15	890	ALVAREZ	90	NA14	$K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$
388 $^{+23}_{-21}$	641	[4] BARLAG	90C	ACCM	π^- Cu 230 GeV
480 ±40 ±30	776	ALBRECHT	88I	ARG	$e^+ e^-$ 10 GeV
422 ± 8 ±10	4212	RAAB	88	E691	Photoproduction
420 ±50	90	BARLAG	87B	ACCM	K^- and π^- 200 GeV

[4] BARLAG 90C estimate systematic error to be negligible.

D^0–$\overline{D}^0$ MIXING

Written April 2002 by D. Asner (LLNL).

Standard Model contributions to D^0–$\overline{D}^0$ mixing are strongly suppressed by CKM and GIM factors. Thus the observation of D^0–$\overline{D}^0$ mixing might be evidence for physics beyond the Standard Model. See Bigi [1] for a review of D^0–$\overline{D}^0$ mixing, and see Nelson [2] for a recent compilation of mixing predictions.

Formalism: The time evolution of the D^0–$\overline{D}^0$ system is described by the Schrödinger equation

$$i\frac{\partial}{\partial t}\begin{pmatrix} D^0(t) \\ \overline{D}^0(t) \end{pmatrix} = \left(\mathbf{M} - \frac{i}{2}\mathbf{\Gamma}\right)\begin{pmatrix} D^0(t) \\ \overline{D}^0(t) \end{pmatrix}, \tag{1}$$

where the $\mathbf{M}$ and $\mathbf{\Gamma}$ matrices are Hermitian, and CPT invariance requires $M_{11} = M_{22} \equiv M$ and $\Gamma_{11} = \Gamma_{22} \equiv \Gamma$. The off-diagonal elements of these matrices describe the dispersive and absorptive parts of D^0–$\overline{D}^0$ mixing.

The two eigenstates D_1 and D_2 of the effective Hamiltonian matrix $(\mathbf{M} - \frac{i}{2}\mathbf{\Gamma})$ are given by

$$|D_{1,2}\rangle = p|D^0\rangle \pm q|\overline{D}^0\rangle \, . \tag{2}$$

The corresponding eigenvalues are

$$\lambda_{1,2} \equiv m_{1,2} - \tfrac{i}{2}\Gamma_{1,2} = \left(M - \tfrac{i}{2}\Gamma\right) \pm \frac{q}{p}\left(M_{12} - \tfrac{i}{2}\Gamma_{12}\right) \, , \tag{3}$$

where

$$\left|\frac{q}{p}\right|^2 = \frac{M_{12}^* - \frac{i}{2}\Gamma_{12}^*}{M_{12} - \frac{i}{2}\Gamma_{12}} \, . \tag{4}$$

We extend the formalism from our note on "B^0–$\overline{B}^0$ mixing" [3]. In addition to the 'right-sign' instantaneous decay amplitudes $\overline{A}_f \equiv \langle f|H|\overline{D}^0\rangle$ and $A_{\overline{f}} \equiv \langle \overline{f}|H|D^0\rangle$ for CP conjugate final states f and $\overline{f}$, we include the 'wrong-sign' amplitudes $\overline{A}_{\overline{f}} \equiv \langle \overline{f}|H|\overline{D}^0\rangle$ and $A_f \equiv \langle f|H|D^0\rangle$.

It is usual to normalize the wrong-sign decay distributions to the integrated rate of right-sign decays and to express time in units of the precisely measured D^0 mean life, $\overline{\tau}_{D^0} = 1/\Gamma = 2/(\Gamma_1 + \Gamma_2)$. We denote the resulting decay distributions as $r(t)$ and $\overline{r}(t)$. Starting from a pure $|D^0\rangle$ or $|\overline{D}^0\rangle$ state at $t = 0$, the time dependence to the wrong-sign final states is then

$$r(t) = \frac{\left|\langle f|H|D^0(t)\rangle\right|^2}{\left|\overline{A}_f\right|^2} = \left|\frac{q}{p}\right|^2 \left|g_+(t)\,\chi_f^{-1} + g_-(t)\right|^2 \, , \tag{5}$$

$$\overline{r}(t) = \frac{\left|\langle \overline{f}|H|\overline{D}^0(t)\rangle\right|^2}{\left|A_{\overline{f}}\right|^2} = \left|\frac{p}{q}\right|^2 \left|g_+(t)\,\chi_{\overline{f}} + g_-(t)\right|^2 \, , \tag{6}$$

where

$$\chi_f = \frac{q\overline{A}_f}{pA_f} \tag{7}$$

and

$$g_{\pm}(t) = \frac{1}{2}\left(e^{-iz_1 t} \pm e^{-iz_2 t}\right) , \quad z_{1,2} = \frac{\lambda_{1,2}}{\Gamma} . \tag{8}$$

Note that a change of the relative phase of D^0 and $\overline{D}^0$ cancels between q/p and $\overline{A}_f/A_f$ and leaves χ_f invariant.

Since D^0–$\overline{D}^0$ mixing is a small effect, the identification tag of the initial particle as a D^0 or a $\overline{D}^0$ must be extremely accurate. The usual tag is the charge of the distinctive slow pion in the decay sequence $D^{*+} \to D^0\pi^+$ or $D^{*-} \to \overline{D}^0\pi^-$. In current experiments, mis-tags occur at a rate of about one per thousand events. Another tag of sufficient accuracy is identification of one of the D's from $\psi(3770) \to D^0\overline{D}^0$.

Semileptonic decays: We expand $r(t)$ and $\overline{r}(t)$ to second order in time for modes where the ratio of decay amplitudes $R_D = |A_f/\overline{A}_f|^2$ is very small. In semileptonic decays, $A_f = \overline{A}_{\overline{f}} = 0$ in the Standard Model. We define reduced mixing amplitudes x and y by

$$x \equiv \frac{2M_{12}}{\Gamma} = \frac{m_1 - m_2}{\Gamma} = \frac{\Delta m}{\Gamma} \tag{9}$$

and

$$y \equiv \frac{\Gamma_{12}}{\Gamma} = \frac{\Gamma_1 - \Gamma_2}{2\Gamma} = \frac{\Delta\Gamma}{2\Gamma} . \tag{10}$$

In these, the first equality holds in the limit of CP conservation; and now the subscripts 1 and 2 indicate the CP-even and CP-odd eigenstates, respectively. Then, in the limit of weak mixing, where $|ix + y| \ll 1$, $r(t)$ is given by

$$r(t) = |g_-(t)|^2 \left|\frac{q}{p}\right|^2 \approx \frac{e^{-t}}{4}(x^2 + y^2)t^2 \left|\frac{q}{p}\right|^2 . \tag{11}$$

For $\overline{r}(t)$ one replaces q/p by p/q, and in the limit of CP conservation, $r(t) = \overline{r}(t)$ and

$$R_M = \int_0^\infty r(t)dt \approx \frac{1}{2}(x^2 + y^2) . \tag{12}$$

Wrong-sign decays to hadronic non-CP eigenstates: Consider the final state $f = K^+\pi^-$, where A_f is doubly Cabibbo suppressed, and the ratio of decay amplitudes is

$$\frac{A_f}{\overline{A}_f} = -\sqrt{R_D}e^{-i\delta} \sim O(\tan^2\theta_c)\,. \tag{13}$$

The minus sign originates from the sign of V_{us} with respect to V_{cd}, and δ is a strong phase difference between doubly Cabibbo suppressed and Cabibbo-favored decay amplitudes.

We characterize the violation of CP in the mixing amplitude, decay amplitude, and the interference between those two processes, by the real-valued parameters A_M, A_D, and ϕ. In general $\chi_{\overline{f}}$ and χ_f^{-1} are two independent complex numbers. We adopt a parameterization similar to that of Nir [4] and CLEO [5] and express these quantities in a way that is convenient to describe the three types of CP violation:

$$\left|\frac{q}{p}\right| = 1 + A_M\,, \tag{14}$$

$$\chi_f^{-1} \equiv \frac{pA_f}{q\overline{A}_f} = \frac{-\sqrt{R_D}(1+A_D)}{(1+A_M)}e^{-i(\delta+\phi)}\,, \tag{15}$$

$$\chi_{\overline{f}} \equiv \frac{q\overline{A}_{\overline{f}}}{pA_{\overline{f}}} = \frac{-\sqrt{R_D}(1+A_M)}{(1+A_D)}e^{-i(\delta-\phi)}\,. \tag{16}$$

To leading order,

$$r(t) = e^{-t} \times \Big[R_D(1+A_D)^2 + \sqrt{R_D}(1+A_M)(1+A_D)y'_{-}t + \frac{(1+A_M)^2R_M}{2}t^2\Big]\,, \tag{17}$$

$$\overline{r}(t) = e^{-t} \times \left[\frac{R_D}{(1+A_D)^2} + \frac{\sqrt{R_D}}{(1+A_D)(1+A_M)} y'_+ t + \frac{R_M}{2(1+A_M)^2} t^2\right], \quad (18)$$

where

$$y'_\pm \equiv y' \cos\phi \pm x' \sin\phi = y \cos(\delta \mp \phi) - x \sin(\delta \mp \phi) \quad (19)$$

$$y' \equiv y \cos\delta - x \sin\delta, \quad x' \equiv x \cos\delta + y \sin\delta\,, \quad (20)$$

and R_D and R_M are the doubly Cabibbo-suppressed decay and mixing rates, respectively, relative to the time-integrated right-sign rate. Comparing the terms in Eq. (17) and Eq. (18) probes the three fundamental types of CP violation. In the limit of CP conservation, A_M, A_D, and ϕ are all zero, and $r(t) = \overline{r}(t)$. Eq. (17) and Eq. (18) become

$$r(t) = e^{-t} \left(R_D + \sqrt{R_D} y' t + \frac{1}{2} R_M t^2 \right) , \quad (21)$$

$$R = \int_0^\infty r(t) dt = R_D + \sqrt{R_D} y' + R_M , \quad (22)$$

where R is the time-integrated wrong-sign rate relative to the time-integrated right-sign rate.

For multibody final states, Eqs. (13)–(22) are applicable for one point in the Dalitz space. Although x and y do not vary across the Dalitz space, knowledge of the resonant substructure is needed to extrapolate the strong phase difference δ to a different point. Both the sign and magnitude of x and y are believed to be experimentally accessible through the study of the time-dependent resonant substructure in decay modes such as $D^0 \to K_S \pi^+ \pi^-$ [6].

Decays to CP eigenstates: When the final state f is a CP eigenstate, there is no distinction between f and $\overline{f}$, and $A_f = A_{\overline{f}}$

and $\overline{A}_{\overline{f}} = \overline{A}_f$. We denote final states with CP eigenvalues ± 1 by $f_\pm$. In analogy with Eqs. (5)–(6), the time dependence of decays to CP eigenstates is then

$$r_\pm(t) = \frac{\left|\langle f_\pm | H | D^0(t)\rangle\right|^2}{\left|\overline{A}_\pm\right|^2}$$

$$= \frac{1}{4}\left| h_\pm(t)\left(\frac{A_\pm}{\overline{A}_\pm} \pm \frac{q}{p}\right) + h_\mp(t)\left(\frac{A_\pm}{\overline{A}_\pm} \mp \frac{q}{p}\right)\right|^2,$$

$$\propto \frac{1}{|p|^2}\left| h_\pm(t) + \eta_\pm h_\mp(t)\right|^2, \tag{23}$$

$$\overline{r}_\pm(t) = \frac{\left|\langle f_\pm | H | \overline{D}^0(t)\rangle\right|^2}{\left|A_\pm\right|^2} \propto \frac{1}{|q|^2}\left| h_\pm(t) - \eta_\pm h_\mp(t)\right|^2, \tag{24}$$

where

$$h_\pm(t) = g_+(t) \pm g_-(t) = e^{-iz_\pm t}\,, \tag{25}$$

$$\eta_\pm \equiv \frac{pA_\pm \mp q\overline{A}_\pm}{pA_\pm \pm q\overline{A}_\pm} = \frac{1 \mp \chi_\pm}{1 \pm \chi_\pm}\,, \tag{26}$$

and the variable $\eta_\pm$ describes CP violation. This $\eta_\pm$ can receive contributions from each of the three fundamental types of CP violation.

The quantity y is accessible experimentally, by comparing the lifetime measured, for example, with decays to non-CP eigenstates such as $D^0 \to K^-\pi^+$, with that measured with decays to a CP eigenstate such as $D^0 \to K^+K^-$; see Bergmann [7]. A positive y would make K^+K^- decays appear to have a shorter lifetime than $K^-\pi^+$ decays.

In the limit of weak mixing, where $|ix + y| \ll 1$, and small CP violation, where $|A_M|$, $|A_D|$, and $|\sin\phi| \ll 1$, the time dependence of decays to CP eigenstates is proportional to a single exponential:

$$r_\pm(t) \propto e^{-[1\pm\frac{q}{p}(y\cos\phi - x\sin\phi)]t} \,, \tag{27}$$

$$\overline{r}_\pm(t) \propto e^{-[1\pm\frac{p}{q}(y\cos\phi + x\sin\phi)]t} \,, \tag{28}$$

$$r_\pm(t) + \overline{r}_\pm(t) \propto e^{-(1\pm y_{CP})t} \,, \tag{29}$$

where

$$\begin{aligned} y_{CP} \equiv & y\cos\phi\left[\frac{1}{2}\left(\frac{q}{p}+\frac{p}{q}\right)+\frac{A_{\rm prod}}{2}\left(\frac{q}{p}-\frac{p}{q}\right)\right] \\ & - x\sin\phi\left[\frac{1}{2}\left(\frac{q}{p}-\frac{p}{q}\right)+\frac{A_{\rm prod}}{2}\left(\frac{q}{p}+\frac{p}{q}\right)\right] \,, \end{aligned} \tag{30}$$

and

$$A_{\rm prod} \equiv \frac{N(D^0) - N(\overline{D}^0)}{N(D^0) + N(\overline{D}^0)} \tag{31}$$

is defined as the production asymmetry of the D^0 and $\overline{D}^0$. Note that deviations from the lifetime measured in non-CP eigenstates do not require $y \neq 0$ but can be due to $x\sin\phi \neq 0$. This possibility is distinguished by a relative sign difference between the D^0 and $\overline{D}^0$ samples.

In the limit of CP conservation, $A_\pm = \pm\overline{A}_\pm$, $\eta_\pm = 0$, $y = y_{CP}$, and

$$r_\pm(t)\left|\overline{A}_\pm\right|^2 = \overline{r}_\pm(t)\left|A_\pm\right|^2 = e^{-(1\pm y_{CP})t} \,. \tag{32}$$

References

1. I. Bigi, in *Proceedings of the Tau-Charm Factory Workshop*, Stanford, Calif., ed. L.V. Beers, SLAC (1989).
2. H.N. Nelson, in *Proceedings of the 19th Intl. Symp. on Lepton and Photon Interactions at High Energy LP99*, ed. J.A. Jaros and M.E. Peskin, SLAC (1999).

3. See the review on B^0–$\overline{B}^0$ mixing by O. Schneider in this *Review*.
4. Y. Nir, Lectures given at 27th SLAC Summer Institute on Particle Physics: CP Violation in and Beyond the Standard Model (SSI 99), Stanford, California, 7-16 Jul 1999. Published in Trieste 1999, *Particle Physics* pp. 165-243.
5. R. Godang *et al.*, Phys. Rev. Lett. **84**, 5038 (2000).
6. D. Asner, UCRL-JC-147296.
7. S. Bergmann *et al.*, Phys. Lett. **B486**, 418 (2000).

$|m_{D^0_1} - m_{D^0_2}|$

The D^0_1 and D^0_2 are the mass eigenstates of the D^0 meson, as described in the note on "D^0-$\overline{D}^0$ Mixing," above.

VALUE (10^{10} $\hbar$ s^{-1})	CL%	DOCUMENT ID		TECN	COMMENT
< 7	95	[5] GODANG	00	CLE2	$e^+ e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<32	90	[6,7] AITALA	98	E791	π^- nucleus, 500 GeV
<24	90	[8] AITALA	96C	E791	π^- nucleus, 500 GeV
<21	90	[7,9] ANJOS	88C	E691	Photoproduction

[5] This GODANG 00 limit is inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows CP violation. The strong phase between $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by a factor of two.

[6] AITALA 98 allows interference between the doubly Cabibbo-suppressed and mixing amplitudes, and also allows CP violation in this term, but assumes that A_D=A_R=0. See the note on "D^0-$\overline{D}^0$ Mixing," above.

[7] This limit is inferred from R_M for $f = K^+\pi^-$ and $f = K^+\pi^-\pi^+\pi^-$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Decay-time information is used to distinguish doubly Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing.

[8] This limit is inferred from R_M for $f = K^+\ell^-\overline{\nu}_\ell$. See the note on "$D^0$-$\overline{D}^0$ Mixing," above.

[9] ANJOS 88C assumes that $y = 0$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Without this assumption, the limit degrades by about a factor of two.

$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y$

The D_1^0 and D_2^0 are the mass eigenstates of the D^0 meson, as described in the note on "D^0-$\overline{D}^0$ Mixing," above.

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
−0.003 ±0.022 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.					
$-0.010 \pm 0.020 {}^{+0.014}_{-0.016}$		18k	[10] ABE 02I	BELL	$e^+e^- \approx \Upsilon(4S)$
$-0.024 \pm 0.050 \pm 0.028$		3393	[11] CSORNA 02	CLE2	$e^+e^- \approx \Upsilon(4S)$
$-0.050 {}^{+0.028}_{-0.032} \pm 0.006$			[12] GODANG 00	CLE2	e^+e^-
$0.0684 \pm 0.0278 \pm 0.0148$		10k	[10] LINK 00	FOCS	γ nucleus
$+0.016 \pm 0.058 \pm 0.021$			[10] AITALA 99E	E791	$K^-\pi^+$, K^+K^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$\lvert\Delta\Gamma\rvert/\Gamma < 0.26$	90		[13,14] AITALA 98	E791	π^- nucleus, 500 GeV
$\lvert\Delta\Gamma\rvert/\Gamma < 0.20$	90		[15] AITALA 96C	E791	π^- nucleus, 500 GeV
$\lvert\Delta\Gamma\rvert/\Gamma < 0.17$	90		[14,16] ANJOS 88C	E691	Photoproduction

[10] LINK 00, AITALA 99E, and ABE 02I measure the lifetime difference between $D^0 \to K^-K^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or $y_{CP}=[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}=\Delta\Gamma/\Gamma$.

[11] CSORNA 02 measures the lifetime difference between $D^0 \to K^-K^+$ and $\pi^-\pi^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or $y_{CP}=[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}=\Delta\Gamma/\Gamma$.

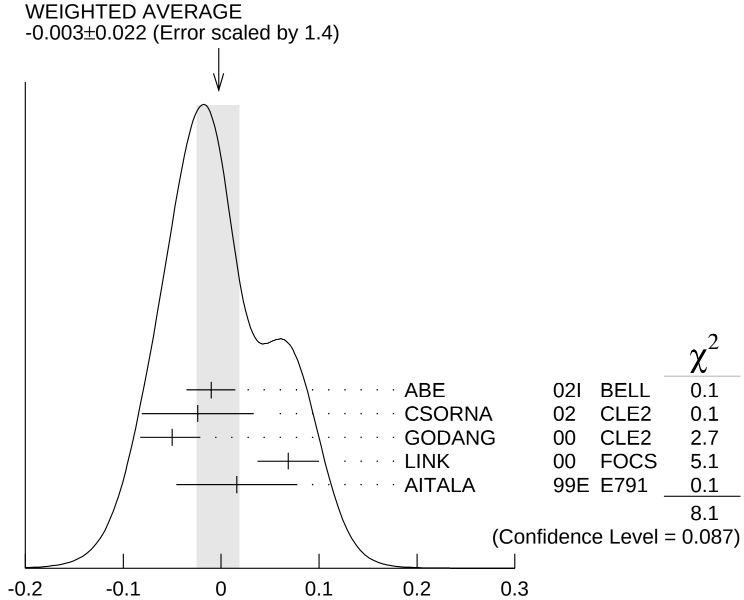
[12] This GODANG 00 limit is inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0$))/$\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows CP violation. The phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. This is a measurement of y' and is not the same as the y_{CP} of LINK 00.

[13] AITALA 98 allows interference between the doubly Cabibbo-suppressed and mixing amplitudes, and also allows CP violation in this term, but assumes that A_D=A_R=0. See the note on "D^0-$\overline{D}^0$ Mixing," above.

[14] This limit is inferred from R_M for $f = K^+\pi^-$ and $f = K^+\pi^-\pi^+\pi^-$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Decay-time information is used to distinguish doubly Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing.

[15] This limit is inferred from R_M for $f = K^+\ell^-\overline{\nu}_\ell$. See the note on "$D^0$-$\overline{D}^0$ Mixing," above.

[16] ANJOS 88C assumes that $y = 0$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Without this assumption, the limit degrades by about a factor of two.



$(\Gamma_1 - \Gamma_2)/\Gamma = 2y$

D^0 DECAY MODES

$\overline{D}^0$ modes are charge conjugates of the modes below.

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Inclusive modes			
Γ_1	e^+ anything	[a]	(6.87 ± 0.28) %	
Γ_2	μ^+ anything		$(6.5\ \pm0.8\ )$ %	
Γ_3	K^- anything		$(53\ \pm4\ )$ %	S=1.3
Γ_4	$\overline{K}^0$ anything + K^0 anything		$(42\ \pm5\ )$ %	
Γ_5	K^+ anything		$(3.4\ ^{+0.6}_{-0.4})$ %	
Γ_6	η anything	[b]	< 13 %	CL=90%
Γ_7	ϕ anything		$(1.7\ \pm0.8\ )$ %	
	Semileptonic modes			
Γ_8	$K^-\ell^+\nu_\ell$	[c]	(3.43 ± 0.15) %	S=1.2
Γ_9	$K^- e^+\nu_e$		(3.58 ± 0.18) %	S=1.1
Γ_{10}	$K^-\mu^+\nu_\mu$		(3.19 ± 0.17) %	
Γ_{11}	$K^-\pi^0 e^+\nu_e$		$(1.1\ ^{+0.8}_{-0.6})$ %	S=1.6
Γ_{12}	$\overline{K}^0\pi^- e^+\nu_e$		$(1.8\ \pm0.8\ )$ %	S=1.6

Γ_{13}	$\overline{K}^*(892)^- e^+ \nu_e$ $\times$ B($K^{*-} \to \overline{K}^0 \pi^-$)		(1.43$\pm$0.23) %	
Γ_{14}	$K^*(892)^- \ell^+ \nu_\ell$			
Γ_{15}	$\overline{K}^*(892)^0 \pi^- e^+ \nu_e$			
Γ_{16}	$K^- \pi^+ \pi^- \mu^+ \nu_\mu$		$<$ 1.2 $\times 10^{-3}$	CL=90%
Γ_{17}	$(\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu$		$<$ 1.4 $\times 10^{-3}$	CL=90%
Γ_{18}	$\pi^- e^+ \nu_e$		(3.6 $\pm$0.6) $\times 10^{-3}$	

A fraction of the following resonance mode has already appeared above as a submode of a charged-particle mode.

Γ_{19}	$K^*(892)^- e^+ \nu_e$		(2.14$\pm$0.35) %	

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

Γ_{20}	$K^- \pi^+$		(3.80$\pm$0.09) %	
Γ_{21}	$\overline{K}^0 \pi^0$		(2.28$\pm$0.22) %	
Γ_{22}	$\overline{K}^0 \pi^+ \pi^-$	[*d*]	(5.92$\pm$0.35) %	S=1.1
Γ_{23}	$\overline{K}^0 \rho^0$		(1.47$\pm$0.29) %	
Γ_{24}	$\overline{K}^0 f_0(980)$ $\times$ B($f_0 \to \pi^+ \pi^-$)		(3.2 $\pm$0.9) $\times 10^{-3}$	
Γ_{25}	$\overline{K}^0 f_2(1270)$ $\times$ B($f_2 \to \pi^+ \pi^-$)		(2.5 $\pm$1.0) $\times 10^{-3}$	
Γ_{26}	$\overline{K}^0 f_0(1370)$ $\times$ B($f_0 \to \pi^+ \pi^-$)		(4.7 $\pm$1.4) $\times 10^{-3}$	
Γ_{27}	$K^*(892)^- \pi^+$ $\times$ B($K^{*-} \to \overline{K}^0 \pi^-$)		(4.0 $\pm$0.4) %	
Γ_{28}	$K_0^*(1430)^- \pi^+$ $\times$ B($K_0^*(1430)^- \to \overline{K}^0 \pi^-$)		(7.3 $\pm$1.6) $\times 10^{-3}$	
Γ_{29}	$\overline{K}^0 \pi^+ \pi^-$ nonresonant			
Γ_{30}	$K^- \pi^+ \pi^0$	[*d*]	(13.1 $\pm$0.9) %	S=1.3
Γ_{31}	$K^- \rho^+$		(10.2 $\pm$0.9) %	
Γ_{32}	$K^- \rho(1700)^+$ $\times$ B($\rho(1700)^+ \to \pi^+ \pi^0$)		(7.5 $\pm$1.7) $\times 10^{-3}$	
Γ_{33}	$K^*(892)^- \pi^+$ $\times$ B($K^{*-} \to K^- \pi^0$)		(2.0 $\pm$0.2) %	
Γ_{34}	$\overline{K}^*(892)^0 \pi^0$ $\times$ B($\overline{K}^{*0} \to K^- \pi^+$)		(1.87$\pm$0.27) %	
Γ_{35}	$K_0^*(1430)^- \pi^+$ $\times$ B($K_0^*(1430)^- \to K^- \pi^0$)		(3.6 $\pm$0.8) $\times 10^{-3}$	
Γ_{36}	$\overline{K}_0^*(1430)^0 \pi^0$ $\times$ B($\overline{K}_0^*(1430)^0 \to K^- \pi^+$)		(5.3 $^{+4.2}_{-1.4}$) $\times 10^{-3}$	
Γ_{37}	$K^*(1680)^- \pi^+$ $\times$ B($K^*(1680)^- \to K^- \pi^0$)		(1.7 $\pm$0.6) $\times 10^{-3}$	
Γ_{38}	$K^- \pi^+ \pi^0$ nonresonant		(1.05$^{+0.51}_{-0.19}$) %	

Γ_{39}	$\overline{K}^0 \pi^0 \pi^0$		—
Γ_{40}	$\overline{K}^*(892)^0 \pi^0$ $\times$ B($\overline{K}^{*0} \to \overline{K}^0 \pi^0$)		(9.3 ±1.3) $\times 10^{-3}$
Γ_{41}	$\overline{K}^0 \pi^0 \pi^0$ nonresonant		(8.4 ±2.2) $\times 10^{-3}$
Γ_{42}	$K^- \pi^+ \pi^+ \pi^-$	[d]	(7.46±0.31) %
Γ_{43}	$K^- \pi^+ \rho^0$ total		(6.2 ±0.4) %
Γ_{44}	$K^- \pi^+ \rho^0$ 3-body		(4.7 ±2.1) $\times 10^{-3}$
Γ_{45}	$\overline{K}^*(892)^0 \rho^0$ $\times$ B($\overline{K}^{*0} \to K^- \pi^+$)		(9.7 ±2.1) $\times 10^{-3}$
Γ_{46}	$K^- a_1(1260)^+$ $\times$ B($a_1(1260)^+ \to \pi^+ \pi^+ \pi^-$)		(3.6 ±0.6) %
Γ_{47}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ total $\times$ B($\overline{K}^{*0} \to K^- \pi^+$)		(1.5 ±0.4) %
Γ_{48}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body $\times$ B($\overline{K}^{*0} \to K^- \pi^+$)		(9.5 ±2.1) $\times 10^{-3}$
Γ_{49}	$K_1(1270)^- \pi^+$ $\times$ B($K_1(1270)^- \to K^- \pi^+ \pi^-$)	[e]	(3.7 ±1.0) $\times 10^{-3}$
Γ_{50}	$K^- \pi^+ \pi^+ \pi^-$ nonresonant		(1.74±0.25) %
Γ_{51}	$\overline{K}^0 \pi^+ \pi^- \pi^0$	[d]	(10.8 ±1.3) %
Γ_{52}	$\overline{K}^0 \eta$ $\times$ B($\eta \to \pi^+ \pi^- \pi^0$)		(1.7 ±0.3) $\times 10^{-3}$
Γ_{53}	$\overline{K}^0 \omega$ $\times$ B($\omega \to \pi^+ \pi^- \pi^0$)		(2.2 ±0.4) %
Γ_{54}	$K^*(892)^- \rho^+$ $\times$ B($K^{*-} \to \overline{K}^0 \pi^-$)		(4.3 ±1.7) %
Γ_{55}	$\overline{K}^*(892)^0 \rho^0$ $\times$ B($\overline{K}^{*0} \to \overline{K}^0 \pi^0$)		(4.8 ±1.1) $\times 10^{-3}$
Γ_{56}	$K_1(1270)^- \pi^+$ $\times$ B($K_1(1270)^- \to \overline{K}^0 \pi^- \pi^0$)	[e]	(5.3 ±1.5) $\times 10^{-3}$
Γ_{57}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body $\times$ B($\overline{K}^{*0} \to \overline{K}^0 \pi^0$)		(4.7 ±1.0) $\times 10^{-3}$
Γ_{58}	$\overline{K}^0 \pi^+ \pi^- \pi^0$ nonresonant		(2.3 ±2.3) %
Γ_{59}	$K^- \pi^+ \pi^0 \pi^0$		
Γ_{60}	$K^- \pi^+ \pi^+ \pi^- \pi^0$		(4.0 ±0.4) %
Γ_{61}	$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$ $\times$ B($\overline{K}^{*0} \to K^- \pi^+$)		(1.2 ±0.6) %
Γ_{62}	$\overline{K}^*(892)^0 \eta$ $\times$ B($\overline{K}^{*0} \to K^- \pi^+$) $\times$ B($\eta \to \pi^+ \pi^- \pi^0$)		(2.8 ±0.6) $\times 10^{-3}$
Γ_{63}	$K^- \pi^+ \omega$ $\times$ B($\omega \to \pi^+ \pi^- \pi^0$)		(2.7 ±0.5) %
Γ_{64}	$\overline{K}^*(892)^0 \omega$ $\times$ B($\overline{K}^{*0} \to K^- \pi^+$) $\times$ B($\omega \to \pi^+ \pi^- \pi^0$)		(6.5 ±2.4) $\times 10^{-3}$
Γ_{65}	$\overline{K}^0 \pi^+ \pi^+ \pi^- \pi^-$		(6.3 ±1.8) $\times 10^{-3}$
Γ_{66}	$\overline{K}^0 \pi^+ \pi^- \pi^0 \pi^0 (\pi^0)$		

Γ_{67}	$\overline{K}^0 K^+ K^-$		(1.02 ± 0.10) %	
	In the fit as $\frac{1}{2}\Gamma_{79} + \Gamma_{69}$, where $\frac{1}{2}\Gamma_{79} = \Gamma_{68}$.			
Γ_{68}	$\overline{K}^0 \phi \times$ B$(\phi \to K^+ K^-)$		$(4.7 \pm0.6) \times 10^{-3}$	
Γ_{69}	$\overline{K}^0 K^+ K^-$ non-ϕ		$(5.5 \pm0.9) \times 10^{-3}$	
Γ_{70}	$K^0_S K^0_S K^0_S$		$(9.1 \pm1.6) \times 10^{-4}$	
Γ_{71}	$K^- \pi^+ \phi \times$ B$(\phi \to K^+ K^-)$			
Γ_{72}	$K^+ K^- K^- \pi^+$		$(2.4 \pm0.7) \times 10^{-4}$	
Γ_{73}	$K^+ K^- \overline{K}^0 \pi^0$			

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes for which there are only upper limits and $\overline{K}^*(892)\rho$ submodes only appear below.)

Γ_{74}	$\overline{K}^0 \eta$		$(7.6 \pm1.1) \times 10^{-3}$	
Γ_{75}	$\overline{K}^0 \rho^0$		(1.47 ± 0.29) %	
Γ_{76}	$K^- \rho^+$		(10.2 ± 0.8) %	S=1.2
Γ_{77}	$\overline{K}^0 \omega$		(2.2 ± 0.4) %	
Γ_{78}	$\overline{K}^0 \eta'(958)$		(1.87 ± 0.28) %	
Γ_{79}	$\overline{K}^0 \phi$		$(9.4 \pm1.1) \times 10^{-3}$	
Γ_{80}	$K^- a_1(1260)^+$		(7.2 ± 1.1) %	
Γ_{81}	$\overline{K}^0 a_1(1260)^0$		< 1.9 %	CL=90%
Γ_{82}	$\overline{K}^0 f_2(1270)$		$(4.5 \pm1.7) \times 10^{-3}$	
Γ_{83}	$K^- a_2(1320)^+$		$< 2 \times 10^{-3}$	CL=90%
Γ_{84}	$K^*(892)^- \pi^+$		(6.0 ± 0.5) %	S=1.2
Γ_{85}	$\overline{K}^*(892)^0 \pi^0$		(2.8 ± 0.4) %	S=1.1
Γ_{86}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ total		(2.2 ± 0.5) %	
Γ_{87}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body		(1.42 ± 0.31) %	
Γ_{88}	$K^- \pi^+ \rho^0$ total		(6.2 ± 0.4) %	
Γ_{89}	$K^- \pi^+ \rho^0$ 3-body		$(4.7 \pm2.1) \times 10^{-3}$	
Γ_{90}	$\overline{K}^*(892)^0 \rho^0$		(1.45 ± 0.32) %	
Γ_{91}	$\overline{K}^*(892)^0 \rho^0$ transverse		(1.5 ± 0.5) %	
Γ_{92}	$\overline{K}^*(892)^0 \rho^0$ *S*-wave		(2.8 ± 0.6) %	
Γ_{93}	$\overline{K}^*(892)^0 \rho^0$ *S*-wave long.		$< 3 \times 10^{-3}$	CL=90%
Γ_{94}	$\overline{K}^*(892)^0 \rho^0$ *P*-wave		$< 3 \times 10^{-3}$	CL=90%
Γ_{95}	$\overline{K}^*(892)^0 \rho^0$ *D*-wave		(1.9 ± 0.6) %	
Γ_{96}	$K^*(892)^- \rho^+$		(6.5 ± 2.6) %	
Γ_{97}	$K^*(892)^- \rho^+$ longitudinal		(3.1 ± 1.3) %	
Γ_{98}	$K^*(892)^- \rho^+$ transverse		(3.4 ± 2.0) %	
Γ_{99}	$K^*(892)^- \rho^+$ *P*-wave		< 1.5 %	CL=90%
Γ_{100}	$K^- \pi^+ f_0(980)$			
Γ_{101}	$\overline{K}^*(892)^0 f_0(980)$			
Γ_{102}	$K_1(1270)^- \pi^+$	[e]	(1.13 ± 0.31) %	
Γ_{103}	$K_1(1400)^- \pi^+$		< 1.2 %	CL=90%
Γ_{104}	$\overline{K}_1(1400)^0 \pi^0$		< 3.7 %	CL=90%

Γ_{105}	$K^*(1410)^- \pi^+$			
Γ_{106}	$K_0^*(1430)^- \pi^+$		(1.18 ± 0.25) %	
Γ_{107}	$\overline{K}_0^*(1430)^0 \pi^0$		$(8.6 \,{}^{+6.8}_{-2.3}) \times 10^{-3}$	
Γ_{108}	$K_2^*(1430)^- \pi^+$		$< 9 \times 10^{-3}$	CL=90%
Γ_{109}	$\overline{K}_2^*(1430)^0 \pi^0$		$< 3.4 \times 10^{-3}$	CL=90%
Γ_{110}	$K^*(1680)^- \pi^+$		(1.3 ± 0.5) %	
Γ_{111}	$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$		(1.8 ± 0.9) %	
Γ_{112}	$\quad \overline{K}^*(892)^0 \eta$		(1.8 ± 0.4) %	
Γ_{113}	$K^- \pi^+ \omega$		(3.0 ± 0.6) %	
Γ_{114}	$\quad \overline{K}^*(892)^0 \omega$		(1.1 ± 0.4) %	
Γ_{115}	$K^- \pi^+ \eta'(958)$		$(6.9 \pm 1.8) \times 10^{-3}$	
Γ_{116}	$\quad \overline{K}^*(892)^0 \eta'(958)$		$< 1.0 \times 10^{-3}$	CL=90%
Γ_{117}	$K^- \pi^+ \phi$		$(3.3 \pm 1.7) \times 10^{-4}$	

Pionic modes

Γ_{118}	$\pi^+ \pi^-$		$(1.43 \pm 0.07) \times 10^{-3}$	
Γ_{119}	$\pi^0 \pi^0$		$(8.4 \pm 2.2) \times 10^{-4}$	
Γ_{120}	$\pi^+ \pi^- \pi^0$		(1.1 ± 0.4) %	
Γ_{121}	$\pi^+ \pi^+ \pi^- \pi^-$		$(7.3 \pm 0.5) \times 10^{-3}$	
Γ_{122}	$\pi^+ \pi^+ \pi^- \pi^- \pi^0$			
Γ_{123}	$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^-$			

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

Γ_{124}	$K^+ K^-$		$(4.12 \pm 0.14) \times 10^{-3}$	
Γ_{125}	$K^0 \overline{K}^0$		$(7.1 \pm 1.9) \times 10^{-4}$	S=1.2
Γ_{126}	$K^0 K^- \pi^+$		$(6.9 \pm 1.0) \times 10^{-3}$	S=1.1
Γ_{127}	$\quad \overline{K}^*(892)^0 K^0 \times B(\overline{K}^{*0} \to K^- \pi^+)$		$< 1.1 \times 10^{-3}$	CL=90%
Γ_{128}	$\quad K^*(892)^+ K^- \times B(K^{*+} \to K^0 \pi^+)$		$(2.5 \pm 0.5) \times 10^{-3}$	
Γ_{129}	$\quad K^0 K^- \pi^+$ nonresonant		$(2.3 \pm 2.3) \times 10^{-3}$	
Γ_{130}	$\overline{K}^0 K^+ \pi^-$		$(5.2 \pm 1.0) \times 10^{-3}$	
Γ_{131}	$\quad K^*(892)^0 \overline{K}^0 \times B(K^{*0} \to K^+ \pi^-)$		$< 6 \times 10^{-4}$	CL=90%
Γ_{132}	$\quad K^*(892)^- K^+ \times B(K^{*-} \to \overline{K}^0 \pi^-)$		$(1.3 \pm 0.7) \times 10^{-3}$	
Γ_{133}	$\quad \overline{K}^0 K^+ \pi^-$ nonresonant		$(3.8 \,{}^{+2.3}_{-1.9}) \times 10^{-3}$	
Γ_{134}	$K^+ K^- \pi^0$		$(1.24 \pm 0.35) \times 10^{-3}$	
Γ_{135}	$K_S^0 K_S^0 \pi^0$		$< 5.9 \times 10^{-4}$	
Γ_{136}	$K^+ K^- \pi^+ \pi^-$	[f]	$(2.49 \pm 0.23) \times 10^{-3}$	
Γ_{137}	$\quad \phi \pi^+ \pi^- \times B(\phi \to K^+ K^-)$		$(5.3 \pm 1.4) \times 10^{-4}$	
Γ_{138}	$\quad\quad \phi \rho^0 \times B(\phi \to K^+ K^-)$		$(2.9 \pm 1.5) \times 10^{-4}$	
Γ_{139}	$\quad K^+ K^- \rho^0$ 3-body		$(9.0 \pm 2.3) \times 10^{-4}$	

Γ_{140}	$K^*(892)^0 K^- \pi^+$+c.c. $\times$ B($K^{*0} \to K^+\pi^-$)	[g]	$<$ 5	$\times 10^{-4}$	
Γ_{141}	$K^*(892)^0 \overline{K}^*(892)^0$ $\times$ B^2($K^{*0} \to K^+\pi^-$)		(6 ±2)	$\times 10^{-4}$	
Γ_{142}	$K^+ K^- \pi^+ \pi^-$ non-ϕ				
Γ_{143}	$K^+ K^- \pi^+ \pi^-$ nonresonant		$<$ 8	$\times 10^{-4}$	CL=90%
Γ_{144}	$K^0 \overline{K}^0 \pi^+ \pi^-$		(7.5 ±2.9)	$\times 10^{-3}$	
Γ_{145}	$K^+ K^- \pi^+ \pi^- \pi^0$		(3.1 ±2.0)	$\times 10^{-3}$	

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

Γ_{146}	$\overline{K}^*(892)^0 K^0$		$<$ 1.7	$\times 10^{-3}$	CL=90%
Γ_{147}	$K^*(892)^+ K^-$		(3.8 ±0.8)	$\times 10^{-3}$	
Γ_{148}	$K^*(892)^0 \overline{K}^0$		$<$ 9	$\times 10^{-4}$	CL=90%
Γ_{149}	$K^*(892)^- K^+$		(2.0 ±1.1)	$\times 10^{-3}$	
Γ_{150}	$\phi\pi^0$		$<$ 1.4	$\times 10^{-3}$	CL=90%
Γ_{151}	$\phi\eta$		$<$ 2.8	$\times 10^{-3}$	CL=90%
Γ_{152}	$\phi\omega$		$<$ 2.1	$\times 10^{-3}$	CL=90%
Γ_{153}	$\phi\pi^+\pi^-$		(1.07±0.28)	$\times 10^{-3}$	
Γ_{154}	$\phi\rho^0$		(5.7 ±3.0)	$\times 10^{-4}$	
Γ_{155}	$\phi\pi^+\pi^-$ 3-body		(7 ±5)	$\times 10^{-4}$	
Γ_{156}	$K^*(892)^0 K^- \pi^+$+ c.c.	[g]	$<$ 7	$\times 10^{-4}$	CL=90%
Γ_{157}	$K^*(892)^0 K^- \pi^+$				
Γ_{158}	$\overline{K}^*(892)^0 K^+ \pi^-$				
Γ_{159}	$K^*(892)^0 \overline{K}^*(892)^0$		(1.4 ±0.5)	$\times 10^{-3}$	

Radiative modes

Γ_{160}	$\rho^0\gamma$		$<$ 2.4	$\times 10^{-4}$	CL=90%
Γ_{161}	$\omega\gamma$		$<$ 2.4	$\times 10^{-4}$	CL=90%
Γ_{162}	$\phi\gamma$		$<$ 1.9	$\times 10^{-4}$	CL=90%
Γ_{163}	$\overline{K}^*(892)^0\gamma$		$<$ 7.6	$\times 10^{-4}$	CL=90%

Doubly Cabibbo suppressed (*DC*) modes, $\Delta C = 2$ forbidden via mixing (*C2M*) modes, $\Delta C = 1$ weak neutral current (*C1*) modes, Lepton Family number (*LF*) violating modes, or Lepton number (*L*) violating modes

Γ_{164}	$K^+ \ell^- \overline{\nu}_\ell$ (via $\overline{D}^0$)	*C2M*	$<$ 1.7	$\times 10^{-4}$	CL=90%
Γ_{165}	$K^+\pi^-$	*DC*	(1.48±0.21)	$\times 10^{-4}$	
Γ_{166}	$K^+\pi^-$ (via $\overline{D}^0$)	*C2M*	$<$ 1.6	$\times 10^{-5}$	CL=95%
Γ_{167}	$K^+\pi^-\pi^0$		(5.6 ±1.7)	$\times 10^{-4}$	
Γ_{168}	$K^+\pi^-\pi^+\pi^-$	*DC*	(3.1 ±1.0)	$\times 10^{-4}$	
Γ_{169}	$K^+\pi^-\pi^+\pi^-$ (via $\overline{D}^0$)	*C2M*	$<$ 4	$\times 10^{-4}$	CL=90%
Γ_{170}	$K^+\pi^-$ or $K^+\pi^-\pi^+\pi^-$ (via $\overline{D}^0$)		$<$ 1.0	$\times 10^{-3}$	CL=90%

Γ_{171}	μ^- anything (via $\overline{D}^0$)	*C2M*		$<$	4	$\times 10^{-4}$	CL=90%
Γ_{172}	$e^+ e^-$	*C1*		$<$	6.2	$\times 10^{-6}$	CL=90%
Γ_{173}	$\mu^+ \mu^-$	*C1*		$<$	4.1	$\times 10^{-6}$	CL=90%
Γ_{174}	$\pi^0 e^+ e^-$	*C1*		$<$	4.5	$\times 10^{-5}$	CL=90%
Γ_{175}	$\pi^0 \mu^+ \mu^-$	*C1*		$<$	1.8	$\times 10^{-4}$	CL=90%
Γ_{176}	$\eta e^+ e^-$	*C1*		$<$	1.1	$\times 10^{-4}$	CL=90%
Γ_{177}	$\eta \mu^+ \mu^-$	*C1*		$<$	5.3	$\times 10^{-4}$	CL=90%
Γ_{178}	$\pi^+ \pi^- e^+ e^-$	*C1*		$<$	3.73	$\times 10^{-4}$	CL=90%
Γ_{179}	$\rho^0 e^+ e^-$	*C1*		$<$	1.0	$\times 10^{-4}$	CL=90%
Γ_{180}	$\pi^+ \pi^- \mu^+ \mu^-$	*C1*		$<$	3.0	$\times 10^{-5}$	CL=90%
Γ_{181}	$\rho^0 \mu^+ \mu^-$	*C1*		$<$	2.2	$\times 10^{-5}$	CL=90%
Γ_{182}	$\omega e^+ e^-$	*C1*		$<$	1.8	$\times 10^{-4}$	CL=90%
Γ_{183}	$\omega \mu^+ \mu^-$	*C1*		$<$	8.3	$\times 10^{-4}$	CL=90%
Γ_{184}	$K^- K^+ e^+ e^-$	*C1*		$<$	3.15	$\times 10^{-4}$	CL=90%
Γ_{185}	$\phi e^+ e^-$	*C1*		$<$	5.2	$\times 10^{-5}$	CL=90%
Γ_{186}	$K^- K^+ \mu^+ \mu^-$	*C1*		$<$	3.3	$\times 10^{-5}$	CL=90%
Γ_{187}	$\phi \mu^+ \mu^-$	*C1*		$<$	3.1	$\times 10^{-5}$	CL=90%
Γ_{188}	$\overline{K}^0 e^+ e^-$		[*h*]	$<$	1.1	$\times 10^{-4}$	CL=90%
Γ_{189}	$\overline{K}^0 \mu^+ \mu^-$		[*h*]	$<$	2.6	$\times 10^{-4}$	CL=90%
Γ_{190}	$K^- \pi^+ e^+ e^-$	*C1*		$<$	3.85	$\times 10^{-4}$	CL=90%
Γ_{191}	$\overline{K}^*(892)^0 e^+ e^-$		[*h*]	$<$	4.7	$\times 10^{-5}$	CL=90%
Γ_{192}	$K^- \pi^+ \mu^+ \mu^-$	*C1*		$<$	3.59	$\times 10^{-4}$	CL=90%
Γ_{193}	$\overline{K}^*(892)^0 \mu^+ \mu^-$		[*h*]	$<$	2.4	$\times 10^{-5}$	CL=90%
Γ_{194}	$\pi^+ \pi^- \pi^0 \mu^+ \mu^-$	*C1*		$<$	8.1	$\times 10^{-4}$	CL=90%
Γ_{195}	$\mu^\pm e^\mp$	*LF*	[*i*]	$<$	8.1	$\times 10^{-6}$	CL=90%
Γ_{196}	$\pi^0 e^\pm \mu^\mp$	*LF*	[*i*]	$<$	8.6	$\times 10^{-5}$	CL=90%
Γ_{197}	$\eta e^\pm \mu^\mp$	*LF*	[*i*]	$<$	1.0	$\times 10^{-4}$	CL=90%
Γ_{198}	$\pi^+ \pi^- e^\pm \mu^\mp$	*LF*	[*i*]	$<$	1.5	$\times 10^{-5}$	CL=90%
Γ_{199}	$\rho^0 e^\pm \mu^\mp$	*LF*	[*i*]	$<$	4.9	$\times 10^{-5}$	CL=90%
Γ_{200}	$\omega e^\pm \mu^\mp$	*LF*	[*i*]	$<$	1.2	$\times 10^{-4}$	CL=90%
Γ_{201}	$K^- K^+ e^\pm \mu^\mp$	*LF*	[*i*]	$<$	1.8	$\times 10^{-4}$	CL=90%
Γ_{202}	$\phi e^\pm \mu^\mp$	*LF*	[*i*]	$<$	3.4	$\times 10^{-5}$	CL=90%
Γ_{203}	$\overline{K}^0 e^\pm \mu^\mp$	*LF*	[*i*]	$<$	1.0	$\times 10^{-4}$	CL=90%
Γ_{204}	$K^- \pi^+ e^\pm \mu^\mp$	*LF*	[*i*]	$<$	5.53	$\times 10^{-4}$	CL=90%
Γ_{205}	$\overline{K}^*(892)^0 e^\pm \mu^\mp$	*LF*	[*i*]	$<$	8.3	$\times 10^{-5}$	CL=90%
Γ_{206}	$\pi^- \pi^- e^+ e^+ +$ c.c.	*L*		$<$	1.12	$\times 10^{-4}$	CL=90%
Γ_{207}	$\pi^- \pi^- \mu^+ \mu^+ +$ c.c.	*L*		$<$	2.9	$\times 10^{-5}$	CL=90%
Γ_{208}	$K^- \pi^- e^+ e^+ +$ c.c.	*L*		$<$	2.06	$\times 10^{-4}$	CL=90%
Γ_{209}	$K^- \pi^- \mu^+ \mu^+ +$ c.c.	*L*		$<$	3.9	$\times 10^{-4}$	CL=90%
Γ_{210}	$K^- K^- e^+ e^+ +$ c.c.	*L*		$<$	1.52	$\times 10^{-4}$	CL=90%
Γ_{211}	$K^- K^- \mu^+ \mu^+ +$ c.c.	*L*		$<$	9.4	$\times 10^{-5}$	CL=90%
Γ_{212}	$\pi^- \pi^- e^+ \mu^+ +$ c.c.	*L*		$<$	7.9	$\times 10^{-5}$	CL=90%
Γ_{213}	$K^- \pi^- e^+ \mu^+ +$ c.c.	*L*		$<$	2.18	$\times 10^{-4}$	CL=90%
Γ_{214}	$K^- K^- e^+ \mu^+ +$ c.c.	*L*		$<$	5.7	$\times 10^{-5}$	CL=90%

Γ_{215}	A dummy mode used by the fit.	(11.5 ± 3.4) %	S=1.1

[*a*] The exclusive e^+ modes $K^- e^+ \nu_e$, $K^- \pi^0 e^+ \nu_e$, $\overline{K}^0 \pi^- e^+ \nu_e$ and $\pi^- e^+ \nu_e$ are constrained to equal this (well-measured) inclusive fraction.

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

[*c*] This value averages the e^+ and μ^+ branching fractions, after making a small phase-space adjustment to the μ^+ fraction to be able to use it as an e^+ fraction; hence our ℓ^+ here is really an e^+.

[*d*] 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.

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

[*f*] The experiments on the division of this charge mode amongst its submodes disagree, and the submode branching fractions here add up to considerably more than the charged-mode fraction.

[*g*] However, these upper limits are in serious disagreement with values obtained in another experiment.

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

[*i*] The value is for the sum of the charge states or particle/antiparticle states indicated.

CONSTRAINED FIT INFORMATION

An overall fit to 56 branching ratios uses 125 measurements and one constraint to determine 31 parameters. The overall fit has a $\chi^2 = 60.0$ for 95 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_2	x_9	x_{10}	x_{11}	x_{12}	x_{18}	x_{19}	x_{20}	x_{21}	x_{22}
x_9	6									
x_{10}	31	19								
x_{11}	0	−8	−1							
x_{12}	−1	−15	−3	−91						
x_{18}	1	24	5	−4	−8					
x_{19}	1	10	3	−1	−1	2				
x_{20}	13	45	42	−3	−7	11	8			
x_{21}	1	6	5	0	−1	1	17	11		
x_{22}	2	10	7	−1	−1	2	28	18	58	
x_{30}	3	11	9	−1	−2	3	9	22	21	30
x_{42}	5	18	17	−1	−3	4	3	40	5	8
x_{51}	1	4	3	0	−1	1	12	8	25	42
x_{60}	3	9	8	−1	−1	2	2	19	2	3
x_{69}	1	4	3	0	−1	1	11	7	22	38
x_{74}	1	4	3	0	−1	1	11	7	54	40
x_{77}	1	3	2	0	0	1	9	5	18	30
x_{79}	1	5	4	0	−1	1	15	9	30	51
x_{84}	2	8	7	−1	−1	2	18	16	37	62
x_{85}	1	5	4	0	−1	1	5	10	19	18
x_{87}	1	3	3	0	0	1	1	7	1	1
x_{91}	1	2	2	0	0	0	1	4	2	4
x_{102}	0	2	2	0	0	0	5	4	9	16
x_{106}	1	3	2	0	0	1	7	5	15	25
x_{112}	1	3	3	0	0	1	2	6	5	7
x_{124}	9	31	29	−2	−5	7	5	68	7	12
x_{125}	0	2	2	0	0	0	6	4	12	21
x_{126}	1	4	4	0	−1	1	10	8	20	33
x_{130}	1	4	3	0	−1	1	7	7	14	23
x_{147}	1	3	2	0	0	1	7	5	15	25
x_{215}	−28	−17	−24	0	1	−4	−29	−34	−47	−67

x_{42}	9									
x_{51}	13	4								
x_{60}	4	28	2							
x_{69}	11	3	16	1						
x_{74}	14	3	17	1	15					
x_{77}	9	3	39	1	11	12				
x_{79}	15	4	21	2	−3	21	15			
x_{84}	43	7	26	3	24	25	19	32		
x_{85}	44	4	8	2	7	11	6	9	22	
x_{87}	2	18	1	5	1	1	0	1	1	1
x_{91}	2	10	8	3	1	2	3	2	3	1
x_{102}	5	4	37	1	6	6	15	8	10	3
x_{106}	12	2	11	1	10	10	8	13	17	6
x_{112}	23	2	3	1	3	3	2	4	10	10
x_{124}	15	27	5	13	5	5	4	6	11	7
x_{125}	6	2	9	1	8	8	6	11	13	4
x_{126}	10	4	14	2	13	13	10	17	21	6
x_{130}	8	3	10	1	9	9	7	12	15	5
x_{147}	8	2	11	1	10	10	8	13	16	5
x_{215}	−56	−27	−66	−20	−27	−33	−42	−36	−59	−37
	x_{30}	x_{42}	x_{51}	x_{60}	x_{69}	x_{74}	x_{77}	x_{79}	x_{84}	x_{85}

x_{91}	2									
x_{102}	1	3								
x_{106}	0	1	4							
x_{112}	0	0	1	3						
x_{124}	5	3	3	4	4					
x_{125}	0	1	3	5	1	2				
x_{126}	1	1	5	8	2	6	7			
x_{130}	1	1	4	6	2	5	5	8		
x_{147}	0	1	4	6	2	4	5	8	6	
x_{215}	−14	−23	−33	−25	−26	−23	−14	−26	−19	−19
	x_{87}	x_{91}	x_{102}	x_{106}	x_{112}	x_{124}	x_{125}	x_{126}	x_{130}	x_{147}

D^0 BRANCHING RATIOS

See the "Note on D Mesons" in the $D^{\pm}$ Listings.

Some older now obsolete results have been omitted from these Listings.

Inclusive modes

$\Gamma(e^+ \text{anything})/\Gamma_{total}$ — $\Gamma_1/\Gamma = (\Gamma_9+\Gamma_{11}+\Gamma_{12}+\Gamma_{18})/\Gamma$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0687±0.0028 OUR FIT					
0.0675±0.0029 OUR AVERAGE					
0.069 ±0.003 ±0.005	1670	ALBRECHT	96C	ARG	$e^+e^- \approx$ 10 GeV
0.0664±0.0018±0.0029	4609	[17] KUBOTA	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.075 ±0.011 ±0.004	137	BALTRUSAIT...	85B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.15 ±0.05		AGUILAR-...	87E	HYBR	πp, $p p$ 360, 400 GeV
0.055 ±0.037	12	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[17] KUBOTA 96B uses $D^{*+} \rightarrow D^0\pi^+$ (and charge conjugate) events in which the D^0 subsequently decays to $X e^+ \nu_e$.

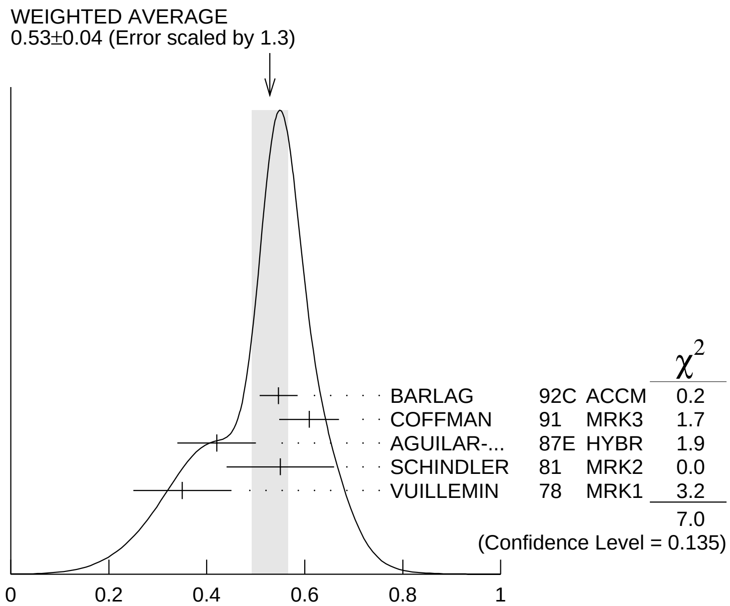
$\Gamma(\mu^+ \text{anything})/\Gamma_{total}$ — Γ_2/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.065±0.008 OUR FIT					
0.060±0.007±0.012	310	ALBRECHT	96C	ARG	$e^+e^- \approx$ 10 GeV

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.53 ±0.04 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.					
$0.546^{+0.039}_{-0.038}$		[18] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.609±0.032±0.052		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
0.42 ±0.08		AGUILAR-...	87E	HYBR	πp, $p p$ 360, 400 GeV
0.55 ±0.11	121	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.35 ±0.10	19	VUILLEMIN	78	MRK1	e^+e^- 3.772 GeV

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



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

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

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.42 ±0.05 OUR AVERAGE					
0.455±0.050±0.032		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
0.29 ±0.11	13	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.57 ±0.26	6	VUILLEMIN	78	MRK1	e^+e^- 3.772 GeV

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

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{0.034^{+0.006}_{-0.004}}$ **OUR AVERAGE**					
$0.034^{+0.007}_{-0.005}$		[19] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.028±0.009±0.004		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
$0.03^{+0.05}_{-0.02}$		AGUILAR-...	87E	HYBR	πp, $p p$ 360, 400 GeV
0.08 ±0.03	25	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

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

$\Gamma\left(\phi \text{ anything}\right)/\Gamma_{\text{total}}$ — Γ_7/Γ

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{0.0171^{+0.0076}_{-0.0071}\pm0.0017}$	9	[20] BAI	00C	BES	$e^+e^- \rightarrow D\overline{D}^*$, $D^*\overline{D}^*$

[20] BAI 00C finds the average (ϕ anything) branching fraction for the 4.03-GeV mix of D^+ and D^0 mesons to be (1.34 ± 0.52 ± 0.12)%.

Semileptonic modes

$\Gamma(K^- \ell^+ \nu_\ell)/\Gamma_{total}$ — Γ_8/Γ

We average our $K^- e^+ \nu_e$ and $K^- \mu^+ \nu_\mu$ branching fractions, after multiplying the latter by a phase-space factor of 1.03 to be able to use it with the $K^- e^+ \nu_e$ fraction. Hence our ℓ^+ here is really an e^+.

VALUE	DOCUMENT ID		COMMENT
0.0343±0.0015 OUR AVERAGE	Error includes scale factor of 1.2.		
0.0359±0.0018	PDG	02	Our $\Gamma(K^- e^+ \nu_e)/\Gamma_{total}$
0.0329±0.0017	PDG	02	1.03 × our $\Gamma(K^- \mu^+ \nu_\mu)/\Gamma_{total}$

$\Gamma(K^- e^+ \nu_e)/\Gamma_{total}$ — Γ_9/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0358±0.0018 OUR FIT	Error includes scale factor of 1.1.				
0.034 ±0.005 ±0.004	55	ADLER	89	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^- e^+ \nu_e)/\Gamma(K^- \pi^+)$ — Γ_9/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.94 ±0.04 OUR FIT					
0.95 ±0.04 OUR AVERAGE					
0.978±0.027±0.044	2510	[21] BEAN	93C	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.90 ±0.06 ±0.06	584	[22] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.91 ±0.07 ±0.11	250	[23] ANJOS	89F	E691	Photoproduction

[21] BEAN 93C uses $K^- \mu^+ \nu_\mu$ as well as $K^- e^+ \nu_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events. A pole mass of $2.00 \pm 0.12 \pm 0.18$ GeV/c^2 is obtained from the q^2 dependence of the decay rate.

[22] CRAWFORD 91B uses $K^- e^+ \nu_e$ and $K^- \mu^+ \nu_\mu$ candidates to measure a pole mass of $2.1^{+0.4}_{-0.2}{}^{+0.3}_{-0.2}$ GeV/c^2 from the q^2 dependence of the decay rate.

[23] ANJOS 89F measures a pole mass of $2.1^{+0.4}_{-0.2} \pm 0.2$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(K^- \pi^+)$ — Γ_{10}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.84 ±0.04 OUR FIT					
0.84 ±0.04 OUR AVERAGE					
0.852±0.034±0.028	1897	[24] FRABETTI	95G	E687	γ Be $\overline{E}_\gamma$= 220 GeV
0.82 ±0.13 ±0.13	338	[25] FRABETTI	93I	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.79 ±0.08 ±0.09	231	[26] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV

[24] FRABETTI 95G extracts the ratio of form factors $f_-(0)/f_+(0) = -1.3^{+3.6}_{-3.4} \pm 0.6$, and measures a pole mass of $1.87^{+0.11}_{-0.08}{}^{+0.07}_{-0.06}$ GeV/c^2 from the q^2 dependence of the decay rate.

[25] FRABETTI 93I measures a pole mass of $2.1^{+0.7}_{-0.3}{}^{+0.7}_{-0.3}$ GeV/c^2 from the q^2 dependence of the decay rate.

[26] CRAWFORD 91B measures a pole mass of $2.00 \pm 0.12 \pm 0.18$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(\mu^+ \text{anything})$ — Γ_{10}/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.49 ±0.06 OUR FIT					
0.472±0.051±0.040	232	KODAMA	94	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32 ±0.05 ±0.05	124	KODAMA	91	EMUL	pA 800 GeV

$\Gamma(K^- \pi^0 e^+ \nu_e)/\Gamma_{\text{total}}$ — Γ_{11}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.011^{+0.008}_{-0.006}}$ **OUR FIT** Error includes scale factor of 1.6.					
$\mathbf{0.016^{+0.013}_{-0.005}\pm0.002}$	4	[27] BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

[27] BAI 91 finds that a fraction $0.79^{+0.15}_{-0.17}{}^{+0.09}_{-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+\nu_e$ (24 events) are $\overline{K}^*(892) e^+\nu_e$. BAI 91 uses 56 $K^- e^+\nu_e$ events to measure a pole mass of 1.8 ± 0.3 ± 0.2 GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(\overline{K}^0 \pi^- e^+ \nu_e)/\Gamma_{\text{total}}$ — Γ_{12}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.018±0.008 OUR FIT Error includes scale factor of 1.6.					
$\mathbf{0.028^{+0.017}_{-0.008}\pm0.003}$	6	[28] BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

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

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma(K^- e^+ \nu_e)$ — Γ_{19}/Γ_9

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.60±0.10 OUR FIT				
0.51±0.18±0.06	CRAWFORD	91B	CLEO	$e^+e^- \approx$ 10.5 GeV

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{19}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.36±0.06 OUR FIT					
0.38±0.06±0.03	152	[29] BEAN	93C	CLE2	$e^+e^- \approx \Upsilon(4S)$

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

$\Gamma(K^*(892)^- \ell^+ \nu_\ell)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{14}/Γ_{22}

This an average of the $K^*(892)^- e^+\nu_e$ and $K^*(892)^- \mu^+\nu_\mu$ ratios. 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. • • •					
0.24±0.07±0.06	137	[30] ALEXANDER	90B	CLEO	e^+e^- 10.5–11 GeV

[30] ALEXANDER 90B cannot exclude extra π^0's in the final state. See nearby data blocks for more detailed results.

$\Gamma(\overline{K}^*(892)^0\pi^- e^+\nu_e)/\Gamma(K^*(892)^- e^+\nu_e)$ — Γ_{15}/Γ_{19}

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. • • •					
<0.64	90	[31] CRAWFORD	91B	CLEO	$e^+e^- \approx$ 10.5 GeV

[31] The limit on $(\overline{K}^*(892)\pi)^-\ \mu^+\nu_\mu$ below is much stronger.

$\Gamma(K^-\pi^+\pi^-\mu^+\nu_\mu)/\Gamma(K^-\mu^+\nu_\mu)$ — Γ_{16}/Γ_{10}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.037	90	KODAMA	93B	E653	π^- emulsion 600 GeV

$\Gamma((\overline{K}^*(892)\pi)^-\mu^+\nu_\mu)/\Gamma(K^-\mu^+\nu_\mu)$ — Γ_{17}/Γ_{10}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.043	90	[32] KODAMA	93B	E653	π^- emulsion 600 GeV

[32] KODAMA 93B searched in $K^-\pi^+\pi^-\mu^+\nu_\mu$, but the limit includes other $(\overline{K}^*(892)\pi)^-$ charge states.

$\Gamma(\pi^- e^+\nu_e)/\Gamma_{\text{total}}$ — Γ_{18}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0036±0.0006 OUR FIT					
$\mathbf{0.0039^{+0.0023}_{-0.0011}\pm0.0004}$	7	[33] ADLER	89	MRK3	e^+e^- 3.77 GeV

[33] This result of ADLER 89 gives $|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.057^{+0.038}_{-0.015} \pm 0.005$.

$\Gamma(\pi^- e^+\nu_e)/\Gamma(K^- e^+\nu_e)$ — Γ_{18}/Γ_9

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.101±0.017 OUR FIT					
0.101±0.018 OUR AVERAGE					
0.101±0.020±0.003	91	[34] FRABETTI	96B	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.103±0.039±0.013	87	[35] BUTLER	95	CLE2	< 0.156 (90% CL)

[34] FRABETTI 96B uses both e and μ events, and makes a small correction to the μ events to make them effectively e events. This result gives $|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.050\pm0.011\pm0.002$.

[35] BUTLER 95 has 87 ± 33 $\pi^- e^+\nu_e$ events. The result gives $|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.052 \pm 0.020 \pm 0.007$.

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

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

We list measurements *before* radiative corrections are made.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0380±0.0009 OUR FIT					
0.0385±0.0009 OUR AVERAGE					
0.0382±0.0007±0.0012		[36] ARTUSO	98	CLE2	CLEO average
0.0390±0.0009±0.0012	5392	[37] BARATE	97C	ALEP	From Z decays
0.045 ±0.006 ±0.004		[38] ALBRECHT	94	ARG	$e^+e^- \approx \Upsilon(4S)$
0.0341±0.0012±0.0028	1173	[37] ALBRECHT	94F	ARG	$e^+e^- \approx \Upsilon(4S)$

0.0362±0.0034±0.0044		[37] DECAMP	91J	ALEP	From Z decays
0.045 ±0.008 ±0.005	56	[37] ABACHI	88	HRS	e^+e^- 29 GeV
0.042 ±0.004 ±0.004	930	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.041 ±0.006	263	[39] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.043 ±0.010	130	[40] PERUZZI	77	MRK1	e^+e^- 3.77 GeV

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

0.0381±0.0015±0.0016	1165	[41] ARTUSO	98	CLE2	e^+e^- at $\Upsilon(4S)$
0.0369±0.0011±0.0016		[42] COAN	98	CLE2	
0.0391±0.0008±0.0017	4208	[37,43] AKERIB	93	CLE2	$e^+e^- \approx \Upsilon(4S)$

[36] This combines the CLEO results of ARTUSO 98, COAN 98, and AKERIB 93.

[37] ABACHI 88, DECAMP 91J, AKERIB 93, ALBRECHT 94F, and BARATE 97C use $D^*(2010)^+ \rightarrow D^0\pi^+$ decays. The π^+ is both slow and of low p_T with respect to the event thrust axis or nearest jet ($\approx D^{*+}$ direction). The excess number of such π^+'s over background gives the number of $D^*(2010)^+ \rightarrow D^0\pi^+$ events, and the fraction with $D^0 \rightarrow K^-\pi^+$ gives the $D^0 \rightarrow K^-\pi^+$ branching fraction.

[38] ALBRECHT 94 uses D^0 mesons from $\overline{B}^0 \rightarrow D^{*+}\ell^-\overline{\nu}_\ell$ decays. This is a different set of events than used by ALBRECHT 94F.

[39] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.24 ± 0.02 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[40] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.25 ± 0.05 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[41] ARTUSO 98, following ALBRECHT 94, uses D^0 mesons from $\overline{B}^0 \rightarrow D^*(2010)^+ X\ell^-\overline{\nu}_\ell$ decays. Our average uses the CLEO average of this value with the values of COAN 98 and AKERIB 93.

[42] COAN 98 assumes that $\Gamma(B \rightarrow \overline{D}X\ell^+\nu)/\Gamma(B \rightarrow X\ell^+\nu) = 1.0 - 3|V_{ub}/V_{cb}|^2 - 0.010 \pm 0.005$, the last term accounting for $\overline{B} \rightarrow D_s^+ K X\ell^-\overline{\nu}$. COAN 98 is included in the CLEO average in ARTUSO 98.

[43] This AKERIB 93 value does not include radiative corrections; with them, the value is $0.0395 \pm 0.0008 \pm 0.0017$. AKERIB 93 is included in the CLEO average in ARTUSO 98.

$\Gamma(\overline{K}^0\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{21}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.60±0.06 OUR FIT					
1.36±0.23±0.22	119	ANJOS	92B	E691	γBe 80–240 GeV

$\Gamma(\overline{K}^0\pi^0)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{21}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.385±0.031 OUR FIT					
0.378±0.033 OUR AVERAGE					
0.44 ±0.02 ±0.05	1942	PROCARIO	93B	CLE2	e^+e^- 10.36–10.7 GeV
0.34 ±0.04 ±0.02	92	[44] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.36 ±0.04 ±0.08	104	KINOSHITA	91	CLEO	$e^+e^- \sim 10.7$ GeV

[44] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^0 \pi^+ \pi^-)/\Gamma_{total}$ — Γ_{22}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0592±0.0035 OUR FIT Error includes scale factor of 1.1.					
0.055 ±0.005 OUR AVERAGE					
0.0503±0.0039±0.0049	284	[45] ALBRECHT	94F	ARG	$e^+ e^- \approx \Upsilon(4S)$
0.064 ±0.005 ±0.010		ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV
0.052 ±0.016	32	[46] SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV
0.079 ±0.023	28	[47] PERUZZI	77	MRK1	$e^+ e^-$ 3.77 GeV

[45] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^- \pi^+)/\Gamma_{total}$ for the method used.

[46] SCHINDLER 81 (MARK-2) measures $\sigma(e^+ e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.30 ± 0.08 nb. We use the MARK-3 (ADLER 88C) value of σ = 5.8 ± 0.5 ± 0.6 nb.

[47] PERUZZI 77 (MARK-1) measures $\sigma(e^+ e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.46 ± 0.12 nb. We use the MARK-3 (ADLER 88C) value of σ = 5.8 ± 0.5 ± 0.6 nb.

$\Gamma(\overline{K}^0 \pi^+ \pi^-)/\Gamma(K^- \pi^+)$ — Γ_{22}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.56±0.09 OUR FIT Error includes scale factor of 1.1.					
1.65±0.17 OUR AVERAGE					
1.61±0.10±0.15	856	FRABETTI	94J	E687	γ Be $\overline{E}_\gamma$=220 GeV
1.7 ±0.8	35	AVERY	80	SPEC	$\gamma N \rightarrow D^{*+}$
2.8 ±1.0	116	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma(\overline{K}^0 \rho^0)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{23}/Γ_{22}

VALUE	DOCUMENT ID		TECN	COMMENT
0.25 ±0.05 OUR AVERAGE Error includes scale factor of 1.5.				
0.350±0.028±0.067	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.227±0.032±0.009	ALBRECHT	93D	ARG	$e^+ e^- \approx$ 10 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.215±0.051±0.037	ANJOS	93	E691	γ Be 90–260 GeV
0.20 ±0.06 ±0.03	FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.12 ±0.01 ±0.07	ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^0 f_0(980) \times B(f_0 \rightarrow \pi^+ \pi^-))/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{24}/Γ_{22}

This includes only $\pi^+ \pi^-$ decays of the $f_0(980)$, because branching fractions of this resonance are not known.

VALUE	DOCUMENT ID		TECN	COMMENT
0.054±0.015 OUR AVERAGE				
0.068±0.016±0.018	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.046±0.018±0.006	ALBRECHT	93D	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(\overline{K}^0 f_2(1270))/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{82}/Γ_{22}

Unseen decay modes of the $f_2(1270)$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.076±0.028 OUR AVERAGE				
0.065±0.025±0.030	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.088±0.037±0.014	ALBRECHT	93D	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(\overline{K}^0 f_0(1370) \times B(f_0 \to \pi^+\pi^-))/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{26}/Γ_{22}

This includes only $\pi^+\pi^-$ decays of the $f_0(1370)$, because branching fractions of this resonance are not known.

VALUE	DOCUMENT ID		TECN	COMMENT
0.080±0.024 OUR AVERAGE				
0.077±0.022±0.031	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.082±0.028±0.013	ALBRECHT	93D	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(K^*(892)^-\pi^+)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{84}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.01 ±0.06 OUR FIT Error includes scale factor of 1.4.					
1.00 ±0.07 OUR AVERAGE Error includes scale factor of 1.4.					
0.938±0.054±0.038		FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
1.08 ±0.063±0.045		ALBRECHT	93D	ARG	$e^+e^- \approx$ 10 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.720±0.145±0.185		ANJOS	93	E691	γ Be 90–260 GeV
0.96 ±0.12 ±0.075		FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.84 ±0.06 ±0.08		ADLER	87	MRK3	e^+e^- 3.77 GeV
$1.05\ ^{+0.23}_{-0.26}\ ^{+0.07}_{-0.09}$	25	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

$\Gamma(K_0^*(1430)^-\pi^+)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{106}/Γ_{22}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.20 ±0.04 OUR FIT				
0.19 ±0.05 OUR AVERAGE				
0.176±0.044±0.047	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
0.208±0.055±0.034	ALBRECHT	93D	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(K_2^*(1430)^-\pi^+)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{108}/Γ_{22}

Unseen decay modes of the $\overline{K}_2^*(1430)^-$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.15	90	ALBRECHT	93D	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(\overline{K}^0\pi^+\pi^-$ nonresonant$)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{29}/Γ_{22}

Neither FRABETTI 94G nor ALBRECHT 93D, the most detailed analyses so far, see evidence for a nonresonant component.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.263±0.024±0.041	ANJOS	93	E691	γ Be 90–260 GeV
0.26 ±0.08 ±0.05	FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.33 ±0.05 ±0.10	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^0)/\Gamma_{total}$ Γ_{30}/Γ

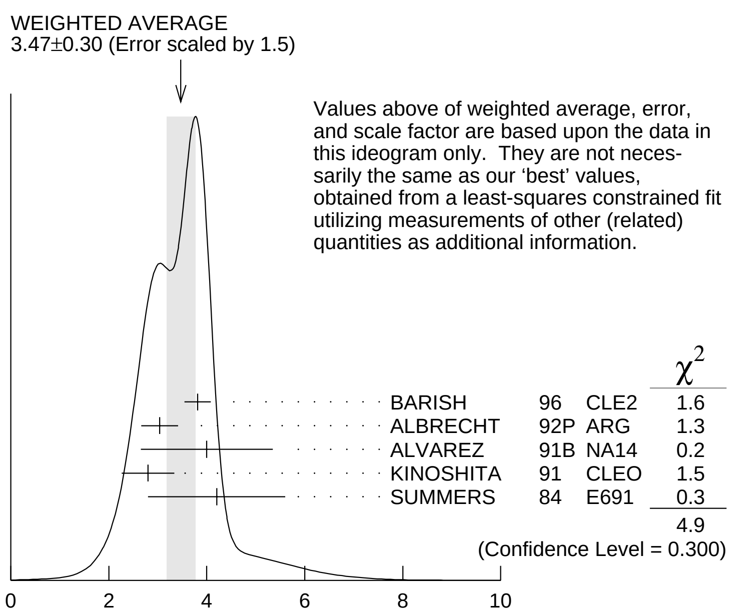
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.131±0.009 OUR FIT Error includes scale factor of 1.3.					
0.131±0.016 OUR AVERAGE					
0.133±0.012±0.013	931	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.117±0.043	37	[48] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[48] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.68 ± 0.23 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^-\pi^+\pi^0)/\Gamma(K^-\pi^+)$ Γ_{30}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
3.44±0.22 OUR FIT Error includes scale factor of 1.3.					
3.47±0.30 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.					
3.81±0.07±0.26	10k	BARISH	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
3.04±0.16±0.34	931	[49] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
4.0 ±0.9 ±1.0	69	ALVAREZ	91B	NA14	Photoproduction
2.8 ±0.14±0.52	1050	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV
4.2 ±1.4	41	SUMMERS	84	E691	Photoproduction

[49] This value is calculated from numbers in Table 1 of ALBRECHT 92P.



$\Gamma\left(K^-\pi^+\pi^0\right)/\Gamma\left(K^-\pi^+\right)$

$\Gamma(K^-\rho^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{31}/Γ_{30}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.78 ±0.04 OUR AVERAGE					
0.788±0.019±0.048		KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV
0.765±0.041±0.054		FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV

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

$0.647 \pm 0.039 \pm 0.150$		ANJOS	93	E691	γ Be 90–260 GeV
$0.81 \pm 0.03 \pm 0.06$		ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV
$0.31 {}^{+0.20}_{-0.14}$	13	SUMMERS	84	E691	Photoproduction
$0.85 {}^{+0.11}_{-0.15} {}^{+0.09}_{-0.10}$	31	SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV

$\Gamma(K^- \rho(1700)^+ \times B(\rho(1700)^+ \to \pi^+ \pi^0))/\Gamma(K^- \pi^+ \pi^0)$ Γ_{32}/Γ_{30}

This only includes $\pi^+ \pi^0$ decays of the $\rho(1700)^+$, because branching fractions of this resonance are not known.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.057 \pm 0.008 \pm 0.009$	KOPP	01	CLE2	$e^+ e^- \approx$ 10.6 GeV

$\Gamma(K^*(892)^- \pi^+)/\Gamma(K^- \pi^+ \pi^0)$ Γ_{84}/Γ_{30}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.46 ± 0.04 OUR FIT Error includes scale factor of 1.2.				
$0.48 {}^{+0.08}_{-0.04}$ OUR AVERAGE				
$0.483 \pm 0.021 {}^{+0.081}_{-0.032}$	KOPP	01	CLE2	$e^+ e^- \approx$ 10.6 GeV
$0.444 \pm 0.084 \pm 0.147$	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.252 \pm 0.033 \pm 0.035$	ANJOS	93	E691	γ Be 90–260 GeV
$0.36 \pm 0.06 \pm 0.09$	ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0 \pi^0)/\Gamma(K^- \pi^+ \pi^0)$ Γ_{85}/Γ_{30}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.214 ± 0.026 OUR FIT Error includes scale factor of 1.1.				
0.204 ± 0.025 OUR AVERAGE				
$0.191 \pm 0.014 \pm 0.024$	KOPP	01	CLE2	$e^+ e^- \approx$ 10.6 GeV
$0.248 \pm 0.047 \pm 0.023$	FRABETTI	94G	E687	γ Be, $\overline{E}_\gamma \approx$ 220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.213 \pm 0.027 \pm 0.035$	ANJOS	93	E691	γ Be 90–260 GeV
$0.20 \pm 0.03 \pm 0.05$	ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K_0^*(1430)^- \pi^+)/\Gamma(K^- \pi^+ \pi^0)$ Γ_{106}/Γ_{30}

Unseen decay modes of the $K_0^*(1430)^-$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.090 ± 0.020 OUR FIT				
$0.107 \pm 0.019 \pm 0.045$	KOPP	01	CLE2	$e^+ e^- \approx$ 10.6 GeV

$\Gamma(\overline{K}_0^*(1430)^0 \pi^0)/\Gamma(K^- \pi^+ \pi^0)$ Γ_{107}/Γ_{30}

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

VALUE	DOCUMENT ID		TECN	COMMENT
$0.066 \pm 0.010 {}^{+0.051}_{-0.014}$	KOPP	01	CLE2	$e^+ e^- \approx$ 10.6 GeV

$\Gamma(K^*(1680)^-\pi^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{110}/Γ_{30}

Unseen decay modes of the $K^*(1680)^-$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.101±0.023±0.033	KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV

$\Gamma(K^-\pi^+\pi^0$ nonresonant$)/\Gamma(K^-\pi^+\pi^0)$ Γ_{38}/Γ_{30}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.080^{+0.038}_{-0.014}$ OUR AVERAGE					
$0.075\pm0.009^{+0.056}_{-0.011}$		KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV
0.101±0.033±0.040		FRABETTI	94G	E687	γBe, $\overline{E}_\gamma \approx$ 220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.036±0.004±0.018		ANJOS	93	E691	γBe 90–260 GeV
0.09 ±0.02 ±0.04		ADLER	87	MRK3	e^+e^- 3.77 GeV
0.51 ±0.22	21	SUMMERS	84	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\pi^0)/\Gamma(\overline{K}^0\pi^0)$ Γ_{85}/Γ_{21}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.23±0.20 OUR FIT Error includes scale factor of 1.2.					
$1.65^{+0.39}_{-0.31}\pm0.20$	122	PROCARIO	93B	CLE2	$\overline{K}^0\pi^0\pi^0$ Dalitz plot

$\Gamma(\overline{K}_2^*(1430)^0\pi^0)/\Gamma(\overline{K}^*(892)^0\pi^0)$ Γ_{109}/Γ_{85}

Unseen decay modes of the $\overline{K}_2^*(1430)^0$ and $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.12	90	PROCARIO	93B	CLE2	$\overline{K}^0\pi^0\pi^0$ Dalitz plot

$\Gamma(\overline{K}^0\pi^0\pi^0$ nonresonant$)/\Gamma(\overline{K}^0\pi^0)$ Γ_{41}/Γ_{21}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.37±0.08±0.04	76	PROCARIO	93B	CLE2	$\overline{K}^0\pi^0\pi^0$ Dalitz plot

$\Gamma(K^-\pi^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{42}/Γ

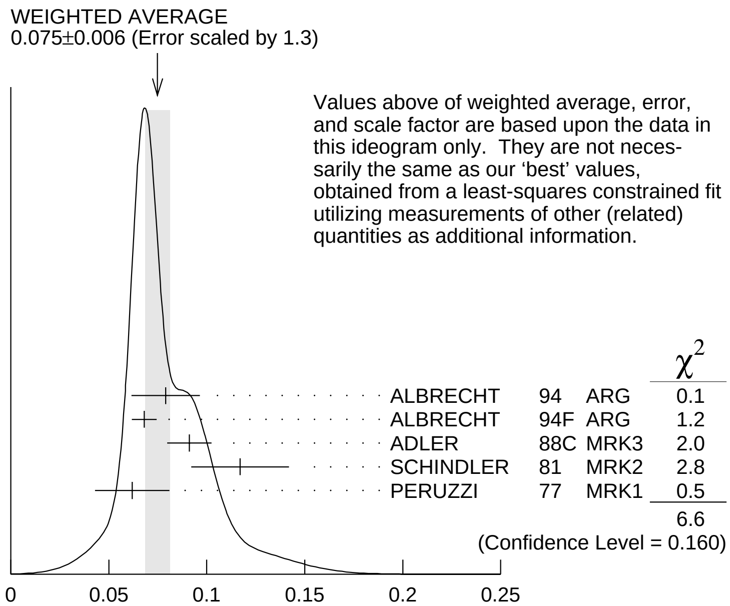
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0746±0.0031 OUR FIT					
0.075 ±0.006 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.					
0.079 ±0.015 ±0.009		[50] ALBRECHT	94	ARG	$e^+e^- \approx \Upsilon(4S)$
0.0680±0.0027±0.0057	1430	[51] ALBRECHT	94F	ARG	$e^+e^- \approx \Upsilon(4S)$
0.091 ±0.008 ±0.008	992	ADLER	88C	MRK3	e^+e^- 3.77 GeV
0.117 ±0.025	185	[52] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
0.062 ±0.019	44	[53] PERUZZI	77	MRK1	e^+e^- 3.77 GeV

[50] ALBRECHT 94 uses D^0 mesons from $\overline{B}^0 \rightarrow D^{*+}\ell^-\overline{\nu}_\ell$ decays. This is a different set of events than used by ALBRECHT 94F.

[51] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^-\pi^+)/\Gamma_{total}$ for the method used.

[52] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.68 ± 0.11 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[53] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.36 ± 0.10 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.



$\Gamma\left(K^- \pi^+ \pi^+ \pi^-\right)/\Gamma_{total}$

$\Gamma(K^-\pi^+\pi^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{42}/Γ_{20}

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.96±0.08 OUR FIT					
1.97±0.09 OUR AVERAGE					
$1.94\pm0.07{}^{+0.09}_{-0.11}$		JUN	00	SELX	Σ^- nucleus, 600 GeV
$1.7\ \pm0.2\ \pm0.2$	1745	ANJOS	92C	E691	γ Be 90–260 GeV
$1.90\pm0.25\pm0.20$	337	ALVAREZ	91B	NA14	Photoproduction
$2.12\pm0.16\pm0.09$		BORTOLETTO	88	CLEO	e^+e^- 10.55 GeV
$2.0\ \pm0.9$	48	BAILEY	86	ACCM	π^- Be fixed target
$2.17\pm0.28\pm0.23$		ALBRECHT	85F	ARG	e^+e^- 10 GeV
$2.0\ \pm1.0$	10	BAILEY	83B	SPEC	π^- Be $\rightarrow$ D^0
$2.2\ \pm0.8$	214	PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV

$\Gamma(K^-\pi^+\rho^0\text{total})/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{43}/Γ_{42}

This includes $K^- a_1(1260)^+$, $\overline{K}^*(892)^0 \rho^0$, etc. The next entry gives the specifically 3-body fraction. We rely on the MARK III and E691 full amplitude analyses of the $K^-\pi^+\pi^+\pi^-$ channel for values of the resonant substructure.

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.835±0.035 OUR AVERAGE				
$0.80\ \pm0.03\ \pm0.05$	ANJOS	92C	E691	γ Be 90–260 GeV
$0.855\pm0.032\pm0.030$	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.98\ \pm0.12\ \pm0.10$	ALVAREZ	91B	NA14	Photoproduction

$\Gamma(K^- \pi^+ \rho^0 \text{3-body})/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{44}/Γ_{42}

We rely on the MARK III and E691 full amplitude analyses of the $K^- \pi^+ \pi^+ \pi^-$ channel for values of the resonant substructure.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.063±0.028 OUR AVERAGE					
0.05 ±0.03 ±0.02		ANJOS	92C	E691	γ Be 90–260 GeV
0.084±0.022±0.04		COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.77 ±0.06 ±0.06		[54] ALVAREZ	91B	NA14	Photoproduction
0.85 $^{+0.11}_{-0.22}$	180	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

[54] This value is for ρ^0 $(K^- \pi^+)$-nonresonant. ALVAREZ 91B cannot determine what fraction of this is $K^- a_1(1260)^+$.

$\Gamma(\overline{K}^*(892)^0 \rho^0)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{90}/Γ_{42}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included. We rely on the MARK III and E691 full amplitude analyses of the $K^- \pi^+ \pi^+ \pi^-$ channel for values of the resonant substructure.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.195±0.03±0.03		ANJOS	92C	E691	γ Be 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.34 ±0.09±0.09		ALVAREZ	91B	NA14	Photoproduction
0.75 ±0.3	5	BAILEY	83B	SPEC	π Be $\rightarrow$ D^0
0.15 $^{+0.16}_{-0.15}$	20	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{transverse})/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{91}/Γ_{42}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.21 ±0.07 OUR FIT				
0.213±0.024±0.075	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \textit{S}\text{-wave})/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{92}/Γ_{42}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.375±0.045±0.06	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \textit{S}\text{-wave long.})/\Gamma_{\text{total}}$ — Γ_{93}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.003	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0 \textit{P}\text{-wave})/\Gamma_{\text{total}}$ — Γ_{94}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.003	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.009	90	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0 \rho^0\ D\text{-wave})/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{95}/Γ_{42}

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

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.255±0.045±0.06	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^- \pi^+ f_0(980))/\Gamma_{\text{total}}$ — Γ_{100}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.011	90	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(\overline{K}^*(892)^0 f_0(980))/\Gamma_{\text{total}}$ — Γ_{101}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.007	90	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K^- a_1(1260)^+)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{80}/Γ_{42}

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*
0.97 ±0.14 OUR AVERAGE				
0.94 ±0.13 ±0.20	ANJOS	92C	E691	γ Be 90–260 GeV
0.984±0.048±0.16	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^- a_2(1320)^+)/\Gamma_{\text{total}}$ — Γ_{83}/Γ

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

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.002	90	ANJOS	92C	E691	γ Be 90–260 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.006	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K_1(1270)^- \pi^+)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{102}/Γ_{42}

Unseen decay modes of the $K_1(1270)^-$ are included. The MARK3 and E691 experiments disagree considerably here.

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.15 ±0.04 OUR FIT					
0.194±0.056±0.088		COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.013	90	ANJOS	92C	E691	γ Be 90–260 GeV

$\Gamma(K_1(1400)^- \pi^+)/\Gamma_{\text{total}}$ — Γ_{103}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.012	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^*(1410)^- \pi^+)/\Gamma_{\text{total}}$ — Γ_{105}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^-\text{total})/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{86}/Γ_{42}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.30±0.06±0.03	ANJOS	92C	E691	γBe 90–260 GeV

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^-\text{3-body})/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{87}/Γ_{42}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.19 ±0.04 OUR FIT				
0.18 ±0.04 OUR AVERAGE				
0.165±0.03 ±0.045	ANJOS	92C	E691	γBe 90–260 GeV
0.210±0.027±0.06	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^+\pi^-\text{nonresonant})/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{50}/Γ_{42}

VALUE	DOCUMENT ID		TECN	COMMENT
0.233±0.032 OUR AVERAGE				
0.23 ±0.02 ±0.03	ANJOS	92C	E691	γBe 90–260 GeV
0.242±0.025±0.06	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.108±0.013 OUR FIT					
0.103±0.022±0.025	140	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.134^{+0.032}_{-0.033}$		[55] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(\overline{K}^0\pi^+\pi^-\pi^0)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{51}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.82±0.20 OUR FIT					
1.86±0.23 OUR AVERAGE					
1.80±0.20±0.21	190	[56] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
2.8 ±0.8 ±0.8	46	ANJOS	92C	E691	γBe 90–260 GeV
1.85±0.26±0.30	158	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[56] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^0\eta)/\Gamma(K^-\pi^+)$ — Γ_{74}/Γ_{20}

Unseen decay modes of the η are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.64	90	ALBRECHT	89D	ARG	e^+e^- 10 GeV

$\Gamma(\overline{K}^0\eta)/\Gamma(\overline{K}^0\pi^0)$ — Γ_{74}/Γ_{21}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.33±0.04 OUR FIT					
0.32±0.04±0.03	225	PROCARIO	93B	CLE2	$\eta \to \gamma\gamma$

$\Gamma(\overline{K}^0\eta)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{74}/Γ_{22}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.129±0.017 OUR FIT					
0.14 ±0.02 ±0.02	80	PROCARIO	93B	CLE2	$\eta \to \pi^+\pi^-\pi^0$

$\Gamma(\overline{K}^0\omega)/\Gamma(K^-\pi^+)$ — Γ_{77}/Γ_{20}

Unseen decay modes of the ω are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.59±0.10 OUR FIT				
1.00±0.36±0.20	ALBRECHT	89D	ARG	e^+e^- 10 GeV

$\Gamma(\overline{K}^0\omega)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{77}/Γ_{22}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.38±0.06 OUR FIT					
0.33±0.09 OUR AVERAGE Error includes scale factor of 1.1.					
0.29±0.08±0.05	16	[57] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.54±0.14±0.16	40	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[57] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^0\omega)/\Gamma(\overline{K}^0\pi^+\pi^-\pi^0)$ — Γ_{77}/Γ_{51}

Unseen decay modes of the ω are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.21 ±0.04 OUR FIT				
0.220±0.048±0.0116	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0\eta'(958))/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{78}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.32±0.04 OUR AVERAGE					
0.31±0.02±0.04	594	PROCARIO	93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$
0.37±0.13±0.06	18	[58] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[58] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^*(892)^-\rho^+)/\Gamma(\overline{K}^0\pi^+\pi^-\pi^0)$ — Γ_{96}/Γ_{51}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.606±0.188±0.126	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^-\rho^+ \text{ longitudinal})/\Gamma(\overline{K}^0\pi^+\pi^-\pi^0)$ — Γ_{97}/Γ_{51}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.290±0.111	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^-\rho^+ \text{ transverse})/\Gamma(\overline{K}^0\pi^+\pi^-\pi^0)$ — Γ_{98}/Γ_{51}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.317±0.180	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^*(892)^- \rho^+ P\text{-wave})/\Gamma_{total}$ — Γ_{99}/Γ

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.015	90	[59] COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

[59] Obtained using other $\overline{K}^*(892)\rho P$-wave limits and isospin relations.

$\Gamma(\overline{K}^*(892)^0 \rho^0 \text{transverse})/\Gamma(\overline{K}^0 \pi^+ \pi^- \pi^0)$ — Γ_{91}/Γ_{51}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.14 ±0.05 OUR FIT				
0.126±0.111	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^0 a_1(1260)^0)/\Gamma_{total}$ — Γ_{81}/Γ

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	CL%	DOCUMENT ID		TECN	COMMENT
<0.019	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K_1(1270)^- \pi^+)/\Gamma(\overline{K}^0 \pi^+ \pi^- \pi^0)$ — Γ_{102}/Γ_{51}

Unseen decay modes of the $K_1(1270)^-$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.105±0.028 OUR FIT				
0.10 ±0.03	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}_1(1400)^0 \pi^0)/\Gamma_{total}$ — Γ_{104}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.037	90	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^*(892)^0 \pi^+ \pi^- \text{3-body})/\Gamma(\overline{K}^0 \pi^+ \pi^- \pi^0)$ — Γ_{87}/Γ_{51}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.131±0.035 OUR FIT Error includes scale factor of 1.1.				
0.191±0.105	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(\overline{K}^0 \pi^+ \pi^- \pi^0 \text{nonresonant})/\Gamma(\overline{K}^0 \pi^+ \pi^- \pi^0)$ — Γ_{58}/Γ_{51}

VALUE	DOCUMENT ID		TECN	COMMENT
0.210±0.147±0.150	COFFMAN	92B	MRK3	$e^+ e^-$ 3.77 GeV

$\Gamma(K^- \pi^+ \pi^0 \pi^0)/\Gamma_{total}$ — Γ_{59}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.177±0.029		[60] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.149±0.037±0.030	24	[61] ADLER	88C	MRK3	$e^+ e^-$ 3.77 GeV
$0.209^{+0.074}_{-0.043}\pm0.012$	9	[60] AGUILAR-...	87F	HYBR	πp, $p p$ 360, 400 GeV

[60] AGUILAR-BENITEZ 87F and BARLAG 92C compute the branching fraction using topological normalization. They do not distinguish the presence of a third π^0, and thus are not included in the average.

[61] ADLER 88C uses an absolute normalization method finding this decay channel opposite a detected $\overline{D}^0 \to K^+ \pi^-$ in pure $D\overline{D}$ events.

$\Gamma(K^-\pi^+\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{60}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.05±0.10 OUR FIT					
0.98±0.11±0.11	225	[62] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[62] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{60}/Γ_{42}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.54±0.05 OUR FIT					
0.56±0.07 OUR AVERAGE					
$0.55\pm0.07^{+0.12}_{-0.09}$	167	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV
0.57±0.06±0.05	180	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^+\pi^-\pi^0)$ — Γ_{111}/Γ_{60}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.45±0.15±0.15	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+)$ — Γ_{112}/Γ_{20}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.46±0.12 OUR FIT					
$\mathbf{0.58\pm0.19^{+0.24}_{-0.28}}$	46	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{112}/Γ_{30}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.135±0.034 OUR FIT					
0.13 ±0.02 ±0.03	214	PROCARIO	93B	CLE2	$\overline{K}^{*0}\eta \to K^-\pi^+/\gamma\gamma$

$\Gamma(K^-\pi^+\omega)/\Gamma(K^-\pi^+)$ — Γ_{113}/Γ_{20}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.78±0.12±0.10	99	[63] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[63] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^*(892)^0\omega)/\Gamma(K^-\pi^+)$ — Γ_{114}/Γ_{20}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.28±0.11±0.04	17	[64] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[64] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^*(892)^0\omega)/\Gamma(K^-\pi^+\pi^+\pi^-\pi^0)$ — Γ_{114}/Γ_{60}

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.44	90	[65] ANJOS	90D	E691	Photoproduction

[65] Recovered from the published limit, $\Gamma(\overline{K}^*(892)^0\omega)/\Gamma_{total}$, in order to make our normalization consistent.

$\Gamma(K^-\pi^+\eta'(958))/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{115}/Γ_{42}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.093±0.014±0.019	286	PROCARIO	93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$

$\Gamma(\overline{K}^*(892)^0\eta'(958))/\Gamma(K^-\pi^+\eta'(958))$ — $\Gamma_{116}/\Gamma_{115}$

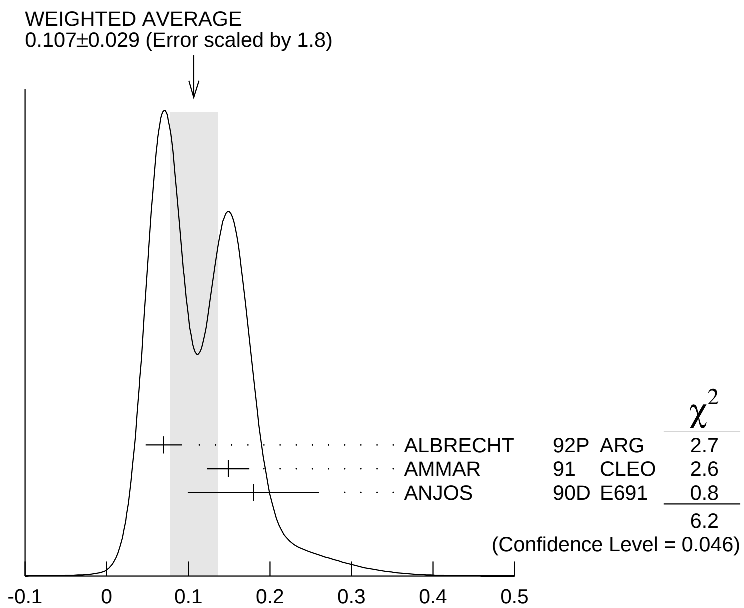
Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN
<0.15	90	PROCARIO	93B	CLE2

$\Gamma(\overline{K}^0\pi^+\pi^+\pi^-\pi^-)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{65}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.107±0.029 OUR AVERAGE	Error includes scale factor of 1.8. See the ideogram below.				
0.07 ±0.02 ±0.01	11	[66] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.149±0.026	56	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
0.18 ±0.07 ±0.04	6	ANJOS	90D	E691	Photoproduction

[66] This value is calculated from numbers in Table 1 of ALBRECHT 92P.



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

$\Gamma(\overline{K}^0\pi^+\pi^-\pi^0\pi^0(\pi^0))/\Gamma_{total}$ — Γ_{66}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.106^{+0.073}_{-0.029}\pm0.006$	4	[67] AGUILAR-...	87F	HYBR	πp, $p p$ 360, 400 GeV

[67] AGUILAR-BENITEZ 87F computes the branching fraction using topological normalization, and does not distinguish the presence of a third π^0.

$\Gamma(\overline{K}^0 K^+ K^-)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — $\Gamma_{67}/\Gamma_{22} = (\Gamma_{69}+\frac{1}{2}\Gamma_{79})/\Gamma_{22}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.172±0.014 OUR FIT					
0.178±0.019 OUR AVERAGE					
0.20 ±0.05 ±0.04	47	FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.170±0.022	136	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.24 ±0.08		BEBEK	86	CLEO	$e^+ e^-$ near $\Upsilon(4S)$
0.185±0.055	52	ALBRECHT	85B	ARG	$e^+ e^-$ 10 GeV

$\Gamma(\overline{K}^0 \phi)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{79}/Γ_{22}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.158±0.016 OUR FIT					
0.156±0.017 OUR AVERAGE					
0.13 ±0.06 ±0.02	13	FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.163±0.023	63	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.155±0.033	56	ALBRECHT	87E	ARG	$e^+ e^-$ 10 GeV
0.14 ±0.05	29	BEBEK	86	CLEO	$e^+ e^-$ near $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.186±0.052	26	ALBRECHT	85B	ARG	See ALBRECHT 87E

$\Gamma(\overline{K}^0 K^+ K^- \text{ non-}\phi)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{69}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.093±0.014 OUR FIT					
0.088±0.019 OUR AVERAGE					
0.11 ±0.04 ±0.03	20	FRABETTI	92B	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.084±0.020		ALBRECHT	87E	ARG	$e^+ e^-$ 10 GeV

$\Gamma(K^0_S K^0_S K^0_S)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{70}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0154±0.0025 OUR AVERAGE					
0.0139±0.0019±0.0024	61	ASNER	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.035 ±0.012 ±0.006	10	FRABETTI	94J	E687	γ Be $\overline{E}_\gamma$=220 GeV
0.016 ±0.005	22	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.017 ±0.007 ±0.005	5	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^+ K^- K^- \pi^+)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{72}/Γ_{42}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0032±0.0009 OUR AVERAGE Error includes scale factor of 1.4.					
0.0054±0.0016±0.0008	18	AITALA	01D	E791	π^- nucleus, 500 GeV
0.0028±0.0007±0.0001	20	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma(K^- \pi^+ \phi)/\Gamma(K^+ K^- K^- \pi^+)$ — Γ_{117}/Γ_{72}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.4±0.6	13	[68] AITALA	01D	E791	π^- nucleus, 500 GeV

[68] This AITALA 01D result is from a projection fit, not a full amplitude analysis.

$\Gamma(K^+ K^- \overline{K}^0 \pi^0)/\Gamma_{total}$ — Γ_{73}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0072^{+0.0048}_{-0.0035}$	[69] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

Pionic modes

$\Gamma(\pi^+ \pi^-)/\Gamma(K^- \pi^+)$ — Γ_{118}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0376±0.0017 OUR AVERAGE	Error includes scale factor of 1.1.				
0.0351±0.0016±0.0017	710	CSORNA	02	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.040 ±0.002 ±0.003	2043	AITALA	98C	E791	π^- nucleus, 500 GeV
0.043 ±0.007 ±0.003	177	FRABETTI	94C	E687	γ Be $\overline{E}_\gamma$= 220 GeV
0.0348±0.0030±0.0023	227	SELEN	93	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.048 ±0.013 ±0.008	51	ADAMOVICH	92	OMEG	π^- 340 GeV
0.055 ±0.008 ±0.005	120	ANJOS	91D	E691	Photoproduction
0.040 ±0.007 ±0.006	57	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV
0.050 ±0.007 ±0.005	110	ALEXANDER	90	CLEO	$e^+ e^-$ 10.5–11 GeV
0.033 ±0.010 ±0.006	39	BALTRUSAIT...	85E	MRK3	$e^+ e^-$ 3.77 GeV
0.033 ±0.015		ABRAMS	79D	MRK2	$e^+ e^-$ 3.77 GeV

$\Gamma(\pi^0 \pi^0)/\Gamma(K^- \pi^+)$ — Γ_{119}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.022±0.004±0.004	40	SELEN	93	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+ \pi^- \pi^0)/\Gamma_{total}$ — Γ_{120}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.011 ±0.004 ±0.002	10	[70] BALTRUSAIT...	85E	MRK3	$e^+ e^-$ 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.0390^{+0.0100}_{-0.0095}$		[71] BARLAG	92C	ACCM	π^- Cu 230 GeV

[70] All the BALTRUSAITIS 85E events are consistent with $\rho^0 \pi^0$.
[71] BARLAG 92C computes the branching fraction using topological normalization. Possible contamination by extra π^0's may partly explain the unexpectedly large value.

$\Gamma(\pi^+ \pi^+ \pi^- \pi^-)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{121}/Γ_{42}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.098±0.006 OUR AVERAGE					
0.095±0.007±0.002	814	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.115±0.023±0.016	64	ADAMOVICH	92	OMEG	π^- 340 GeV
0.108±0.024±0.008	79	FRABETTI	92	E687	γ Be
0.102±0.013	345	[72] AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.096±0.018±0.007	66	ANJOS	91	E691	γ Be 80–240 GeV

[72] AMMAR 91 finds 1.25 ± 0.25 ± 0.25 ρ^0's per $\pi^+ \pi^+ \pi^- \pi^-$ decay, but can't untangle the resonant substructure ($\rho^0 \rho^0$, $a_1^\pm \pi^\mp$, $\rho^0 \pi^+ \pi^-$).

$\Gamma(\pi^+\pi^+\pi^-\pi^-\pi^0)/\Gamma_{total}$ — Γ_{122}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0192^{+0.0041}_{-0.0038}$	[73] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-)/\Gamma_{total}$ — Γ_{123}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0004 ± 0.0003	[74] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

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

$\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ — Γ_{124}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.1083±0.0027 OUR FIT					
0.1084±0.0026 OUR AVERAGE					
0.1040±0.0033±0.0027	1900	CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.003 ±0.003	3317	AITALA	98C	E791	π^- nucleus, 500 GeV
0.116 ±0.007 ±0.007	1102	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.007 ±0.009	581	FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
0.107 ±0.029 ±0.015	103	ADAMOVICH	92	OMEG	π^- 340 GeV
0.138 ±0.027 ±0.010	155	FRABETTI	92	E687	γBe
0.16 ±0.05	34	ALVAREZ	91B	NA14	Photoproduction
0.107 ±0.010 ±0.009	193	ANJOS	91D	E691	Photoproduction
0.10 ±0.02 ±0.01	131	ALBRECHT	90C	ARG	$e^+e^- \approx$ 10 GeV
0.117 ±0.010 ±0.007	249	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV
0.122 ±0.018 ±0.012	118	BALTRUSAIT...	85E	MRK3	e^+e^- 3.77 GeV
0.113 ±0.030		ABRAMS	79D	MRK2	e^+e^- 3.77 GeV

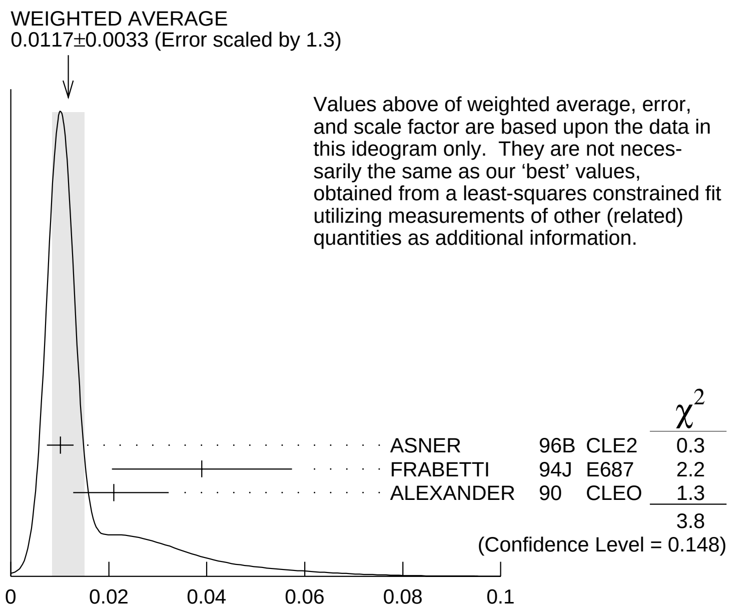
$\Gamma(K^+K^-)/\Gamma(\pi^+\pi^-)$ — $\Gamma_{124}/\Gamma_{118}$

The unused results here are redundant with $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ and $\Gamma(\pi^+\pi^-)/\Gamma(K^-\pi^+)$ measurements by the same experiments.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.96±0.16±0.15	710	CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
2.75±0.15±0.16		AITALA	98C	E791	π^- nucleus, 500 GeV
2.53±0.46±0.19		FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
2.23±0.81±0.46		ADAMOVICH	92	OMEG	π^- 340 GeV
1.95±0.34±0.22		ANJOS	91D	E691	Photoproduction
2.5 ±0.7		ALBRECHT	90C	ARG	$e^+e^- \approx$ 10 GeV
2.35±0.37±0.28		ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(K^0\overline{K}^0)/\Gamma(\overline{K}^0\pi^+\pi^-)$ — Γ_{125}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0120±0.0033 OUR FIT Error includes scale factor of 1.3.					
0.0117±0.0033 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.					
0.0101±0.0022±0.0016	26	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.039 ±0.013 ±0.013	20	FRABETTI	94J	E687	γ Be $\overline{E}_\gamma$=220 GeV
0.021 $^{+0.011}_{-0.008}$ ±0.002	5	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV



$\Gamma\left(K^0\overline{K}^0\right)/\Gamma\left(\overline{K}^0\pi^+\pi^-\right)$

$\Gamma(K^0\overline{K}^0)/\Gamma(K^+K^-)$ — $\Gamma_{125}/\Gamma_{124}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.17±0.05 OUR FIT Error includes scale factor of 1.2.					
0.24±0.16	4	[75] CUMALAT	88	SPEC	nN 0–800 GeV

[75] Includes a correction communicated to us by the authors of CUMALAT 88.

$\Gamma(K^0K^-\pi^+)/\Gamma(K^-\pi^+)$ — Γ_{126}/Γ_{20}

VALUE	DOCUMENT ID		TECN	COMMENT
0.182±0.027 OUR FIT Error includes scale factor of 1.1.				
0.16 ±0.06	[76] ANJOS	91	E691	γ Be 80–240 GeV

[76] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^0 K^- \pi^+)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{126}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.117±0.017 OUR FIT Error includes scale factor of 1.1.					
0.119±0.021 OUR AVERAGE Error includes scale factor of 1.3.					
0.108±0.019	61	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.16 ±0.03 ±0.02	39	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(\overline{K}^*(892)^0 K^0)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{146}/Γ_{22}

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.029	90	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.03	90	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^*(892)^+ K^-)/\Gamma(K^- \pi^+)$ — Γ_{147}/Γ_{20}

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.099±0.021 OUR FIT				
$0.16^{+0.08}_{-0.06}$	[77] ANJOS	91	E691	γBe 80–240 GeV

[77] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^*(892)^+ K^-)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{147}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.064±0.013 OUR FIT					
0.058±0.014 OUR AVERAGE					
0.064±0.018	23	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.05 ±0.02 ±0.01	15	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^0 K^- \pi^+ \text{nonresonant})/\Gamma(K^- \pi^+)$ — Γ_{129}/Γ_{20}

VALUE	DOCUMENT ID		TECN	COMMENT
0.06±0.06	[78] ANJOS	91	E691	γBe 80–240 GeV

[78] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(\overline{K}^0 K^+ \pi^-)/\Gamma(K^- \pi^+)$ — Γ_{130}/Γ_{20}

VALUE	DOCUMENT ID		TECN	COMMENT
0.138±0.026 OUR FIT				
0.10 ±0.05	[79] ANJOS	91	E691	γBe 80–240 GeV

[79] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(\overline{K}^0 K^+ \pi^-)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{130}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.089±0.017 OUR FIT					
0.098±0.020	55	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

$\Gamma(K^*(892)^0 \overline{K}^0)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{148}/Γ_{22}

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.015	90	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

$\Gamma(K^*(892)^- K^+)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ — Γ_{149}/Γ_{22}

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.034±0.019	12	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

$\Gamma(\overline{K}^0 K^+ \pi^-$ nonresonant$)/\Gamma(K^- \pi^+)$ — Γ_{133}/Γ_{20}

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.10^{+0.06}_{-0.05}}$	[80] ANJOS	91	E691	γ Be 80–240 GeV

[80] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^+ K^- \pi^0)/\Gamma(K^- \pi^+ \pi^0)$ — Γ_{134}/Γ_{30}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0095±0.0026	151	ASNER	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^0_S K^0_S \pi^0)/\Gamma_{total}$ — Γ_{135}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
<0.00059	ASNER	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\phi \pi^0)/\Gamma_{total}$ — Γ_{150}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0014	90	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(\phi \eta)/\Gamma_{total}$ — Γ_{151}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0028	90	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(\phi \omega)/\Gamma_{total}$ — Γ_{152}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0021	90	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^+ K^- \pi^+ \pi^-)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ — Γ_{136}/Γ_{42}

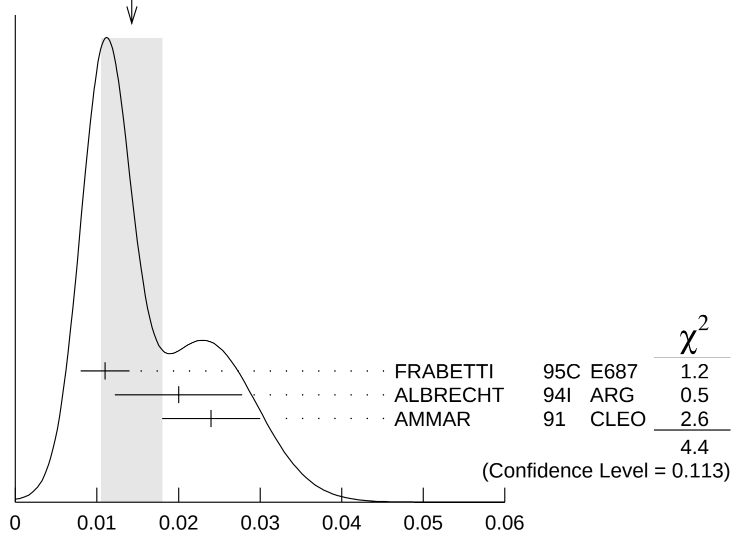
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0334±0.0028 OUR AVERAGE					
0.0313±0.0037±0.0036	136	AITALA	98D	E791	π^- nucleus, 500 GeV
0.035 ±0.004 ±0.002	244	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.041 ±0.007 ±0.005	114	ALBRECHT	94I	ARG	$e^+ e^- \approx$ 10 GeV
0.0314±0.010	89	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
$0.028\ ^{+0.008}_{-0.007}$		ANJOS	91	E691	γ Be 80–240 GeV

$\Gamma(\phi\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{153}/Γ_{42}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.014 ±0.004 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.		
0.011 ±0.003		FRABETTI 95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.020 ±0.006 ±0.005	28	ALBRECHT 94I	ARG	$e^+e^- \approx$ 10 GeV
0.024 ±0.006	34	[81] AMMAR 91	CLEO	$e^+e^- \approx$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0076^{+0.0066}_{-0.0049}$	3	ANJOS 91	E691	γ Be 80–240 GeV

[81] AMMAR 91 measures $\phi\rho^0$, but notes that $\phi\rho^0$ dominates $\phi\pi^+\pi^-$. We put the measurement here to keep from having more $\phi\rho^0$ than $\phi\pi^+\pi^-$.

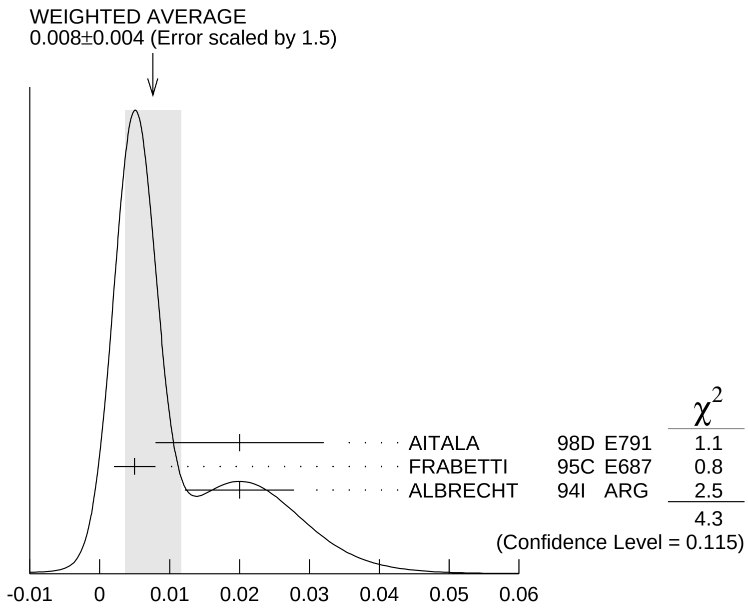


$\Gamma\left(\phi\pi^+\pi^-\right)/\Gamma\left(K^-\pi^+\pi^+\pi^-\right)$

$\Gamma(\phi\rho^0)/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{154}/Γ_{42}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.008±0.004 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.		
0.02 ±0.009±0.008		AITALA 98D	E791	π^- nucleus, 500 GeV
0.005±0.003		FRABETTI 95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.020±0.006±0.005	28	ALBRECHT 94I	ARG	$e^+e^- \approx$ 10 GeV



$\Gamma\left(\phi\rho^0\right)/\Gamma\left(K^-\pi^+\pi^+\pi^-\right)$

$\Gamma\left(\phi\pi^+\pi^-\text{ 3-body}\right)/\Gamma\left(K^-\pi^+\pi^+\pi^-\right)$ — Γ_{155}/Γ_{42}

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.009±0.004±0.005		AITALA	98D	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.006	90	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma\left(K^+K^-\rho^0\text{ 3-body}\right)/\Gamma\left(K^-\pi^+\pi^+\pi^-\right)$ — Γ_{139}/Γ_{42}

VALUE	DOCUMENT ID		TECN	COMMENT
0.012 ±0.003	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV

$\Gamma\left(K^*(892)^0K^-\pi^+ + \text{c.c.}\right)/\Gamma\left(K^-\pi^+\pi^+\pi^-\right)$ — Γ_{156}/Γ_{42}

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.01	90	[82] AITALA	98D	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.017	90	[82] FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
$0.010^{+0.016}_{-0.010}$		ANJOS	91	E691	γ Be 80–240 GeV

[82] These upper limits are in conflict with values in the next two data blocks.

$\Gamma(K^*(892)^0 K^- \pi^+)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ Γ_{157}/Γ_{42}

The $K^{*0} K^- \pi^+$ and $\overline{K}^{*0} K^+ \pi^-$ modes are distinguished by the charge of the pion in $D^*(2010)^\pm \to D^0 \pi^\pm$ decays. Unseen decay modes of the $K^*(892)^0$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.043 \pm 0.014 \pm 0.009$	55	[83] ALBRECHT	94I	ARG	$e^+ e^- \approx 10$ GeV

[83] This ALBRECHT 94I value is in conflict with upper limits given above.

$\Gamma(\overline{K}^*(892)^0 K^+ \pi^-)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ Γ_{158}/Γ_{42}

The $K^{*0} K^- \pi^+$ and $\overline{K}^{*0} K^+ \pi^-$ modes are distinguished by the charge of the pion in $D^*(2010)^\pm \to D^0 \pi^\pm$ decays. Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.023 \pm 0.013 \pm 0.009$	30	[84] ALBRECHT	94I	ARG	$e^+ e^- \approx 10$ GeV

[84] This ALBRECHT 94I value is in conflict with upper limits given above.

$\Gamma(K^*(892)^0 \overline{K}^*(892)^0)/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ Γ_{159}/Γ_{42}

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.018±0.007 OUR AVERAGE			Error includes scale factor of 1.2.			
0.016 ± 0.006			FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx 200$ GeV
$0.036^{+0.020}_{-0.016}$		11	ANJOS	91	E691	γ Be 80–240 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.02	90		AITALA	98D	E791	π^- nucleus, 500 GeV
<0.033	90		[85] AMMAR	91	CLEO	$e^+ e^- \approx 10.5$ GeV

[85] A corrected value (G. Moneti, private communication).

$\Gamma(K^+ K^- \pi^+ \pi^- \text{ non-}\phi)/\Gamma_{total}$ Γ_{142}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0017 ± 0.0005	[86] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

$\Gamma(K^+ K^- \pi^+ \pi^- \text{ nonresonant})/\Gamma(K^- \pi^+ \pi^+ \pi^-)$ Γ_{143}/Γ_{42}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.011	90	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx 200$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.001^{+0.011}_{-0.001}$		ANJOS	91	E691	γ Be 80–240 GeV

$\Gamma(K^0 \overline{K}^0 \pi^+ \pi^-)/\Gamma(\overline{K}^0 \pi^+ \pi^-)$ Γ_{144}/Γ_{22}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.126±0.038±0.030	25	ALBRECHT	94I	ARG	$e^+ e^- \approx 10$ GeV

$\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ — Γ_{145}/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.0031±0.0020	[87] BARLAG	92C	ACCM	π^- Cu 230 GeV

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

Radiative modes

$\Gamma(\rho^0\gamma)/\Gamma_{\text{total}}$ — Γ_{160}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*
$<2.4 \times 10^{-4}$	90	ASNER	98	CLE2

$\Gamma(\omega\gamma)/\Gamma_{\text{total}}$ — Γ_{161}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*
$<2.4 \times 10^{-4}$	90	ASNER	98	CLE2

$\Gamma(\phi\gamma)/\Gamma_{\text{total}}$ — Γ_{162}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*
$<1.9 \times 10^{-4}$	90	ASNER	98	CLE2

$\Gamma(\overline{K}^*(892)^0\gamma)/\Gamma_{\text{total}}$ — Γ_{163}/Γ

VALUE	*CL%*	*DOCUMENT ID*		*TECN*
$<7.6 \times 10^{-4}$	90	ASNER	98	CLE2

Rare or forbidden modes

$\Gamma(K^+\ell^-\overline{\nu}_\ell(\text{via }\overline{D}^0))/\Gamma(K^-\ell^+\nu_\ell)$ — Γ_{164}/Γ_8

This is a limit on R_M without the complications of possible doubly-Cabibbo-suppressed decays that occur when using hadronic modes. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.005	90	[88] AITALA	96C	E791	π^- nucleus, 500 GeV

[88] AITALA 96C uses $D^{*+} \to D^0\pi^+$ (and charge conjugate) decays to identify the charm at production and $D^0 \to K^-\ell^+\nu_\ell$ (and charge conjugate) decays to identify the charm at decay.

$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{165}/Γ_{20}

This is R_b in the note on "D^0-$\overline{D}^0$ Mixing," near the start of the D^0 Listings. The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\,\pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-$ decay. Some of the experiments can use the decay-time information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio; in the next data block we give the limits on the mixing ratio.

Some early limits have been omitted from this Listing; see our 1998 edition (EPJ **C3** 1).

VALUE	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.0039 ±0.0006 OUR AVERAGE						
$0.00404 \pm 0.00085 \pm 0.00025$		149	[89] LINK	01	FOCS	γ nucleus
$0.00332^{+0.00063}_{-0.00065} \pm 0.00040$		45	[90] GODANG	00	CLE2	e^+e^-
$0.0068\ ^{+0.0034}_{-0.0033} \pm 0.0007$		34	[91] AITALA	98	E791	π^- nucleus, 500 GeV
$0.0184 \pm 0.0059 \pm 0.0034$		19	[92] BARATE	98W	ALEP	e^+e^- at Z^0
$0.0077 \pm 0.0025 \pm 0.0025$		19	[93] CINABRO	94	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.011	90		[93] AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
<0.015	90	1 ± 6	[94] ANJOS	88C	E691	Photoproduction
<0.014	90		[93] ALBRECHT	87K	ARG	e^+e^- 10 GeV

[89] This LINK 01 result assumes no D^0-$\overline{D}^0$ mixing; see Fig. 4 of the paper for the DCS value as a function of the (unknown) mixing parameters x' and y'.

[90] This GODANG 00 result assumes no D^0-$\overline{D}^0$ mixing (R_M=0 in the note on "D^0-$\overline{D}^0$ Mixing" mear the start of the D^0 Listings). The DCS ratio becomes $0.0048 \pm 0.0012 \pm 0.0004$ when mixing is allowed.

[91] This AITALA 98 result assumes no D^0-$\overline{D}^0$ mixing (R_M=0 in the note on "D^0-$\overline{D}^0$ Mixing" mear the start of the D^0 Listings). The DCS ratio becomes $0.0090^{+0.0120}_{-0.0109} \pm 0.0044$ when mixing is allowed.

[92] BARATE 98W gets $0.0177^{+0.0060}_{-0.0056} \pm 0.0031$ for the DCS ratio when mixing is allowed, assuming no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings).

[93] CINABRO 94, AMMAR 91, and ALBRECHT 87K cannot distinguish between doubly Cabibbo-suppressed decay and D^0-$\overline{D}^0$ mixing.

[94] ANJOS 88C allows mixing but assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.049.

$\Gamma(K^+\pi^-(\text{via}\,\overline{D}^0))/\Gamma(K^-\pi^+)$ Γ_{166}/Γ_{20}

This is R_M in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \rightarrow (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1-\Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.00041	95		[95] GODANG	00	CLE2	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.0092	95		[96] BARATE	98W	ALEP	e^+e^- at Z^0
<0.005	90	1 ± 4	[97] ANJOS	88C	E691	Photoproduction

[95] This GODANG 00 result assumes that the strong phase between $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$ is small, and limits only $D^0 \rightarrow \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is 0.0017.

[96] This BARATE 98W result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.036 (95%CL).

[97] This ANJOS 88C result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.019. Combined with results on $K^\pm\pi^\mp\pi^+\pi^-$, the limit is, assuming no interference, 0.0037.

$\Gamma(K^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{167}/Γ_{30}

The experiments here use the charge of the pion in $D^*(2010)^\pm \rightarrow (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \rightarrow K^+\pi^-\pi^0$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \rightarrow \overline{D}^0$ mixing followed by $\overline{D}^0 \rightarrow K^+\pi^-\pi^0$ decay.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0043^{+0.0011}_{-0.0010}\pm0.0007}$	38	[98] BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

[98] BRANDENBURG 01 cannot distinguish between doubly Cabbibbo-suppressed decay and D^0-$\overline{D}^0$ mixing.

$\Gamma(K^+\pi^-\pi^+\pi^-)/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{168}/Γ_{42}

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)$ $\pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-\pi^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-\pi^+\pi^-$ decay. Some of the experiments can use the decay-time information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio; in the next data block we give the limits on the mixing ratio.

Some early limits have been omitted from this Listing; see our 1998 edition (EPJ **C3** 1).

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.0042±0.0013 OUR AVERAGE						
$0.0044^{+0.0013}_{-0.0012}\pm0.0006$		54	[99] DYTMAN	01	CLE2	$e^+e^- \approx \Upsilon(4S)$
$0.0025^{+0.0036}_{-0.0034}\pm0.0003$			[100] AITALA	98	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.018	90		[99] AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
<0.018	90	5 ± 12	[101] ANJOS	88C	E691	Photoproduction

[99] AMMAR 91 and DYTMAN 01 cannot distinguish between doubly Cabibbo-suppressed decay and D^0-$\overline{D}^0$ mixing.

[100] This AITALA 98 result assumes no D^0-$\overline{D}^0$ mixing (R_M in the note on "D^0-$\overline{D}^0$ Mixing"). It becomes $-0.0020^{+0.0117}_{-0.0106} \pm 0.0035$ when mixing is allowed and decay-time information is used to distinguish doubly Cabibbo-suppressed decays from mixing.

[101] ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from D^0-$\overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.033.

$\Gamma(K^+\pi^-\pi^+\pi^-(\text{via }\overline{D}^0))/\Gamma(K^-\pi^+\pi^+\pi^-)$ — Γ_{169}/Γ_{42}

This is a D^0-$\overline{D}^0$ mixing limit. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)$ $\pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $\left|m_{D^0_1} - m_{D^0_2}\right|$ and $(\Gamma_{D^0_1} - \Gamma_{D^0_2})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.005	90	0 ± 4	[102] ANJOS	88C	E691	Photoproduction

[102] ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from D^0-$\overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.007. Combined with results on $K^\pm\pi^\mp$, the limit is, assuming no interference, 0.0037.

$\Gamma(K^+\pi^-$ or $K^+\pi^-\pi^+\pi^-$ (via $\overline{D}^0$))$/\Gamma(K^-\pi^+$ or $K^-\pi^+\pi^+\pi^-)$ — Γ_{170}/Γ_0

This is a D^0-$\overline{D}^0$ mixing limit. For the limits on $|m_{D_1^0} - m_{D_2^0}|$ and $(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0085	90	[103] AITALA	98	E791	π^- nucleus, 500 GeV

[103] AITALA 98 uses decay-time information to distinguish doubly Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing. The fit allows interference between the two amplitudes, and also allows CP violation in this term. The central value obtained is $0.0039^{+0.0036}_{-0.0032} \pm 0.0016$. When interference is disallowed, the result becomes $0.0021 \pm 0.0009 \pm 0.0002$.

$\Gamma(\mu^-$ anything (via $\overline{D}^0$))$/\Gamma(\mu^+$ anything) — Γ_{171}/Γ_2

This is a D^0-$\overline{D}^0$ mixing limit. See the somewhat better limits above.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0056	90	LOUIS	86	SPEC	π^- W 225 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	BENVENUTI	85	CNTR	μC, 200 GeV
<0.044	90	BODEK	82	SPEC	π^-, pFe $\rightarrow$ D^0

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

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<6.2 × 10^{-6}	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<8.19 \times 10^{-6}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<1.3 \times 10^{-5}$	90	0	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<1.3 \times 10^{-4}$	90		ADLER	88	MRK3	e^+e^- 3.77 GeV
$<1.7 \times 10^{-4}$	90	7	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$<2.2 \times 10^{-4}$	90	8	HAAS	88	CLEO	e^+e^- 10 GeV

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

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<4.1 × 10^{-6}	90		ADAMOVICH	97	BEAT	π^- Cu, W 350 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.56 \times 10^{-5}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<5.2 \times 10^{-6}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
$<4.2 \times 10^{-6}$	90		ALEXOPOU...	96	E771	p Si, 800 GeV
$<3.4 \times 10^{-5}$	90	1	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<7.6 \times 10^{-6}$	90	0	ADAMOVICH	95	BEAT	See ADAMOVICH 97
$<4.4 \times 10^{-5}$	90	0	KODAMA	95	E653	π^- emulsion 600 GeV
$<3.1 \times 10^{-5}$	90		[104] MISHRA	94	E789	-4.1 ± 4.8 events
$<7.0 \times 10^{-5}$	90	3	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$<1.1 \times 10^{-5}$	90		LOUIS	86	SPEC	π^- W 225 GeV
$<3.4 \times 10^{-4}$	90		AUBERT	85	EMC	Deep inelast. $\mu^- N$

[104] Here MISHRA 94 uses "the statistical approach advocated by the PDG." For an alternate approach, giving a limit of 9×10^{-6} at 90% confidence level, see the paper.

$\Gamma(\pi^0 e^+ e^-)/\Gamma_{total}$ Γ_{174}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<4.5 × 10⁻⁵	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^0 \mu^+ \mu^-)/\Gamma_{total}$ Γ_{175}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.8 \times 10^{-4}$	90	2	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<5.4 \times 10^{-4}$	90	3	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^+ e^-)/\Gamma_{total}$ Γ_{176}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

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

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<5.3 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

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

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.73 \times 10^{-4}$	90	9	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^+ e^-)/\Gamma_{total}$ Γ_{179}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-4}$	90	2	[105] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.24 \times 10^{-4}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV
$<4.5 \times 10^{-4}$	90	2	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[105] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.8 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{total}$ Γ_{180}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.0 \times 10^{-5}$	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{181}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<2.2 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.9 \times 10^{-4}$	90	1	[106] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$<2.3 \times 10^{-4}$	90	0	KODAMA 95	E653	π^- emulsion 600 GeV
$<8.1 \times 10^{-4}$	90	5	HAAS 88	CLEO	$e^+ e^-$ 10 GeV

[106] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 4.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\omega e^+ e^-)/\Gamma_{total}$ — Γ_{182}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<1.8 \times 10^{-4}$	90	1	[107] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[107] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.7 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\omega \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{183}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<8.3 \times 10^{-4}$	90	0	[108] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[108] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 6.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ e^+ e^-)/\Gamma_{total}$ — Γ_{184}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.15 \times 10^{-4}$	90	9	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^+ e^-)/\Gamma_{total}$ — Γ_{185}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<5.2 \times 10^{-5}$	90	2	[109] FREYBERGER 96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.9 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV

[109] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 7.6 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{186}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<3.3 \times 10^{-5}$	90	0	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi\mu^+\mu^-)/\Gamma_{total}$ Γ_{187}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.1 \times 10^{-5}$	90	0	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<4.1 \times 10^{-4}$	90	0	[110] FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

[110] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.4 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^+e^-)/\Gamma_{total}$ Γ_{188}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.7 \times 10^{-3}$	90		ADLER	89C	MRK3	e^+e^- 3.77 GeV

$\Gamma(\overline{K}^0 \mu^+\mu^-)/\Gamma_{total}$ Γ_{189}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<2.6 \times 10^{-4}$	90	2	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<6.7 \times 10^{-4}$	90	1	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(K^-\pi^+e^+e^-)/\Gamma_{total}$ Γ_{190}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.85 \times 10^{-4}$	90	6	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^+e^-)/\Gamma_{total}$ Γ_{191}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<4.7 \times 10^{-5}$	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.4 \times 10^{-4}$	90	1	[111] FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

[111] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.0 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^-\pi^+\mu^+\mu^-)/\Gamma_{total}$ Γ_{192}/Γ

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<3.59 \times 10^{-4}$	90	12	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{193}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<2.4 × 10⁻⁵	90	3	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<1.18 \times 10^{-3}$	90	1	[112] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[112] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.0 \times 10^{-3}$ using a photon pole amplitude model.

$\Gamma(\pi^+ \pi^- \pi^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{194}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<8.1 \times 10^{-4}$	90	1	KODAMA	95	E653	π^- emulsion 600 GeV

$\Gamma(\mu^\pm e^\mp)/\Gamma_{total}$ — Γ_{195}/Γ

A test of lepton family number conservation.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$< 8.1 \times 10^{-6}$	90		AITALA	99G	E791	$\pi^- N$ 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$< 1.72 \times 10^{-5}$	90		PRIPSTEIN	00	E789	p nucleus, 800 GeV
$< 1.9 \times 10^{-5}$	90	2	[113] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$< 1.0 \times 10^{-4}$	90	4	ALBRECHT	88G	ARG	$e^+ e^-$ 10 GeV
$< 2.7 \times 10^{-4}$	90	9	HAAS	88	CLEO	$e^+ e^-$ 10 GeV
$< 1.2 \times 10^{-4}$	90		BECKER	87C	MRK3	$e^+ e^-$ 3.77 GeV
$< 9 \times 10^{-4}$	90		PALKA	87	SILI	200 GeV πp
$<21 \times 10^{-4}$	90	0	[114] RILES	87	MRK2	$e^+ e^-$ 29 GeV

[113] This is the corrected result given in the erratum to FREYBERGER 96.

[114] RILES 87 assumes B($D \rightarrow K\pi$) = 3.0% and has production model dependency.

$\Gamma(\pi^0 e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{196}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<8.6 \times 10^{-5}$	90	2	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{197}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-4}$	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+ \pi^- e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{198}/Γ

A test of lepton family-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
$<1.5 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{199}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<4.9 × 10^{-5}	90	0	[115] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<6.6 \times 10^{-5}$	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

[115] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 5.0 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(\omega e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{200}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-4}	90	0	[116] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[116] This FREYBERGER 96 limit is obtained using a phase-space model. The same limit is obtained using a photon pole amplitude model.

$\Gamma(K^- K^+ e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{201}/Γ

A test of lepton family-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-4}	90	5	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{202}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<3.4 × 10^{-5}	90	0	[117] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$<4.7 \times 10^{-5}$	90	0	AITALA	01C	E791	π^- nucleus, 500 GeV

[117] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 3.3 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{203}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-4}	90	0	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^- \pi^+ e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{204}/Γ

A test of lepton family-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<5.53 × 10^{-4}	90	15	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{205}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<8.3 × 10^{-5}	90	9	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<1.0 × 10^{-4}	90	0	[118] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[118] This FREYBERGER 96 limit is obtained using a phase-space model. The same limit is obtained using a photon pole amplitude model.

$\Gamma(\pi^- \pi^- e^+ e^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{206}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.12 × 10^{-4}	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\pi^- \pi^- \mu^+ \mu^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{207}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<2.9 × 10^{-5}	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- e^+ e^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{208}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<2.06 × 10^{-4}	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- \mu^+ \mu^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{209}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^{-4}	90	14	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- K^- e^+ e^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{210}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<1.52 × 10^{-4}	90	2	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- K^- \mu^+ \mu^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{211}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<9.4 × 10^{-5}	90	1	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\pi^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{212}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<7.9 × 10^{-5}	90	4	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ — Γ_{213}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<2.18 × 10^{-4}	90	7	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- K^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$ — Γ_{214}/Γ

A test of lepton-number conservation. The value is for the sum of the two charge states.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<5.7 × 10^{-5}	90	0	AITALA	01C	E791	π^- nucleus, 500 GeV

D^0 *CP*-VIOLATING DECAY-RATE ASYMMETRIES

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0 \pi^+$ and $D^{*-} \to \overline{D}^0 \pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.005±0.016 OUR AVERAGE					
0.000±0.022±0.008	3023	[119] CSORNA	02	CLE2	$e^+ e^- \approx \Upsilon(4S)$
−0.001±0.022±0.015	3330	[119] LINK	00B	FOCS	
−0.010±0.049±0.012	609	[119] AITALA	98C	E791	$-0.093 < A_{CP} < +0.073$ (90% CL)
+0.080±0.061		BARTELT	95	CLE2	$-0.022 < A_{CP} < +0.18$ (90%CL)
+0.024±0.084		[119] FRABETTI	94I	E687	$-0.11 < A_{CP} < +0.16$ (90% CL)

[119] FRABETTI 94I, AITALA 98C, LINK 00B, and CSORNA 02 measure $N(D^0 \to K^+ K^-)/N(D^0 \to K^- \pi^+)$, the ratio of numbers of events observed, and similarly for the $\overline{D}^0$.

$A_{CP}(K^0_S K^0_S)$ in D^0, $\overline{D}^0 \to K^0_S K^0_S$

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0 \pi^+$ and $D^{*-} \to \overline{D}^0 \pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.23±0.19	65	BONVICINI	01	CLE2	$e^+ e^- \approx$ 10.6 GeV

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0 \pi^+$ and $D^{*-} \to \overline{D}^0 \pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.021±0.026 OUR AVERAGE					
0.019±0.032±0.008	1136	[120] CSORNA	02	CLE2	$e^+ e^- \approx \Upsilon(4S)$
+0.048±0.039±0.025	1177	[120] LINK	00B	FOCS	
−0.049±0.078±0.030	343	[120] AITALA	98C	E791	$-0.186 < A_{CP} < +0.088$ (90% CL)

[120] AITALA 98C, LINK 00B, and CSORNA 02 measure $N(D^0 \to \pi^+ \pi^-)/N(D^0 \to K^- \pi^+)$, the ratio of numbers of events observed, and similarly for the $\overline{D}^0$.

$A_{CP}(\pi^0\pi^0)$ in D^0, $\overline{D}^0 \to \pi^0\pi^0$

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.001±0.048	810	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV

$A_{CP}(K_S^0\phi)$ in D^0, $\overline{D}^0 \to K_S^0\phi$

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	DOCUMENT ID		TECN	COMMENT
−0.028±0.094	BARTELT	95	CLE2	$-0.182 < A_{CP} < +0.126$ (90%CL)

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
+0.001±0.013	9099	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.018±0.030		BARTELT	95	CLE2	See BONVICINI 01

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{+0.02^{+0.19}_{-0.20}\pm0.01}$	45	[121] GODANG	00	CLE2	$-0.43 < A_{CP} < +0.34$ (95%CL)

[121] This GODANG 00 result assumes no D^0-$\overline{D}^0$ mixing; it becomes $-0.01^{+0.16}_{-0.17} \pm 0.01$ when mixing is allowed.

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	DOCUMENT ID		TECN	COMMENT
−0.031±0.086	[122] KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV

[122] KOPP 01 fits separately the D^0 and $\overline{D}^0$ Dalitz plots and then calculates the integrated difference of normalized densities divided by the integrated sum.

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

This is the difference between D^0 and $\overline{D}^0$ partial widths for these modes divided by the sum of the widths. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0\pi^+$ and $D^{*-} \to \overline{D}^0\pi^-$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{+0.09^{+0.25}_{-0.22}}$	38	BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

D^0 PRODUCTION CROSS SECTION AT $\psi(3770)$

A compilation of the cross sections for the direct production of D^0 mesons at or near the $\psi(3770)$ peak in e^+e^- production.

VALUE (nanobarns)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$5.8 \pm 0.5 \pm 0.6$	[123] ADLER	88C	MRK3	e^+e^- 3.768 GeV
7.3 ± 1.3	[124] PARTRIDGE	84	CBAL	e^+e^- 3.771 GeV
$8.00 \pm 0.95 \pm 1.21$	[125] SCHINDLER	80	MRK2	e^+e^- 3.771 GeV
11.5 ± 2.5	[126] PERUZZI	77	MRK1	e^+e^- 3.774 GeV

[123] This measurement compares events with one detected D to those with two detected D mesons, to determine the the absolute cross section. ADLER 88C find the ratio of cross sections (neutral to charged) to be $1.36 \pm 0.23 \pm 0.14$.

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

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

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

D^0 REFERENCES

ABE	02I	PRL 88 162001	K. Abe *et al.*	(KEK BELLE Collab.)
CSORNA	02	PR D (to be publ.)	S.E. Csorna *et al.*	(CLEO Collab.)
hep-ex/0111024				
PDG	02	PR D66 010001	K. Hagiwara *et al.*	
AITALA	01C	PRL 86 3969	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	01D	PR D64 112003	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	01	PR D63 071101R	G. Bonvicini *et al.*	(CLEO Collab.)
BRANDENB...	01	PRL 87 071802	G. Brandenburg *et al.*	(CLEO Collab.)
DYTMAN	01	PR D64 111101 (R)	S.A. Dytman *et al.*	(CLEO Collab.)
KOPP	01	PR D63 092001	S. Kopp *et al.*	(CLEO Collab.)
KUSHNIR...	01	PRL 86 5243	A. Kushnirenko *et al.*	(FNAL SELEX Collab.)
LINK	01	PRL 86 2955	J.M. Link *et al.*	(FNAL FOCUS Collab.)
BAI	00C	PR D62 052001	J.Z. Bai *et al.*	(BEPC BES Collab.)
GODANG	00	PRL 84 5038	R. Godang *et al.*	(CLEO Collab.)
JUN	00	PRL 84 1857	S.Y. Jun *et al.*	(FNAL SELEX Collab.)
LINK	00	PL B485 62	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	00B	PL B491 232	J.M. Link *et al.*	(FNAL FOCUS Collab.)
Also	00D	PL B495 443 (errata)	J.M. Link *et al.*	(FNAL FOCUS Collab.)
PRIPSTEIN	00	PR D61 032005	D. Pripstein *et al.*	(FNAL E789 Collab.)
AITALA	99E	PRL 83 32	E.M. Aitala *et al.*	(FNAL E791 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	98	PR D57 13	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98C	PL B421 405	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98D	PL B423 185	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ARTUSO	98	PRL 80 3193	M. Artuso *et al.*	(CLEO Collab.)

ASNER	98	PR D58 092001	D.M. Asner *et al.*	(CLEO Collab.)
BARATE	98W	PL B436 211	R. Barate *et al.*	(ALEPH Collab.)
COAN	98	PRL 80 1150	T.E. Coan *et al.*	(CLEO Collab.)
ADAMOVICH	97	PL B408 469	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARATE	97C	PL B403 367	R. Barate *et al.*	(ALEPH Collab.)
AITALA	96C	PRL 77 2384	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ALBRECHT	96C	PL B374 249	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXOPOU...	96	PRL 77 2380	T. Alexopoulos *et al.*	(FNAL E771 Collab.)
ASNER	96B	PR D54 4211	D.M. Asner *et al.*	(CLEO Collab.)
BARISH	96	PL B373 334	B.C. Barish *et al.*	(CLEO Collab.)
FRABETTI	96B	PL B382 312	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FREYBERGER	96	PRL 76 3065	A. Freyberger *et al.*	(CLEO Collab.)
Also	96B	PRL 77 2147 (errata)	A. Freyberger *et al.*	(CLEO Collab.)
KUBOTA	96B	PR D54 2994	Y. Kubota *et al.*	(CLEO Collab.)
ADAMOVICH	95	PL B353 563	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARTELT	95	PR D52 4860	J.E. Bartelt *et al.*	(CLEO Collab.)
BUTLER	95	PR D52 2656	F. Butler *et al.*	(CLEO Collab.)
FRABETTI	95C	PL B354 486	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	95G	PL B364 127	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	95	PL B345 85	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	94	PL B324 249	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	94F	PL B340 125	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	94I	ZPHY C64 375	H. Albrecht *et al.*	(ARGUS Collab.)
CINABRO	94	PRL 72 1406	D. Cinabro *et al.*	(CLEO Collab.)
FRABETTI	94C	PL B321 295	P.L. Frabetti *et al.*	(FNAL E687 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.)
FRABETTI	94J	PL B340 254	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	94	PL B336 605	K. Kodama *et al.*	(FNAL E653 Collab.)
MISHRA	94	PR D50 R9	C.S. Mishra *et al.*	(FNAL E789 Collab.)
AKERIB	93	PRL 71 3070	D.S. Akerib *et al.*	(CLEO Collab.)
ALBRECHT	93D	PL B308 435	H. Albrecht *et al.*	(ARGUS 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	93I	PL B315 203	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	93B	PL B313 260	K. Kodama *et al.*	(FNAL E653 Collab.)
PROCARIO	93B	PR D48 4007	M. Procario *et al.*	(CLEO Collab.)
SELEN	93	PRL 71 1973	M.A. Selen *et al.*	(CLEO Collab.)
ADAMOVICH	92	PL B280 163	M.I. Adamovich *et al.*	(CERN WA82 Collab.)
ALBRECHT	92P	ZPHY C56 7	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	92B	PR D46 R1	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	90D	ZPHY C48 29	S. Barlag *et al.*	(ACCMOR Collab.)
COFFMAN	92B	PR D45 2196	D.M. Coffman *et al.*	(Mark III Collab.)
Also	90	PRL 64 2615	J. Adler *et al.*	(Mark III Collab.)
FRABETTI	92	PL B281 167	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	92B	PL B286 195	P.L. Frabetti *et al.*	(FNAL E687 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.)
ANJOS	91	PR D43 R635	J.C. Anjos *et al.*	(FNAL-TPS Collab.)
ANJOS	91D	PR D44 R3371	J.C. Anjos *et al.*	(FNAL-TPS 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.)
CRAWFORD	91B	PR D44 3394	G. Crawford *et al.*	(CLEO Collab.)
DECAMP	91J	PL B266 218	D. Decamp *et al.*	(ALEPH Collab.)
FRABETTI	91	PL B263 584	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KINOSHITA	91	PR D43 2836	K. Kinoshita *et al.*	(CLEO Collab.)
KODAMA	91	PRL 66 1819	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	90C	ZPHY C46 9	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXANDER	90	PRL 65 1184	J. Alexander *et al.*	(CLEO Collab.)
ALEXANDER	90B	PRL 65 1531	J. Alexander *et al.*	(CLEO Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
ANJOS	90D	PR D42 2414	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	90C	ZPHY C46 563	S. Barlag *et al.*	(ACCMOR Collab.)
ADLER	89	PRL 62 1821	J. Adler *et al.*	(Mark III Collab.)
ADLER	89C	PR D40 906	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	89D	ZPHY C43 181	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	89F	PRL 62 1587	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ABACHI	88	PL B205 411	S. Abachi *et al.*	(HRS Collab.)

ADLER	88	PR D37 2023	J. Adler *et al.*	(Mark III Collab.)
ADLER	88C	PRL 60 89	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	88G	PL B209 380	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	88I	PL B210 267	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	88C	PRL 60 1239	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BORTOLETTO	88	PR D37 1719	D. Bortoletto *et al.*	(CLEO Collab.)
Also	89D	PR D39 1471 erratum	D. Bortoletto *et al.*	(CLEO Collab.)
CUMALAT	88	PL B210 253	J.P. Cumalat *et al.*	(E-400 Collab.)
HAAS	88	PRL 60 1614	P. Haas *et al.*	(CLEO 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.)
AGUILAR-...	87E	ZPHY C36 551	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also	88B	ZPHY C40 321	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
AGUILAR-...	87F	ZPHY C36 559	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also	88	ZPHY C38 520 erratum	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
ALBRECHT	87E	ZPHY C33 359	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	87K	PL B199 447	H. Albrecht *et al.*	(ARGUS Collab.)
BARLAG	87B	ZPHY C37 17	S. Barlag *et al.*	(ACCMOR Collab.)
BECKER	87C	PL B193 147	J.J. Becker *et al.*	(Mark III Collab.)
Also	87D	PL B198 590 erratum	J.J. Becker *et al.*	(Mark III Collab.)
PALKA	87	PL B189 238	H. Palka *et al.*	(ACCMOR Collab.)
RILES	87	PR D35 2914	K. Riles *et al.*	(Mark II Collab.)
BAILEY	86	ZPHY C30 51	R. Bailey *et al.*	(ACCMOR Collab.)
BEBEK	86	PRL 56 1893	C. Bebek *et al.*	(CLEO Collab.)
LOUIS	86	PRL 56 1027	W.C. Louis *et al.*	(PRIN, CHIC, ISU)
ALBRECHT	85B	PL 158B 525	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	85F	PL 150B 235	H. Albrecht *et al.*	(ARGUS Collab.)
AUBERT	85	PL 155B 461	J.J. Aubert *et al.*	(EMC 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.)
BENVENUTI	85	PL 158B 531	A.C. Benvenuti *et al.*	(BCDMS Collab.)
ADAMOVICH	84B	PL 140B 123	M.I. Adamovich *et al.*	(CERN WA58 Collab.)
DERRICK	84	PRL 53 1971	M. Derrick *et al.*	(HRS Collab.)
PARTRIDGE	84	Thesis CALT-68-1150	R.A. Partridge	(Crystal Ball Collab.)
SUMMERS	84	PRL 52 410	D.J. Summers *et al.*	(UCSB, CARL, COLO+)
BAILEY	83B	PL 132B 237	R. Bailey *et al.*	(ACCMOR Collab.)
BODEK	82	PL 113B 82	A. Bodek *et al.*	(ROCH, CIT, CHIC, FNAL+)
FIORINO	81	LNC 30 166	A. Fiorino *et al.*	
SCHINDLER	81	PR D24 78	R.H. Schindler *et al.*	(Mark II Collab.)
TRILLING	81	PRPL 75 57	G.H. Trilling	(LBL, UCB) J
ASTON	80E	PL 94B 113	D. Aston *et al.*	(BONN, CERN, EPOL, GLAS+)
AVERY	80	PRL 44 1309	P. Avery *et al.*	(ILL, FNAL, COLU)
SCHINDLER	80	PR D21 2716	R.H. Schindler *et al.*	(Mark II Collab.)
ZHOLENTZ	80	PL 96B 214	A.A. Zholentz *et al.*	(NOVO)
Also	81	SJNP 34 814	A.A. Zholentz *et al.*	(NOVO)
		Translated from YAF 34 1471.		
ABRAMS	79D	PRL 43 481	G.S. Abrams *et al.*	(Mark II Collab.)
ATIYA	79	PRL 43 414	M.S. Atiya *et al.*	(COLU, ILL, FNAL)
BALTAY	78C	PRL 41 73	C. Baltay *et al.*	(COLU, BNL)
VUILLEMIN	78	PRL 41 1149	V. Vuillemin *et al.*	(Mark I Collab.)
GOLDHABER	77	PL 69B 503	G. Goldhaber *et al.*	(Mark I Collab.)
PERUZZI	77	PRL 39 1301	I. Peruzzi *et al.*	(Mark I Collab.)
PICCOLO	77	PL 70B 260	M. Piccolo *et al.*	(Mark I Collab.)
RAPIDIS	77	PRL 39 526	P.A. Rapidis *et al.*	(Mark I Collab.)
GOLDHABER	76	PRL 37 255	G. Goldhaber *et al.*	(Mark I Collab.)

OTHER RELATED PAPERS

RICHMAN	95	RMP 67 893	J.D. Richman, P.R. Burchat	(UCSB, STAN)
ROSNER	95	CNPP 21 369	J. Rosner	(CHIC)