NODE=S035

τ $J = \frac{1}{2}$

NODE=S035

τ discovery paper was PERL 75. $e^+ e^- \rightarrow \tau^+ \tau^-$ cross-section threshold behavior and magnitude are consistent with pointlike spin-1/2 Dirac particle. BRANDELIK 78 ruled out pointlike spin-0 or spin-1 particle. FELDMAN 78 ruled out $J = 3/2$. KIRKBY 79 also ruled out J=integer, $J = 3/2$.

τ MASS

NODE=S035M

NODE=S035M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1776.93±0.09 OUR AVERAGE					
1777.09±0.08±0.11	175M	[1] ADACHI	23C	BEL2	190 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$1776.69^{+0.17}_{-0.19}\pm0.15$		[2] ANASHIN	23A	KEDR	(6.7+ 8.5) pb^{-1}, E^{ee}_{cm}= 3.54–3.78 GeV
$1776.91\pm0.12^{+0.10}_{-0.13}$	1171	[3] ABLIKIM	14D	BES3	23.3 pb^{-1}, E^{ee}_{cm}= 3.54–3.60 GeV
1776.68±0.12±0.41	682k	[1] AUBERT	09AK	BABR	423 fb^{-1}, E^{ee}_{cm}=10.6 GeV
1776.61±0.13±0.35		[1] BELOUS	07	BELL	414 fb^{-1} E^{ee}_{cm}=10.6 GeV
1775.1 ±1.6 ±1.0	13.3k	[4] ABBIENDI	00A	OPAL	1990–1995 LEP runs
1778.2 ±0.8 ±1.2		ANASTASSOV	97	CLEO	E^{ee}_{cm}= 10.6 GeV
$1776.96^{+0.18}_{-0.21}{}^{+0.25}_{-0.17}$	65	[5] BAI	96	BES	E^{ee}_{cm}= 3.54–3.57 GeV
1776.3 ±2.4 ±1.4	11k	[6] ALBRECHT	92M	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
$1783\ ^{+3}_{-4}$	692	[7] BACINO	78B	DLCO	E^{ee}_{cm}= 3.1–7.4 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1776.81^{+0.25}_{-0.23}\pm0.15$	81	ANASHIN	07	KEDR	6.7 pb^{-1}, E^{ee}_{cm}= 3.54–3.78 GeV
1777.8 ±0.7 ±1.7	35k	[8] BALEST	93	CLEO	Repl. by ANASTASSOV 97
$1776.9\ ^{+0.4}_{-0.5}\pm0.2$	14	[9] BAI	92	BES	Repl. by BAI 96

[1] ADACHI 23C, AUBERT 09AK and BELOUS 07 fit τ pseudomass spectrum in $\tau \rightarrow \pi\pi^+\pi^-\nu_\tau$ decays. Result assumes $m_{\nu_\tau} = 0$. NODE=S035M;LINKAGE=BE

[2] Previously also reported LEVICHEV 14. Superseedes ANASHIN 07. NODE=S035M;LINKAGE=H

[3] ABLIKIM 14D fit $\sigma(e^+ e^- \rightarrow \tau^+\tau^-)$ at different energies near threshold. NODE=S035M;LINKAGE=G

[4] ABBIENDI 00A fit τ pseudomass spectrum in $\tau \rightarrow \pi^\pm \leq 2\pi^0\nu_\tau$ and $\tau \rightarrow \pi^\pm\pi^+\pi^- \leq 1\pi^0\nu_\tau$ decays. Result assumes m_{ν_τ}=0. NODE=S035M;LINKAGE=BB

[5] BAI 96 fit $\sigma(e^+ e^- \rightarrow \tau^+\tau^-)$ at different energies near threshold. NODE=S035M;LINKAGE=F

[6] ALBRECHT 92M fit τ pseudomass spectrum in $\tau^- \rightarrow 2\pi^-\pi^+\nu_\tau$ decays. Result assumes m_{ν_τ}=0. NODE=S035M;LINKAGE=D

[7] BACINO 78B value comes from $e^\pm X^\mp$ threshold. Published mass 1782 MeV increased by 1 MeV using the high precision $\psi(2S)$ mass measurement of ZHOLENTZ 80 to eliminate the absolute SPEAR energy calibration uncertainty. NODE=S035M;LINKAGE=A

[8] BALEST 93 fit spectra of minimum kinematically allowed τ mass in events of the type $e^+e^- \rightarrow \tau^+\tau^- \rightarrow (\pi^+ n\pi^0\nu_\tau)(\pi^- m\pi^0\nu_\tau)$ $n \leq 2$, $m \leq 2$, $1 \leq n+m \leq 3$. If $m_{\nu_\tau} \neq 0$, result increases by $(m^2_{\nu_\tau}/1100$ MeV). NODE=S035M;LINKAGE=C

[9] BAI 92 fit $\sigma(e^+ e^- \rightarrow \tau^+\tau^-)$ near threshold using $e\mu$ events. NODE=S035M;LINKAGE=E

$(m_{\tau^+} - m_{\tau^-})/m_{\text{average}}$

NODE=S035MDF

A test of CPT invariance.

NODE=S035MDF

NODE=S035MDF

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.8 \times 10^{-4}$	90	BELOUS	07	BELL	414 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.5 \times 10^{-4}$	90	[1] AUBERT	09AK	BABR	423 fb^{-1}, E^{ee}_{cm}=10.6 GeV
$<3.0 \times 10^{-3}$	90	ABBIENDI	00A	OPAL	1990–1995 LEP runs

[1] AUBERT 09AK quote both the listed upper limit and $(m_{\tau^+} - m_{\tau^-})/m_{\text{average}} = (-3.4 \pm 1.3 \pm 0.3) \times 10^{-4}$. NODE=S035MDF;LINKAGE=AU

τ MEAN LIFE

NODE=S035T

NODE=S035T

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
290.3 ± 0.5 OUR AVERAGE					
290.17 ± 0.53 ± 0.33	1.1M	BELOUS	14	BELL	711 fb^{-1} E^{ee}_{cm}=10.6 GeV
290.9 ± 1.4 ± 1.0		ABDALLAH	04T	DLPH	1991-1995 LEP runs
293.2 ± 2.0 ± 1.5		ACCIARRI	00B	L3	1991–1995 LEP runs
290.1 ± 1.5 ± 1.1		BARATE	97R	ALEP	1989–1994 LEP runs
289.2 ± 1.7 ± 1.2		ALEXANDER	96E	OPAL	1990–1994 LEP runs
289.0 ± 2.8 ± 4.0	57.4k	BALEST	96	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
291.2 ± 2.0 ± 1.2		BARATE	97I	ALEP	Repl. by BARATE 97R
291.4 ± 3.0		ABREU	96B	DLPH	Repl. by ABDALLAH 04T
290.1 ± 4.0	34k	ACCIARRI	96K	L3	Repl. by ACCIARRI 00B
297 ± 9 ± 5	1671	ABE	95Y	SLD	1992–1993 SLC runs
304 ±14 ± 7	4100	BATTLE	92	CLEO	E^{ee}_{cm}= 10.6 GeV
301 ±29	3780	KLEINWORT	89	JADE	E^{ee}_{cm}= 35–46 GeV
288 ±16 ±17	807	AMIDEI	88	MRK2	E^{ee}_{cm}= 29 GeV
306 ±20 ±14	695	BRAUNSCH...	88C	TASS	E^{ee}_{cm}= 36 GeV
299 ±15 ±10	1311	ABACHI	87C	HRS	E^{ee}_{cm}= 29 GeV
295 ±14 ±11	5696	ALBRECHT	87P	ARG	E^{ee}_{cm}= 9.3–10.6 GeV
309 ±17 ± 7	3788	BAND	87B	MAC	E^{ee}_{cm}= 29 GeV
325 ±14 ±18	8470	BEBEK	87C	CLEO	E^{ee}_{cm}= 10.5 GeV
460 ± 190	102	FELDMAN	82	MRK2	E^{ee}_{cm}= 29 GeV

$(\tau_{\tau^+} - \tau_{\tau^-}) / \tau_{\text{average}}$

NODE=S035TDF

Test of *CPT* invariance. NODE=S035TDF

NODE=S035TDF

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.0 × 10^{-3}	90	[1] BELOUS	14	BELL	711 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] BELOUS 14 quote limit on the absolute value of the relative lifetime difference. NODE=S035TDF;LINKAGE=A

τ MAGNETIC MOMENT ANOMALY

NODE=S035245

The q^2 dependence is expected to be small providing no thresholds are nearby. NODE=S035245

$\mu_\tau/(e\hbar/2m_\tau)-1 = (g_\tau-2)/2$

NODE=S035MM

For a theoretical calculation [$(g_\tau-2)/2 = 117\,721(5) \times 10^{-8}$], see EIDELMAN 07. NODE=S035MM

NODE=S035MM

OCCUR=2

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
−0.057 to 0.024	95	[1] AAD	23BM	ATLS	$\gamma\gamma \to \tau^+\tau^-$, Pb−Pb
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$-0.041^{+0.012}_{-0.009}$		[1,2] AAD	23BM	ATLS	$\gamma\gamma \to \tau^+\tau^-$, Pb−Pb
$0.001^{+0.055}_{-0.089}$		[2,3] TUMASYAN	23AS	CMS	$\gamma\gamma \to \tau^+\tau^-$, Pb-Pb
−0.018±0.017		[2,4] ABDALLAH	04K	DLPH	$e^+e^- \to e^+e^-\tau^+\tau^-$
< 0.107	95	[5] ACHARD	04G	L3	$e^+e^- \to e^+e^-\tau^+\tau^-$
−0.007 to 0.005	95	[6] GONZALEZ-S...	00	RVUE	$e^+e^- \to \tau^+\tau^-$ and $W \to \tau\nu_\tau$
−0.052 to 0.058	95	[7] ACCIARRI	98E	L3	1991–1995 LEP runs
−0.068 to 0.065	95	[8] ACKERSTAFF	98N	OPAL	1990–1995 LEP runs
−0.004 to 0.006	95	[9] ESCRIBANO	97	RVUE	$Z \to \tau^+\tau^-$ at LEP
< 0.01	95	[10] ESCRIBANO	93	RVUE	$Z \to \tau^+\tau^-$ at LEP
< 0.12	90	GRIFOLS	91	RVUE	$Z \to \tau\tau\gamma$ at LEP
< 0.023	95	[11] SILVERMAN	83	RVUE	$e^+e^- \to \tau^+\tau^-$ at PETRA

[1] AAD 23BM measurement is derived from $\gamma\gamma \rightarrow \tau^+\tau^-$ total cross-section from 1.44 nb^{-1} LHC Pb−Pb collisions at $\sqrt{S_{NN}}$ = 5.02 TeV. Authors report both the measured value and the corresponding 95% CL limit. NODE=S035MM;LINKAGE=F

[2] Measurement ill-suited for a standard average because its likelihood appears to be remarkably non-Gaussian and asymmetric according to the model-dependent extraction procedure and the reported 95% CL limits. NODE=S035MM;LINKAGE=D

[3] TUMASYAN 23AS measurement is derived from $\gamma\gamma \rightarrow \tau^+\tau^-$ total cross-section from 404 μb^{-1} LHC Pb-Pb collisions at $\sqrt{S_{NN}}$ = 5.02 TeV. NODE=S035MM;LINKAGE=E

[4] ABDALLAH 04K measurement is derived from $e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ total cross-section measurements at $\sqrt{s}$ between 183 and 208 GeV. In addition to the measurement, the authors also quote 95% CL limits of > -0.052 and < 0.013. NODE=S035MM;LINKAGE=AB

[5] ACHARD 04G limit is derived from $e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ total cross-section measurements at $\sqrt{s}$ between 189 and 206 GeV, and is on the absolute value of the magnetic moment anomaly. NODE=S035MM;LINKAGE=AH

[6] GONZALEZ-SPRINBERG 00 use data on tau lepton production at LEP1, SLC, and LEP2, and data from colliders and LEP2 to determine limits. Assume imaginary component is zero. NODE=S035MM;LINKAGE=GS

[7] ACCIARRI 98E use $Z \rightarrow \tau^+\tau^-\gamma$ events. In addition to the limits, the authors also quote a value of 0.004 ± 0.027 ± 0.023. NODE=S035MM;LINKAGE=AC

[8] ACKERSTAFF 98N use $Z \rightarrow \tau^+\tau^-\gamma$ events. The limit applies to an average of the form factor for off-shell τ's having p^2 ranging from m_τ^2 to $(M_Z - m_\tau)^2$. NODE=S035MM;LINKAGE=NA

[9] ESCRIBANO 97 use preliminary experimental results. NODE=S035MM;LINKAGE=C

[10] ESCRIBANO 93 limit derived from $\Gamma(Z \rightarrow \tau^+\tau^-)$, and is on the absolute value of the magnetic moment anomaly. NODE=S035MM;LINKAGE=A

[11] SILVERMAN 83 limit is derived from $e^+e^- \rightarrow \tau^+\tau^-$ total cross-section measurements for q^2 up to (37 GeV)^2. NODE=S035MM;LINKAGE=B

τ ELECTRIC DIPOLE MOMENT (d_τ)

NODE=S035240

A nonzero value is forbidden by both T invariance and P invariance. NODE=S035240

The q^2 dependence is expected to be small providing no thresholds are nearby.

Re(d_τ)

NODE=S035EDM
NODE=S035EDM

VALUE (10^{-16} e cm)	CL%	DOCUMENT ID		TECN	COMMENT
− 0.185 to 0.061	95	[1] INAMI	22	BELL	E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 2.3	90	[2] GROZIN	09A	RVUE	From e EDM limit
< 3.7	95	[3] ABDALLAH	04K	DLPH	$e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ at LEP2
< 11.4	95	[4] ACHARD	04G	L3	$e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ at LEP2
− 0.22 to 0.45	95	[5] INAMI	03	BELL	E^{ee}_{cm}= 10.6 GeV
< 4.6	95	[6] ALBRECHT	00	ARG	E^{ee}_{cm}= 10.4 GeV
> −3.1 and < 3.1	95	ACCIARRI	98E	L3	1991–1995 LEP runs
> −3.8 and < 3.6	95	[7] ACKERSTAFF	98N	OPAL	1990–1995 LEP runs
< 0.11	95	[8,9] ESCRIBANO	97	RVUE	$Z \rightarrow \tau^+\tau^-$ at LEP
< 0.5	95	[10] ESCRIBANO	93	RVUE	$Z \rightarrow \tau^+\tau^-$ at LEP
< 7	90	GRIFOLS	91	RVUE	$Z \rightarrow \tau\tau\gamma$ at LEP
< 1.6	90	DELAGUILA	90	RVUE	$e^+e^- \rightarrow \tau^+\tau^-$ E^{ee}_{cm}= 35 GeV

[1] INAMI 22 use $e^+e^- \rightarrow \tau^+\tau^-$ events from 833 fb^{-1} of data. Also report a measurement of Re(d_τ) = $(-0.62 \pm 0.63) \times 10^{-17}$ ecm. NODE=S035EDM;LINKAGE=D

[2] GROZIN 09A calculate the contribution to the electron electric dipole moment from the τ electric dipole moment appearing in loops, which is $\Delta d_e = 6.9 \times 10^{-12}\ d_\tau$. Dividing the REGAN 02 upper limit $|d_e| \leq 1.6 \times 10^{-27}$ e cm at CL=90% by 6.9×10^{-12} gives this limit. NODE=S035EDM;LINKAGE=GR

[3] ABDALLAH 04K limit is derived from $e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ total cross-section measurements at $\sqrt{s}$ between 183 and 208 GeV and is on the absolute value of d_τ. NODE=S035EDM;LINKAGE=AB

[4] ACHARD 04G limit is derived from $e^+e^- \rightarrow e^+e^-\tau^+\tau^-$ total cross-section measurements at $\sqrt{s}$ between 189 and 206 GeV, and is on the absolute value of d_τ. NODE=S035EDM;LINKAGE=AC

[5] INAMI 03 use $e^+e^- \rightarrow \tau^+\tau^-$ events. NODE=S035EDM;LINKAGE=IN

[6] ALBRECHT 00 use $e^+e^- \rightarrow \tau^+\tau^-$ events. Limit is on the absolute value of Re(d_τ). NODE=S035EDM;LINKAGE=AT

[7] ACKERSTAFF 98N use $Z \rightarrow \tau^+\tau^-\gamma$ events. The limit applies to an average of the form factor for off-shell τ's having p^2 ranging from m_τ^2 to $(M_Z - m_\tau)^2$. NODE=S035EDM;LINKAGE=NA

[8] ESCRIBANO 97 derive the relationship $|d_\tau| = \cot\theta_W\ |d_\tau^W|$ using effective Lagrangian methods, and use a conference result $|d_\tau^W| < 5.8 \times 10^{-18}$ e cm at 95% CL (L. Silvestris, ICHEP96) to obtain this result. NODE=S035EDM;LINKAGE=B

[9] ESCRIBANO 97 use preliminary experimental results. NODE=S035EDM;LINKAGE=C

[10] ESCRIBANO 93 limit derived from $\Gamma(Z \rightarrow \tau^+\tau^-)$, and is on the absolute value of the electric dipole moment. NODE=S035EDM;LINKAGE=A

Im(d_τ)

NODE=S035EDI
NODE=S035EDI

VALUE (10^{-16} e cm)	CL%	DOCUMENT ID		TECN	COMMENT
−0.103 to 0.023 (CL = 95%) [−0.103 to 0.0230 × 10^{-16} e cm (CL = 95%) OUR 2025 BEST LIMIT]					
−0.103 to 0.023	95	[1] INAMI	22	BELL	E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.25 to 0.008	95	[2] INAMI	03	BELL	E^{ee}_{cm} = 10.6 GeV
< 1.8	95	[3] ALBRECHT	00	ARG	E^{ee}_{cm} = 10.4 GeV

[1] INAMI 22 use $e^+ e^- \to \tau^+ \tau^-$ events from 833 fb^{-1} of data. Also report a measurement of Im(d_τ) = (-0.40 ± 0.32) × 10^{-17} ecm. NODE=S035EDI;LINKAGE=A

[2] INAMI 03 use $e^+ e^- \to \tau^+ \tau^-$ events. NODE=S035EDI;LINKAGE=IN

[3] ALBRECHT 00 use $e^+ e^- \to \tau^+ \tau^-$ events. Limit is on the absolute value of Im(d_τ). NODE=S035EDI;LINKAGE=AT

τ WEAK DIPOLE MOMENT (d^w_τ)

NODE=S035242

A nonzero value is forbidden by *CP* invariance.

NODE=S035242

The q^2 dependence is expected to be small providing no thresholds are nearby.

Re(d^w_τ)

NODE=S035WDM
NODE=S035WDM

VALUE (10^{-17} e cm)	CL%	DOCUMENT ID		TECN	COMMENT
<0.50	95	[1] HEISTER	03F	ALEP	1990–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.0	90	[1] ACCIARRI	98C	L3	1991–1995 LEP runs
<0.56	95	ACKERSTAFF	97L	OPAL	1991–1995 LEP runs
<0.78	95	[2] AKERS	95F	OPAL	Repl. by ACKERSTAFF 97L
<1.5	95	[2] BUSKULIC	95C	ALEP	Repl. by HEISTER 03F
<7.0	95	[2] ACTON	92F	OPAL	$Z \to \tau^+ \tau^-$ at LEP
<3.7	95	[2] BUSKULIC	92J	ALEP	Repl. by BUSKULIC 95C

[1] Limit is on the absolute value of the real part of the weak dipole moment. NODE=S035WDM;LINKAGE=WA

[2] Limit is on the absolute value of the real part of the weak dipole moment, and applies for $q^2 = m^2_Z$. NODE=S035WDM;LINKAGE=A

Im(d^w_τ)

NODE=S035WDI
NODE=S035WDI

VALUE (10^{-17} e cm)	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	95	[1] HEISTER	03F	ALEP	1990–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.5	95	ACKERSTAFF	97L	OPAL	1991–1995 LEP runs
<4.5	95	[2] AKERS	95F	OPAL	Repl. by ACKERSTAFF 97L

[1] HEISTER 03F limit is on the absolute value of the imaginary part of the weak dipole moment. NODE=S035WDI;LINKAGE=HF

[2] Limit is on the absolute value of the imaginary part of the weak dipole moment, and applies for $q^2 = m^2_Z$. NODE=S035WDI;LINKAGE=A

τ WEAK ANOMALOUS MAGNETIC DIPOLE MOMENT (α^w_τ)

NODE=S035243

Electroweak radiative corrections are expected to contribute at the 10^{-6} level. See BERNABEU 95.

NODE=S035243

The q^2 dependence is expected to be small providing no thresholds are nearby.

Re(α^w_τ)

NODE=S035WMM
NODE=S035WMM

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1 × 10^{-3}	95	[1] HEISTER	03F	ALEP	1990–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
> −0.0024 and < 0.0025	95	[2] GONZALEZ-S...	00	RVUE	$e^+ e^- \to \tau^+ \tau^-$ and $W \to \tau \nu_\tau$
<4.5 × 10^{-3}	90	[1] ACCIARRI	98C	L3	1991–1995 LEP runs

[1] Limit is on the absolute value of the real part of the weak anomalous magnetic dipole moment. NODE=S035WMM;LINKAGE=WA

[2] GONZALEZ-SPRINBERG 00 use data on tau lepton production at LEP1, SLC, and LEP2, and data from colliders and LEP2 to determine limits. Assume imaginary component is zero. NODE=S035WMM;LINKAGE=GS

$\mathrm{Im}(\alpha^w_\tau)$

NODE=S035WMI
NODE=S035WMI

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.7 \times 10^{-3}$	95	[1] HEISTER	03F	ALEP	1990–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<9.9 \times 10^{-3}$	90	[1] ACCIARRI	98C	L3	1991–1995 LEP runs

[1] Limit is on the absolute value of the imaginary part of the weak anomalous magnetic dipole moment.

NODE=S035WMI;LINKAGE=WA

τ^- DECAY MODES

NODE=S035215;NODE=S035

τ^+ modes are charge conjugates of the modes below. "$h^\pm$" stands for $\pi^\pm$ or $K^\pm$. "ℓ" stands for e or μ. "Neutrals" stands for γ's and/or π^0's.

NODE=S035

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	
	Modes with one charged particle				NODE=S035;CLUMP=B
Γ_1	particle$^-$ ≥ 0 neutrals $\geq 0K^0\nu_\tau$ ("1-prong")		(85.24 ± 0.06) %		DESIG=219
Γ_2	particle$^-$ ≥ 0 neutrals $\geq 0K^0_L\nu_\tau$		(84.58 ± 0.06) %		DESIG=191
Γ_3	$\mu^-\overline{\nu}_\mu\nu_\tau$	[a]	(17.39 ± 0.04) %		DESIG=1
Γ_4	$\mu^-\overline{\nu}_\mu\nu_\tau\gamma$	[b]	$(3.67 \pm 0.08) \times 10^{-3}$		DESIG=76
Γ_5	$e^-\overline{\nu}_e\nu_\tau$	[a]	(17.82 ± 0.04) %		DESIG=2
Γ_6	$e^-\overline{\nu}_e\nu_\tau\gamma$	[b]	(1.83 ± 0.05) %		DESIG=274
Γ_7	$h^- \geq 0K^0_L\ \nu_\tau$		(12.03 ± 0.05) %		DESIG=181
Γ_8	$h^-\nu_\tau$		(11.51 ± 0.05) %		DESIG=217
Γ_9	$\pi^-\nu_\tau$	[a]	(10.82 ± 0.05) %		DESIG=12
Γ_{10}	$K^-\nu_\tau$	[a]	$(6.96 \pm 0.10) \times 10^{-3}$		DESIG=7
Γ_{11}	$h^- \geq 1$ neutralsν_τ		(37.00 ± 0.09) %		DESIG=192
Γ_{12}	$h^- \geq 1\pi^0\nu_\tau(\text{ex.}K^0)$		(36.50 ± 0.09) %		DESIG=299
Γ_{13}	$h^-\pi^0\nu_\tau$		(25.93 ± 0.09) %		DESIG=171
Γ_{14}	$\pi^-\pi^0\nu_\tau$	[a]	(25.49 ± 0.09) %		DESIG=16
Γ_{15}	$\pi^-\pi^0$ non-$\rho(770)\nu_\tau$		$(3.0 \pm 3.2) \times 10^{-3}$		DESIG=24
Γ_{16}	$K^-\pi^0\nu_\tau$	[a]	$(4.33 \pm 0.15) \times 10^{-3}$		DESIG=182
Γ_{17}	$h^- \geq 2\pi^0\nu_\tau$		(10.81 ± 0.09) %		DESIG=19
Γ_{18}	$h^-2\pi^0\nu_\tau$		(9.48 ± 0.10) %		DESIG=218
Γ_{19}	$h^-2\pi^0\nu_\tau(\text{ex.}K^0)$		(9.32 ± 0.10) %		DESIG=27
Γ_{20}	$\pi^-2\pi^0\nu_\tau(\text{ex.}K^0)$	[a]	(9.26 ± 0.10) %		DESIG=201
Γ_{21}	$\pi^-2\pi^0\nu_\tau(\text{ex.}K^0)$, scalar		$< 9 \times 10^{-3}$	CL=95%	DESIG=282
Γ_{22}	$\pi^-2\pi^0\nu_\tau(\text{ex.}K^0)$, vector		$< 7 \times 10^{-3}$	CL=95%	DESIG=283
Γ_{23}	$K^-2\pi^0\nu_\tau(\text{ex.}K^0)$	[a]	$(6.5 \pm 2.2) \times 10^{-4}$		DESIG=115
Γ_{24}	$h^- \geq 3\pi^0\nu_\tau$		(1.34 ± 0.07) %		DESIG=79
Γ_{25}	$h^- \geq 3\pi^0\nu_\tau(\text{ex. } K^0)$		(1.25 ± 0.07) %		DESIG=300
Γ_{26}	$h^-3\pi^0\nu_\tau$		(1.18 ± 0.07) %		DESIG=26
Γ_{27}	$\pi^-3\pi^0\nu_\tau(\text{ex.}K^0)$	[a]	(1.04 ± 0.07) %		DESIG=203
Γ_{28}	$K^-3\pi^0\nu_\tau(\text{ex.}K^0,\ \eta)$	[a]	$(4.8 \pm 2.1) \times 10^{-4}$		DESIG=116
Γ_{29}	$h^-4\pi^0\nu_\tau(\text{ex.}K^0)$		$(1.6 \pm 0.4) \times 10^{-3}$		DESIG=220
Γ_{30}	$h^-4\pi^0\nu_\tau(\text{ex.}K^0,\eta)$	[a]	$(1.1 \pm 0.4) \times 10^{-3}$		DESIG=110
Γ_{31}	$a_1(1260)\nu_\tau \to \pi^-\gamma\nu_\tau$		$(4.0 \pm 1.5) \times 10^{-4}$		DESIG=344
Γ_{32}	$K^- \geq 0\pi^0\ \geq 0K^0\ \geq 0\gamma\ \nu_\tau$		(1.552 ± 0.029) %		DESIG=198
Γ_{33}	$K^- \geq 1\ (\pi^0$ or K^0 or $\gamma)\ \nu_\tau$		$(8.59 \pm 0.28) \times 10^{-3}$		DESIG=11

	Modes with K^0's					NODE=S035;CLUMP=F
Γ_{34}	K_S^0 (particles)$^-$ ν_τ		$(9.43 \pm 0.28) \times 10^{-3}$			DESIG=127
Γ_{35}	$h^- \overline{K}^0 \nu_\tau$		$(9.87 \pm 0.14) \times 10^{-3}$			DESIG=212
Γ_{36}	$\pi^- \overline{K}^0 \nu_\tau$	[a]	$(8.38 \pm 0.14) \times 10^{-3}$			DESIG=117
Γ_{37}	$\pi^- \overline{K}^0$ (non-$K^*(892)^-$) ν_τ		$(5.4 \pm 2.1) \times 10^{-4}$			DESIG=142
Γ_{38}	$K^- K^0 \nu_\tau$	[a]	$(1.486 \pm 0.034) \times 10^{-3}$			DESIG=62
Γ_{39}	$K^- K^0 \geq 0\pi^0 \nu_\tau$		$(2.99 \pm 0.07) \times 10^{-3}$			DESIG=273
Γ_{40}	$h^- \overline{K}^0 \pi^0 \nu_\tau$		$(5.32 \pm 0.13) \times 10^{-3}$			DESIG=213
Γ_{41}	$\pi^- \overline{K}^0 \pi^0 \nu_\tau$	[a]	$(3.82 \pm 0.13) \times 10^{-3}$			DESIG=118
Γ_{42}	$\overline{K}^0 \rho^- \nu_\tau$		$(2.2 \pm 0.5) \times 10^{-3}$			DESIG=249
Γ_{43}	$K^- K^0 \pi^0 \nu_\tau$	[a]	$(1.50 \pm 0.07) \times 10^{-3}$			DESIG=119
Γ_{44}	$\pi^- \overline{K}^0 \geq 1\pi^0 \nu_\tau$		$(4.08 \pm 0.25) \times 10^{-3}$			DESIG=272
Γ_{45}	$\pi^- \overline{K}^0 \pi^0 \pi^0 \nu_\tau$ (ex.K^0)	[a]	$(2.6 \pm 2.3) \times 10^{-4}$			DESIG=238
Γ_{46}	$K^- K^0 \pi^0 \pi^0 \nu_\tau$		$< 1.6 \times 10^{-4}$	CL=95%		DESIG=239
Γ_{47}	$\pi^- K^0 \overline{K}^0 \nu_\tau$		$(1.55 \pm 0.24) \times 10^{-3}$			DESIG=141
Γ_{48}	$\pi^- K_S^0 K_S^0 \nu_\tau$	[a]	$(2.35 \pm 0.06) \times 10^{-4}$			DESIG=214
Γ_{49}	$\pi^- K_S^0 K_L^0 \nu_\tau$	[a]	$(1.08 \pm 0.24) \times 10^{-3}$			DESIG=240
Γ_{50}	$\pi^- K_L^0 K_L^0 \nu_\tau$		$(2.35 \pm 0.06) \times 10^{-4}$			DESIG=342
Γ_{51}	$\pi^- K^0 \overline{K}^0 \pi^0 \nu_\tau$		$(3.6 \pm 1.2) \times 10^{-4}$			DESIG=278
Γ_{52}	$\pi^- K_S^0 K_S^0 \pi^0 \nu_\tau$	[a]	$(1.82 \pm 0.21) \times 10^{-5}$			DESIG=241
Γ_{53}	$K^{*-} K^0 \pi^0 \nu_\tau \to \pi^- K_S^0 K_S^0 \pi^0 \nu_\tau$		$(1.08 \pm 0.21) \times 10^{-5}$			DESIG=336
Γ_{54}	$f_1(1285) \pi^- \nu_\tau \to \pi^- K_S^0 K_S^0 \pi^0 \nu_\tau$		$(6.8 \pm 1.5) \times 10^{-6}$			DESIG=337
Γ_{55}	$f_1(1420) \pi^- \nu_\tau \to \pi^- K_S^0 K_S^0 \pi^0 \nu_\tau$		$(2.4 \pm 0.8) \times 10^{-6}$			DESIG=338
Γ_{56}	$\pi^- K_S^0 K_L^0 \pi^0 \nu_\tau$	[a]	$(3.2 \pm 1.2) \times 10^{-4}$			DESIG=242
Γ_{57}	$\pi^- K_L^0 K_L^0 \pi^0 \nu_\tau$		$(1.82 \pm 0.21) \times 10^{-5}$			DESIG=343
Γ_{58}	$K^- K_S^0 K_S^0 \nu_\tau$		$< 6.3 \times 10^{-7}$	CL=90%		DESIG=332
Γ_{59}	$K^- K_S^0 K_S^0 \pi^0 \nu_\tau$		$< 4.0 \times 10^{-7}$	CL=90%		DESIG=333
Γ_{60}	$K^0 h^+ h^- h^- \geq 0$ neutrals ν_τ		$< 1.7 \times 10^{-3}$	CL=95%		DESIG=29
Γ_{61}	$K^0 h^+ h^- h^- \nu_\tau$	[a]	$(2.5 \pm 2.0) \times 10^{-4}$			DESIG=244
	Modes with three charged particles					NODE=S035;CLUMP=C
Γ_{62}	$h^- h^- h^+ \geq 0$ neutrals $\geq 0 K_L^0 \nu_\tau$		(15.20 ± 0.06) %			DESIG=194
Γ_{63}	$h^- h^- h^+ \geq 0$ neutrals ν_τ (ex. $K_S^0 \to \pi^+\pi^-$) ("3-prong")		(14.55 ± 0.06) %			DESIG=209
Γ_{64}	$h^- h^- h^+ \nu_\tau$		(9.80 ± 0.05) %			DESIG=17
Γ_{65}	$h^- h^- h^+ \nu_\tau$ (ex.K^0)		(9.46 ± 0.05) %			DESIG=208
Γ_{66}	$h^- h^- h^+ \nu_\tau$ (ex.K^0,ω)		(9.43 ± 0.05) %			DESIG=215
Γ_{67}	$\pi^- \pi^+ \pi^- \nu_\tau$		(9.31 ± 0.05) %			DESIG=257
Γ_{68}	$\pi^- \pi^+ \pi^- \nu_\tau$ (ex.K^0)		(9.02 ± 0.05) %			DESIG=258
Γ_{69}	$\pi^- \pi^+ \pi^- \nu_\tau$ (ex.K^0), non-axial vector		< 2.4 %	CL=95%		DESIG=284
Γ_{70}	$\pi^- \pi^+ \pi^- \nu_\tau$ (ex.K^0,ω)	[a]	(8.99 ± 0.05) %			DESIG=259
Γ_{71}	$h^- h^- h^+ \geq 1$ neutrals ν_τ		(5.29 ± 0.05) %			DESIG=18
Γ_{72}	$h^- h^- h^+ \geq 1\pi^0 \nu_\tau$ (ex. K^0)		(5.09 ± 0.05) %			DESIG=222
Γ_{73}	$h^- h^- h^+ \pi^0 \nu_\tau$		(4.76 ± 0.05) %			DESIG=25
Γ_{74}	$h^- h^- h^+ \pi^0 \nu_\tau$ (ex.K^0)		(4.57 ± 0.05) %			DESIG=143
Γ_{75}	$h^- h^- h^+ \pi^0 \nu_\tau$ (ex. K^0, ω)		(2.79 ± 0.07) %			DESIG=202
Γ_{76}	$\pi^- \pi^+ \pi^- \pi^0 \nu_\tau$		(4.62 ± 0.05) %			DESIG=261
Γ_{77}	$\pi^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0)		(4.49 ± 0.05) %			DESIG=262
Γ_{78}	$\pi^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0,ω)	[a]	(2.74 ± 0.07) %			DESIG=263
Γ_{79}	$h^- \rho \pi^0 \nu_\tau$					DESIG=91
Γ_{80}	$h^- \rho^+ h^- \nu_\tau$					DESIG=92
Γ_{81}	$h^- \rho^- h^+ \nu_\tau$					DESIG=93
Γ_{82}	$h^- h^- h^+ \geq 2\pi^0 \nu_\tau$ (ex. K^0)		$(5.17 \pm 0.31) \times 10^{-3}$			DESIG=301
Γ_{83}	$h^- h^- h^+ 2\pi^0 \nu_\tau$		$(5.05 \pm 0.31) \times 10^{-3}$			DESIG=221
Γ_{84}	$h^- h^- h^+ 2\pi^0 \nu_\tau$ (ex.K^0)		$(4.95 \pm 0.31) \times 10^{-3}$			DESIG=112

Γ_{85}	$h^- h^- h^+ 2\pi^0 \nu_\tau$ (ex.K^0,ω,η)	[a]	$(10 \pm 4) \times 10^{-4}$		DESIG=216
Γ_{86}	$h^- h^- h^+ 3\pi^0 \nu_\tau$		$(2.13 \pm 0.30) \times 10^{-4}$		DESIG=204
Γ_{87}	$2\pi^- \pi^+ 3\pi^0 \nu_\tau$ (ex.K^0)		$(1.94 \pm 0.30) \times 10^{-4}$		DESIG=318
Γ_{88}	$2\pi^- \pi^+ 3\pi^0 \nu_\tau$ (ex.K^0, η, $f_1(1285)$)		$(1.7 \pm 0.4) \times 10^{-4}$		DESIG=319
Γ_{89}	$2\pi^- \pi^+ 3\pi^0 \nu_\tau$ (ex.K^0, η, ω, $f_1(1285)$)	[a]	$(1.4 \pm 2.7) \times 10^{-5}$		DESIG=320
Γ_{90}	$K^- h^+ h^- \geq 0$ neutrals ν_τ		$(6.29 \pm 0.14) \times 10^{-3}$		DESIG=28
Γ_{91}	$K^- h^+ \pi^- \nu_\tau$ (ex.K^0)		$(4.37 \pm 0.07) \times 10^{-3}$		DESIG=270
Γ_{92}	$K^- h^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0)		$(8.6 \pm 1.2) \times 10^{-4}$		DESIG=271
Γ_{93}	$K^- \pi^+ \pi^- \geq 0$ neutrals ν_τ		$(4.77 \pm 0.14) \times 10^{-3}$		DESIG=6
Γ_{94}	$K^- \pi^+ \pi^- \geq 0\pi^0 \nu_\tau$ (ex.K^0)		$(3.73 \pm 0.13) \times 10^{-3}$		DESIG=275
Γ_{95}	$K^- \pi^+ \pi^- \nu_\tau$		$(3.45 \pm 0.07) \times 10^{-3}$		DESIG=245
Γ_{96}	$K^- \pi^+ \pi^- \nu_\tau$ (ex.K^0)		$(2.93 \pm 0.07) \times 10^{-3}$		DESIG=260
Γ_{97}	$K^- \pi^+ \pi^- \nu_\tau$ (ex.K^0,ω)	[a]	$(2.93 \pm 0.07) \times 10^{-3}$		DESIG=340
Γ_{98}	$K^- \rho^0 \nu_\tau \rightarrow K^- \pi^+ \pi^- \nu_\tau$		$(1.4 \pm 0.5) \times 10^{-3}$		DESIG=286
Γ_{99}	$K^- \pi^+ \pi^- \pi^0 \nu_\tau$		$(1.31 \pm 0.12) \times 10^{-3}$		DESIG=246
Γ_{100}	$K^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0)		$(7.9 \pm 1.2) \times 10^{-4}$		DESIG=264
Γ_{101}	$K^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0,η)		$(7.6 \pm 1.2) \times 10^{-4}$		DESIG=285
Γ_{102}	$K^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0,ω)		$(3.7 \pm 0.9) \times 10^{-4}$		DESIG=294
Γ_{103}	$K^- \pi^+ \pi^- \pi^0 \nu_\tau$ (ex.K^0,ω,η)	[a]	$(3.9 \pm 1.4) \times 10^{-4}$		DESIG=341
Γ_{104}	$K^- \pi^+ K^- \geq 0$ neut. ν_τ		$< 9 \times 10^{-4}$	CL=95%	DESIG=123
Γ_{105}	$K^- K^+ \pi^- \geq 0$ neut. ν_τ		$(1.496 \pm 0.033) \times 10^{-3}$		DESIG=122
Γ_{106}	$K^- K^+ \pi^- \nu_\tau$	[a]	$(1.435 \pm 0.027) \times 10^{-3}$		DESIG=5
Γ_{107}	$K^- K^+ \pi^- \pi^0 \nu_\tau$	[a]	$(6.1 \pm 1.8) \times 10^{-5}$		DESIG=247
Γ_{108}	$K^- K^+ K^- \nu_\tau$		$(2.2 \pm 0.8) \times 10^{-5}$	S=5.4	DESIG=248
Γ_{109}	$K^- K^+ K^- \nu_\tau$ (ex. ϕ)		$< 2.5 \times 10^{-6}$	CL=90%	DESIG=303
Γ_{110}	$K^- K^+ K^- \pi^0 \nu_\tau$		$< 4.8 \times 10^{-6}$	CL=90%	DESIG=296
Γ_{111}	$\pi^- K^+ \pi^- \geq 0$ neut. ν_τ		$< 2.5 \times 10^{-3}$	CL=95%	DESIG=121
Γ_{112}	$e^- e^- e^+ \overline{\nu}_e \nu_\tau$		$(2.8 \pm 1.5) \times 10^{-5}$		DESIG=210
Γ_{113}	$\mu^- e^- e^+ \overline{\nu}_\mu \nu_\tau$		$< 3.2 \times 10^{-5}$	CL=90%	DESIG=211
Γ_{114}	$\pi^- e^- e^+ \nu_\tau$		seen		DESIG=350
Γ_{115}	$\pi^- \mu^- \mu^+ \nu_\tau$		$< 1.14 \times 10^{-5}$	CL=90%	DESIG=349
	Modes with five charged particles				NODE=S035;CLUMP=D
Γ_{116}	$3h^- 2h^+ \geq 0$ neutrals ν_τ (ex. $K^0_S \rightarrow \pi^- \pi^+$) ("5-prong")		$(9.9 \pm 0.4) \times 10^{-4}$		DESIG=20
Γ_{117}	$3h^- 2h^+ \nu_\tau$ (ex.K^0)		$(8.29 \pm 0.31) \times 10^{-4}$		DESIG=3
Γ_{118}	$3\pi^- 2\pi^+ \nu_\tau$ (ex.K^0, ω)		$(8.27 \pm 0.31) \times 10^{-4}$		DESIG=321
Γ_{119}	$3\pi^- 2\pi^+ \nu_\tau$ (ex.K^0, ω, $f_1(1285)$)	[a]	$(7.75 \pm 0.30) \times 10^{-4}$		DESIG=322
Γ_{120}	$K^- 2\pi^- 2\pi^+ \nu_\tau$ (ex.K^0)	[a]	$(6 \pm 12) \times 10^{-7}$		DESIG=327
Γ_{121}	$K^+ 3\pi^- \pi^+ \nu_\tau$		$< 5.0 \times 10^{-6}$	CL=90%	DESIG=328
Γ_{122}	$K^+ K^- 2\pi^- \pi^+ \nu_\tau$		$< 4.5 \times 10^{-7}$	CL=90%	DESIG=329
Γ_{123}	$3h^- 2h^+ \pi^0 \nu_\tau$ (ex.K^0)		$(1.65 \pm 0.11) \times 10^{-4}$		DESIG=4
Γ_{124}	$3\pi^- 2\pi^+ \pi^0 \nu_\tau$ (ex.K^0)		$(1.64 \pm 0.11) \times 10^{-4}$		DESIG=323
Γ_{125}	$3\pi^- 2\pi^+ \pi^0 \nu_\tau$ (ex.K^0, η, $f_1(1285)$)		$(1.11 \pm 0.10) \times 10^{-4}$		DESIG=324
Γ_{126}	$3\pi^- 2\pi^+ \pi^0 \nu_\tau$ (ex.K^0, η, ω, $f_1(1285)$)	[a]	$(3.8 \pm 0.9) \times 10^{-5}$		DESIG=325
Γ_{127}	$K^- 2\pi^- 2\pi^+ \pi^0 \nu_\tau$ (ex.K^0)	[a]	$(1.1 \pm 0.6) \times 10^{-6}$		DESIG=330
Γ_{128}	$K^+ 3\pi^- \pi^+ \pi^0 \nu_\tau$		$< 8 \times 10^{-7}$	CL=90%	DESIG=331
Γ_{129}	$3h^- 2h^+ 2\pi^0 \nu_\tau$		$< 3.4 \times 10^{-6}$	CL=90%	DESIG=128

Miscellaneous other allowed modes

NODE=S035;CLUMP=E

Γ_{130}	$(5\pi)^-\nu_\tau$		$(7.8 \pm 0.5) \times 10^{-3}$		DESIG=129
Γ_{131}	$4h^-3h^+ \geq 0$ neutrals ν_τ ("7-prong")		$< 3.0 \times 10^{-7}$	CL=90%	DESIG=61
Γ_{132}	$4h^-3h^+\nu_\tau$		$< 4.3 \times 10^{-7}$	CL=90%	DESIG=290
Γ_{133}	$4h^-3h^+\pi^0\nu_\tau$		$< 2.5 \times 10^{-7}$	CL=90%	DESIG=291
Γ_{134}	$X^-(S{=}-1)\nu_\tau$		(2.92 ± 0.04) %		DESIG=281
Γ_{135}	$K^*(892)^- \geq 0$ neutrals $\geq 0K^0_L\nu_\tau$		(1.42 ± 0.18) %	S=1.4	DESIG=23
Γ_{136}	$K^*(892)^-\nu_\tau$		(1.20 ± 0.07) %	S=1.8	DESIG=21
Γ_{137}	$K^*(892)^-\nu_\tau \to \pi^-\overline{K}^0\nu_\tau$		$(7.82 \pm 0.26) \times 10^{-3}$		DESIG=304
Γ_{138}	$K^*(892)^0K^- \geq 0$ neutrals ν_τ		$(3.2 \pm 1.4) \times 10^{-3}$		DESIG=97
Γ_{139}	$K^*(892)^0K^-\nu_\tau$		$(2.1 \pm 0.4) \times 10^{-3}$		DESIG=206
Γ_{140}	$\overline{K}^*(892)^0\pi^- \geq 0$ neutrals ν_τ		$(3.8 \pm 1.7) \times 10^{-3}$		DESIG=98
Γ_{141}	$\overline{K}^*(892)^0\pi^-\nu_\tau$		$(2.2 \pm 0.5) \times 10^{-3}$		DESIG=205
Γ_{142}	$(\overline{K}^*(892)\pi)^-\nu_\tau \to \pi^-\overline{K}^0\pi^0\nu_\tau$		$(1.0 \pm 0.4) \times 10^{-3}$		DESIG=250
Γ_{143}	$K_1(1270)^-\nu_\tau$		$(4.7 \pm 1.1) \times 10^{-3}$		DESIG=125
Γ_{144}	$K_1(1400)^-\nu_\tau$		$(1.7 \pm 2.6) \times 10^{-3}$	S=1.7	DESIG=126
Γ_{145}	$K^*(1410)^-\nu_\tau$		$(1.5 {}^{+1.4}_{-1.0}) \times 10^{-3}$		DESIG=279
Γ_{146}	$K^*_0(1430)^-\nu_\tau$		$< 5 \times 10^{-4}$	CL=95%	DESIG=280
Γ_{147}	$K^*_2(1430)^-\nu_\tau$		$< 3 \times 10^{-3}$	CL=95%	DESIG=22
Γ_{148}	$a_0(980)^- \geq 0$ neutrals ν_τ				DESIG=99
Γ_{149}	$\eta\pi^-\nu_\tau$		$< 9.9 \times 10^{-5}$	CL=95%	DESIG=14
Γ_{150}	$\eta\pi^-\pi^0\nu_\tau$	[a]	$(1.39 \pm 0.07) \times 10^{-3}$		DESIG=58
Γ_{151}	$\eta\pi^-\pi^0\pi^0\nu_\tau$	[a]	$(1.9 \pm 0.4) \times 10^{-4}$		DESIG=68
Γ_{152}	$\eta K^-\nu_\tau$	[a]	$(1.55 \pm 0.08) \times 10^{-4}$		DESIG=109
Γ_{153}	$\eta K^*(892)^-\nu_\tau$		$(1.38 \pm 0.15) \times 10^{-4}$		DESIG=265
Γ_{154}	$\eta K^-\pi^0\nu_\tau$	[a]	$(4.8 \pm 1.2) \times 10^{-5}$		DESIG=266
Γ_{155}	$\eta K^-\pi^0(\text{non-}K^*(892))\nu_\tau$		$< 3.5 \times 10^{-5}$	CL=90%	DESIG=309
Γ_{156}	$\eta\overline{K}^0\pi^-\nu_\tau$	[a]	$(9.4 \pm 1.5) \times 10^{-5}$		DESIG=267
Γ_{157}	$\eta\overline{K}^0\pi^-\pi^0\nu_\tau$		$< 5.0 \times 10^{-5}$	CL=90%	DESIG=310
Γ_{158}	$\eta K^-K^0\nu_\tau$		$< 9.0 \times 10^{-6}$	CL=90%	DESIG=311
Γ_{159}	$\eta\pi^+\pi^-\pi^- \geq 0$ neutrals ν_τ		$< 3 \times 10^{-3}$	CL=90%	DESIG=66
Γ_{160}	$\eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0)$	[a]	$(2.20 \pm 0.13) \times 10^{-4}$		DESIG=230
Γ_{161}	$\eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0,f_1(1285))$		$(9.9 \pm 1.6) \times 10^{-5}$		DESIG=314
Γ_{162}	$\eta a_1(1260)^-\nu_\tau \to \eta\pi^-\rho^0\nu_\tau$		$< 3.9 \times 10^{-4}$	CL=90%	DESIG=231
Γ_{163}	$\eta\eta\pi^-\nu_\tau$		$< 7.4 \times 10^{-6}$	CL=90%	DESIG=69
Γ_{164}	$\eta\eta\pi^-\pi^0\nu_\tau$		$< 2.0 \times 10^{-4}$	CL=95%	DESIG=70
Γ_{165}	$\eta\eta K^-\nu_\tau$		$< 3.0 \times 10^{-6}$	CL=90%	DESIG=312
Γ_{166}	$\eta'(958)\pi^-\nu_\tau$		$< 4.0 \times 10^{-6}$	CL=90%	DESIG=232
Γ_{167}	$\eta'(958)\pi^-\pi^0\nu_\tau$		$< 1.2 \times 10^{-5}$	CL=90%	DESIG=233
Γ_{168}	$\eta'(958)K^-\nu_\tau$		$< 2.4 \times 10^{-6}$	CL=90%	DESIG=326
Γ_{169}	$\phi\pi^-\nu_\tau$		$(3.4 \pm 0.6) \times 10^{-5}$		DESIG=207
Γ_{170}	$\phi K^-\nu_\tau$	[a]	$(4.4 \pm 1.6) \times 10^{-5}$		DESIG=223
Γ_{171}	$f_1(1285)\pi^-\nu_\tau$		$(3.9 \pm 0.5) \times 10^{-4}$	S=1.9	DESIG=234
Γ_{172}	$f_1(1285)\pi^-\nu_\tau \to \eta\pi^-\pi^+\pi^-\nu_\tau$		$(1.18 \pm 0.07) \times 10^{-4}$	S=1.3	DESIG=235
Γ_{173}	$f_1(1285)\pi^-\nu_\tau \to 3\pi^-2\pi^+\nu_\tau$	[a]	$(5.2 \pm 0.4) \times 10^{-5}$		DESIG=315
Γ_{174}	$\pi(1300)^-\nu_\tau \to (\rho\pi)^-\nu_\tau \to (3\pi)^-\nu_\tau$		$< 1.0 \times 10^{-4}$	CL=90%	DESIG=276
Γ_{175}	$\pi(1300)^-\nu_\tau \to ((\pi\pi)_{S-\text{wave}}\pi)^-\nu_\tau \to (3\pi)^-\nu_\tau$		$< 1.9 \times 10^{-4}$	CL=90%	DESIG=277
Γ_{176}	$h^-\omega \geq 0$ neutrals ν_τ		(2.40 ± 0.08) %		DESIG=71
Γ_{177}	$h^-\omega\nu_\tau$		(1.99 ± 0.06) %		DESIG=8
Γ_{178}	$\pi^-\omega\nu_\tau$	[a]	(1.95 ± 0.06) %		DESIG=339
Γ_{179}	$K^-\omega\nu_\tau$	[a]	$(4.1 \pm 0.9) \times 10^{-4}$		DESIG=295
Γ_{180}	$h^-\omega\pi^0\nu_\tau$	[a]	$(4.1 \pm 0.4) \times 10^{-3}$		DESIG=113
Γ_{181}	$h^-\omega 2\pi^0\nu_\tau$		$(1.4 \pm 0.5) \times 10^{-4}$		DESIG=237
Γ_{182}	$\pi^-\omega 2\pi^0\nu_\tau$	[a]	$(7.2 \pm 1.6) \times 10^{-5}$		DESIG=317
Γ_{183}	$h^-2\omega\nu_\tau$		$< 5.4 \times 10^{-7}$	CL=90%	DESIG=302
Γ_{184}	$2h^-h^+\omega\nu_\tau$		$(1.20 \pm 0.22) \times 10^{-4}$		DESIG=287
Γ_{185}	$2\pi^-\pi^+\omega\nu_\tau(\text{ex.}K^0)$	[a]	$(8.4 \pm 0.6) \times 10^{-5}$		DESIG=316

Lepton Family number (LF), Lepton number (L), or Baryon number (B) violating modes

NODE=S035;CLUMP=A

L means lepton number violation (*e.g.* $\tau^- \to e^+\pi^-\pi^-$). Following common usage, LF means lepton family violation *and not* lepton number violation (*e.g.* $\tau^- \to e^-\pi^+\pi^-$). B means baryon number violation.

NODE=S035

Γ_{186}	$e^-\gamma$	LF	<	3.3	$\times 10^{-8}$	CL=90%	DESIG=32
Γ_{187}	$e^-\gamma\gamma$	LF	<	2.5	$\times 10^{-4}$	CL=90%	DESIG=355
Γ_{188}	$\mu^-\gamma$	LF	<	4.2	$\times 10^{-8}$	CL=90%	DESIG=31
Γ_{189}	$\mu^-\gamma\gamma$	LF	<	5.8	$\times 10^{-4}$	CL=90%	DESIG=356
Γ_{190}	$e^-\pi^0$	LF	<	8.0	$\times 10^{-8}$	CL=90%	DESIG=40
Γ_{191}	$\mu^-\pi^0$	LF	<	1.1	$\times 10^{-7}$	CL=90%	DESIG=39
Γ_{192}	$e^-K^0_S$	LF	<	2.6	$\times 10^{-8}$	CL=90%	DESIG=42
Γ_{193}	$\mu^-K^0_S$	LF	<	2.3	$\times 10^{-8}$	CL=90%	DESIG=41
Γ_{194}	$e^-\eta$	LF	<	9.2	$\times 10^{-8}$	CL=90%	DESIG=67
Γ_{195}	$\mu^-\eta$	LF	<	6.5	$\times 10^{-8}$	CL=90%	DESIG=114
Γ_{196}	$e^-\rho^0$	LF	<	2.2	$\times 10^{-8}$	CL=90%	DESIG=44
Γ_{197}	$\mu^-\rho^0$	LF	<	1.7	$\times 10^{-8}$	CL=90%	DESIG=43
Γ_{198}	$e^-\omega$	LF	<	2.4	$\times 10^{-8}$	CL=90%	DESIG=305
Γ_{199}	$\mu^-\omega$	LF	<	3.9	$\times 10^{-8}$	CL=90%	DESIG=306
Γ_{200}	$e^-K^*(892)^0$	LF	<	1.9	$\times 10^{-8}$	CL=90%	DESIG=53
Γ_{201}	$\mu^-K^*(892)^0$	LF	<	2.9	$\times 10^{-8}$	CL=90%	DESIG=54
Γ_{202}	$e^-\overline{K}^*(892)^0$	LF	<	1.7	$\times 10^{-8}$	CL=90%	DESIG=131
Γ_{203}	$\mu^-\overline{K}^*(892)^0$	LF	<	4.3	$\times 10^{-8}$	CL=90%	DESIG=132
Γ_{204}	$e^-\eta'(958)$	LF	<	1.6	$\times 10^{-7}$	CL=90%	DESIG=292
Γ_{205}	$\mu^-\eta'(958)$	LF	<	1.3	$\times 10^{-7}$	CL=90%	DESIG=293
Γ_{206}	$e^-f_0(980) \to e^-\pi^+\pi^-$	LF	<	3.2	$\times 10^{-8}$	CL=90%	DESIG=307
Γ_{207}	$\mu^-f_0(980) \to \mu^-\pi^+\pi^-$	LF	<	3.4	$\times 10^{-8}$	CL=90%	DESIG=308
Γ_{208}	$e^-\phi$	LF	<	2.0	$\times 10^{-8}$	CL=90%	DESIG=255
Γ_{209}	$\mu^-\phi$	LF	<	2.3	$\times 10^{-8}$	CL=90%	DESIG=256
Γ_{210}	$e^-e^+e^-$	LF	<	2.7	$\times 10^{-8}$	CL=90%	DESIG=38
Γ_{211}	$e^-\mu^+\mu^-$	LF	<	2.7	$\times 10^{-8}$	CL=90%	DESIG=36
Γ_{212}	$e^+\mu^-\mu^-$	LF	<	1.7	$\times 10^{-8}$	CL=90%	DESIG=55
Γ_{213}	$\mu^-e^+e^-$	LF	<	1.8	$\times 10^{-8}$	CL=90%	DESIG=37
Γ_{214}	$\mu^+e^-e^-$	LF	<	1.5	$\times 10^{-8}$	CL=90%	DESIG=56
Γ_{215}	$\mu^-\mu^+\mu^-$	LF	<	1.9	$\times 10^{-8}$	CL=90%	DESIG=35
Γ_{216}	$e^-\pi^+\pi^-$	LF	<	2.3	$\times 10^{-8}$	CL=90%	DESIG=45
Γ_{217}	$e^+\pi^-\pi^-$	L	<	2.0	$\times 10^{-8}$	CL=90%	DESIG=46
Γ_{218}	$\mu^-\pi^+\pi^-$	LF	<	2.1	$\times 10^{-8}$	CL=90%	DESIG=47
Γ_{219}	$\mu^+\pi^-\pi^-$	L	<	3.9	$\times 10^{-8}$	CL=90%	DESIG=48
Γ_{220}	$e^-\pi^+K^-$	LF	<	3.7	$\times 10^{-8}$	CL=90%	DESIG=49
Γ_{221}	$e^-\pi^-K^+$	LF	<	3.1	$\times 10^{-8}$	CL=90%	DESIG=77
Γ_{222}	$e^+\pi^-K^-$	L	<	3.2	$\times 10^{-8}$	CL=90%	DESIG=50
Γ_{223}	$e^-K^0_SK^0_S$	LF	<	7.1	$\times 10^{-8}$	CL=90%	DESIG=288
Γ_{224}	$e^-K^+K^-$	LF	<	3.4	$\times 10^{-8}$	CL=90%	DESIG=251
Γ_{225}	$e^+K^-K^-$	L	<	3.3	$\times 10^{-8}$	CL=90%	DESIG=252
Γ_{226}	$\mu^-\pi^+K^-$	LF	<	8.6	$\times 10^{-8}$	CL=90%	DESIG=51
Γ_{227}	$\mu^-\pi^-K^+$	LF	<	4.5	$\times 10^{-8}$	CL=90%	DESIG=78
Γ_{228}	$\mu^+\pi^-K^-$	L	<	4.8	$\times 10^{-8}$	CL=90%	DESIG=52
Γ_{229}	$\mu^-K^0_SK^0_S$	LF	<	8.0	$\times 10^{-8}$	CL=90%	DESIG=289
Γ_{230}	$\mu^-K^+K^-$	LF	<	4.4	$\times 10^{-8}$	CL=90%	DESIG=253
Γ_{231}	$\mu^+K^-K^-$	L	<	4.7	$\times 10^{-8}$	CL=90%	DESIG=254
Γ_{232}	$e^-\pi^0\pi^0$	LF	<	6.5	$\times 10^{-6}$	CL=90%	DESIG=224
Γ_{233}	$\mu^-\pi^0\pi^0$	LF	<	1.4	$\times 10^{-5}$	CL=90%	DESIG=225
Γ_{234}	$e^-\eta\eta$	LF	<	3.5	$\times 10^{-5}$	CL=90%	DESIG=226
Γ_{235}	$\mu^-\eta\eta$	LF	<	6.0	$\times 10^{-5}$	CL=90%	DESIG=227
Γ_{236}	$e^-\pi^0\eta$	LF	<	2.4	$\times 10^{-5}$	CL=90%	DESIG=228
Γ_{237}	$\mu^-\pi^0\eta$	LF	<	2.2	$\times 10^{-5}$	CL=90%	DESIG=229
Γ_{238}	pe^-e^-	L,B	<	3.0	$\times 10^{-8}$	CL=90%	DESIG=351

Γ_{239}	$\overline{p}e^+e^-$	L,B	$<$	3.0	$\times 10^{-8}$	CL=90%	DESIG=352
Γ_{240}	$\overline{p}e^+\mu^-$	L,B	$<$	2.0	$\times 10^{-8}$	CL=90%	DESIG=353
Γ_{241}	$\overline{p}e^-\mu^+$	L,B	$<$	1.8	$\times 10^{-8}$	CL=90%	DESIG=354
Γ_{242}	$p\mu^-\mu^-$	L,B	$<$	4.0	$\times 10^{-8}$	CL=90%	DESIG=334
Γ_{243}	$\overline{p}\mu^+\mu^-$	L,B	$<$	1.8	$\times 10^{-8}$	CL=90%	DESIG=335
Γ_{244}	$\overline{p}\gamma$	L,B	$<$	3.5	$\times 10^{-6}$	CL=90%	DESIG=104
Γ_{245}	$\overline{p}\pi^0$	L,B	$<$	1.5	$\times 10^{-5}$	CL=90%	DESIG=105
Γ_{246}	$\overline{p}2\pi^0$	L,B	$<$	3.3	$\times 10^{-5}$	CL=90%	DESIG=268
Γ_{247}	$\overline{p}\eta$	L,B	$<$	8.9	$\times 10^{-6}$	CL=90%	DESIG=106
Γ_{248}	$\overline{p}\pi^0\eta$	L,B	$<$	2.7	$\times 10^{-5}$	CL=90%	DESIG=269
Γ_{249}	$\Lambda\pi^-$	L,B	$<$	4.7	$\times 10^{-8}$	CL=90%	DESIG=297
Γ_{250}	$\overline{\Lambda}\pi^-$	L,B	$<$	4.3	$\times 10^{-8}$	CL=90%	DESIG=298
Γ_{251}	e^- light boson	LF	$<$	9	$\times 10^{-4}$	CL=95%	DESIG=102
Γ_{252}	μ^- light boson	LF	$<$	6	$\times 10^{-4}$	CL=95%	DESIG=103

[*a*] Basis mode for the τ. LINKAGE=BB

[*b*] See the Particle Listings below for the energy limits used in this measurement. LINKAGE=KDM

CONSTRAINED FIT INFORMATION

An overall fit to 85 branching ratios uses 170 measurements and one constraint to determine 46 parameters. The overall fit has a $\chi^2 = 135.0$ for 125 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_{5}	18									
x_{9}	2	−1								
x_{10}	3	4	5							
x_{14}	−18	−19	−17	−5						
x_{16}	−1	−1	0	−2	−9					
x_{20}	−11	−11	−14	−4	−46	−1				
x_{23}	−1	0	−2	−3	−1	−14	−10			
x_{27}	−6	−5	−10	−1	0	1	−39	1		
x_{28}	0	−1	−1	−2	0	−13	−3	−23	−11	
x_{30}	−4	−3	−11	−1	−9	0	7	−2	−44	2
x_{36}	−2	−2	−3	−1	−1	−1	−2	0	−1	0
x_{38}	−1	−1	1	0	0	0	0	−2	0	−2
x_{41}	−2	−2	−2	−1	−1	0	−2	0	−1	0
x_{43}	−1	−1	−1	−1	0	−3	0	−5	0	−5
x_{45}	−5	−5	−5	−2	−3	−1	−4	−2	−1	−2
x_{48}	−1	−1	2	0	−1	2	−1	−1	0	−1
x_{49}	−5	−5	−5	−2	−3	−1	−5	−2	−1	−2
x_{52}	0	0	0	0	0	0	0	−1	0	−1
x_{56}	−2	−2	−2	−1	−1	−1	−2	−1	−1	−1
x_{61}	−5	−5	−5	−2	−3	−1	−4	−2	−1	−2
x_{70}	−7	−9	4	−2	−6	3	−12	−2	−7	−1
x_{78}	−4	−4	−5	0	−9	0	1	1	−1	1
x_{85}	0	0	−2	0	−2	0	0	0	2	0
x_{89}	0	0	0	0	0	0	0	0	0	0
x_{97}	−2	−2	−1	−1	−1	−1	−3	−1	−2	−1
x_{103}	1	1	0	−1	1	−1	−1	−1	0	−1
x_{106}	−1	−2	2	−1	−1	1	−2	−1	−1	−1
x_{107}	0	0	0	0	0	0	0	0	0	0
x_{119}	−1	−1	1	0	−1	1	−2	−1	−1	0
x_{120}	0	0	0	0	0	0	0	0	0	0
x_{126}	0	0	0	0	0	0	0	0	0	0
x_{127}	0	0	0	0	0	0	0	0	0	0
x_{150}	−1	−1	−1	0	−1	0	−2	−1	0	−1
x_{151}	−1	−1	0	0	−1	0	−1	0	0	0
x_{152}	0	0	0	0	0	0	0	−1	0	−1
x_{154}	0	0	0	0	0	0	0	0	0	0
x_{156}	0	0	0	0	0	0	0	0	0	0
x_{160}	−1	−1	1	0	−1	1	−1	0	−1	0
x_{170}	0	0	0	0	0	0	0	0	0	0
x_{173}	0	−1	1	0	0	1	−1	0	0	0
x_{178}	−3	−3	−3	−1	−4	0	−1	0	−1	0
x_{179}	0	0	0	0	0	0	0	0	0	0
x_{180}	−2	−2	−5	−1	−3	0	−2	−1	2	−1
x_{182}	0	0	0	0	0	0	0	0	0	0
x_{185}	−1	−1	0	0	−1	1	−1	0	0	0
	x_{3}	x_{5}	x_{9}	x_{10}	x_{14}	x_{16}	x_{20}	x_{23}	x_{27}	x_{28}

x_{36}	0									
x_{38}	0	−15								
x_{41}	0	−13	2							
x_{43}	0	−1	−14	−20						
x_{45}	0	−3	0	−6	0					
x_{48}	0	−2	3	−4	1	0				
x_{49}	0	−5	0	−4	−1	−10	−1			
x_{52}	0	1	5	−1	6	0	−7	0		
x_{56}	0	−2	0	−2	−1	−4	0	−8	0	
x_{61}	0	−2	0	−2	0	−4	0	−4	0	−2
x_{70}	−5	−2	3	−2	−1	−4	5	−4	0	−2
x_{78}	3	1	−1	1	0	2	−1	2	0	1
x_{85}	2	0	0	0	0	0	0	0	0	0
x_{89}	0	0	0	0	0	0	0	0	−1	0
x_{97}	−1	−1	0	−1	0	−2	0	−2	0	−1
x_{103}	−1	−1	0	−1	0	−1	0	−1	0	−1
x_{106}	−1	−1	1	0	0	−1	2	−1	0	0
x_{107}	0	0	0	0	0	0	0	0	0	0
x_{119}	−1	−1	1	0	0	−1	2	−1	0	0
x_{120}	0	0	0	0	0	0	0	0	0	0
x_{126}	0	0	0	0	0	0	0	0	0	0
x_{127}	0	0	0	0	0	0	0	0	0	0
x_{150}	−2	−1	0	0	0	−1	0	−1	0	0
x_{151}	0	0	0	0	0	−1	0	−1	0	0
x_{152}	0	0	1	0	0	0	1	0	0	0
x_{154}	0	0	0	0	0	0	0	0	0	0
x_{156}	0	0	0	0	0	0	0	−1	0	0
x_{160}	−1	0	1	0	0	−1	1	−1	0	0
x_{170}	0	0	0	0	0	0	0	0	0	0
x_{173}	−1	0	1	0	0	0	1	0	0	0
x_{178}	1	0	0	0	0	−1	0	−1	0	0
x_{179}	0	0	0	0	0	0	0	0	0	0
x_{180}	2	−1	0	0	0	−1	0	−1	0	0
x_{182}	0	0	0	0	0	0	0	0	0	0
x_{185}	−1	0	1	0	0	0	1	−1	0	0
	x_{30}	x_{36}	x_{38}	x_{41}	x_{43}	x_{45}	x_{48}	x_{49}	x_{52}	x_{56}

	x_{61}	x_{70}	x_{78}	x_{85}	x_{89}	x_{97}	x_{103}	x_{106}	x_{107}	x_{119}
x_{70}	−4									
x_{78}	2	−19								
x_{85}	0	−1	−8							
x_{89}	0	−1	−1	0						
x_{97}	−2	19	−6	0	0					
x_{103}	−1	−4	−14	−1	0	−1				
x_{106}	−1	15	−4	0	0	0	−1			
x_{107}	0	−1	−1	0	0	0	−3	0		
x_{119}	−1	3	−1	0	−4	−1	0	1	0	
x_{120}	0	0	0	0	0	0	0	0	0	−1
x_{126}	0	0	0	0	0	0	0	0	0	3
x_{127}	0	0	0	0	0	0	0	0	0	−1
x_{150}	−1	0	0	−5	0	0	0	0	0	0
x_{151}	−1	0	0	0	−11	0	0	0	0	9
x_{152}	0	2	0	0	0	0	−1	1	0	1
x_{154}	0	0	0	−1	0	0	0	0	0	0
x_{156}	0	0	0	0	−2	0	0	0	0	0
x_{160}	−1	1	−1	0	−8	−1	0	1	0	46
x_{170}	0	−1	0	0	0	1	0	1	0	0
x_{173}	0	1	0	0	−2	0	0	1	0	34
x_{178}	−1	−9	−67	−3	0	−2	10	−2	0	−1
x_{179}	0	0	12	0	0	−2	−58	0	0	0
x_{180}	−1	−2	−11	−64	−1	−1	−1	−1	0	0
x_{182}	0	0	0	0	−16	0	0	0	0	7
x_{185}	0	1	−1	0	−4	0	0	1	0	39

	x_{120}	x_{126}	x_{127}	x_{150}	x_{151}	x_{152}	x_{154}	x_{156}	x_{160}	x_{170}
x_{126}	0									
x_{127}	0	−1								
x_{150}	0	0	0							
x_{151}	0	2	0	0						
x_{152}	0	0	0	4	0					
x_{154}	0	0	0	1	0	1				
x_{156}	0	0	0	2	−1	1	0			
x_{160}	−1	3	−1	0	25	0	0	0		
x_{170}	0	0	0	0	0	0	0	0	0	
x_{173}	−1	1	0	0	4	0	0	0	20	0
x_{178}	0	0	0	0	0	0	0	0	0	0
x_{179}	0	0	0	0	0	0	0	0	0	0
x_{180}	0	0	0	0	0	0	0	0	0	0
x_{182}	0	2	0	0	10	0	0	−1	20	0
x_{185}	−1	−2	−1	0	17	0	0	0	38	0

	x_{173}	x_{178}	x_{179}	x_{180}	x_{182}
x_{178}	0				
x_{179}	0	−14			
x_{180}	0	−4	0		
x_{182}	3	0	0	0	
x_{185}	17	0	0	0	14

See the related review(s):

τ Branching Fractions

$(\Gamma(\tau^+) - \Gamma(\tau^-)) / (\Gamma(\tau^+) + \Gamma(\tau^-))$

NODE=S035250

$\tau^\pm \rightarrow \pi^\pm K^0_S \nu_\tau$ (RATE DIFFERENCE) / (RATE SUM)

NODE=S035DR1
NODE=S035DR1

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.36±0.23±0.11	LEES	12M	BABR	476 fb^{-1} E^{ee}_{cm} = 10.6 GeV

τ^- BRANCHING RATIOS

NODE=S035220

NODE=S035220

Γ(particle$^-$ $\geq$ 0 neutrals $\geq 0K^0\nu_\tau$ ("1-prong"))/Γ_{total} Γ_1/Γ

NODE=S035B75
NODE=S035B75

$\Gamma_1/\Gamma = (\Gamma_3+\Gamma_5+\Gamma_9+\Gamma_{10}+\Gamma_{14}+\Gamma_{16}+\Gamma_{20}+\Gamma_{23}+\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+\Gamma_{36}+\Gamma_{38}+\Gamma_{41}+\Gamma_{43}+\Gamma_{45}+\Gamma_{48}+\Gamma_{49}+\Gamma_{50}+\Gamma_{52}+\Gamma_{56}+\Gamma_{57}+0.7195\Gamma_{150}+0.7195\Gamma_{152}+0.7195\Gamma_{154}+0.7195\Gamma_{156}+0.336\Gamma_{170}+0.0833\Gamma_{178}+0.0833\Gamma_{179}+0.0833\Gamma_{180})/\Gamma$

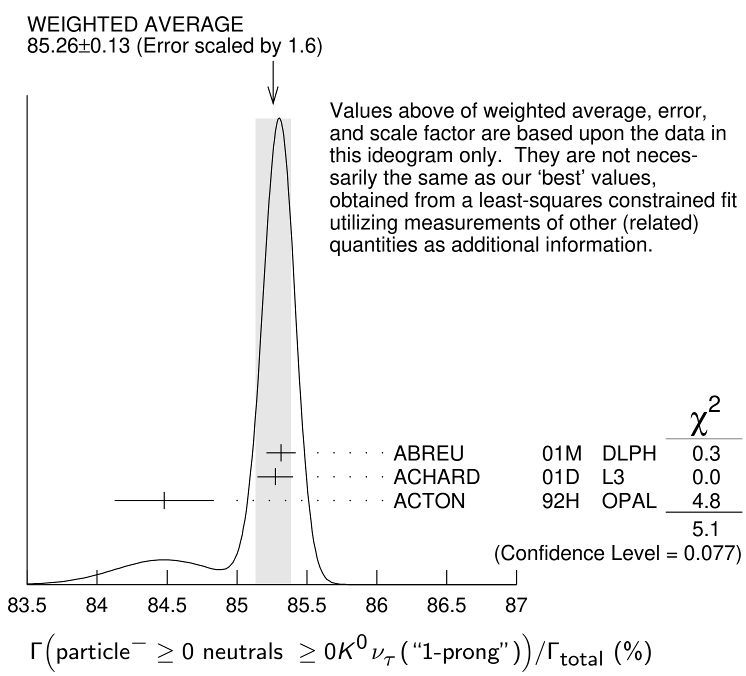
The charged particle here can be e, μ, or hadron. In many analyses, the sum of the topological branching fractions (1, 3, and 5 prongs) is constrained to be unity. Since the 5-prong fraction is very small, the measured 1-prong and 3-prong fractions are highly correlated and cannot be treated as independent quantities in our overall fit. We arbitrarily choose to use the 3-prong fraction in our fit, and leave the 1-prong fraction out. We do, however, use these 1-prong measurements in our average below.

NODE=S035B75

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
85.24 ±0.06 OUR FIT (Produced by HFLAV)						
85.26 ±0.13 OUR AVERAGE Error includes scale factor of 1.6. See the ideogram below.						
• • • We use the following data for averages but not for fits. • • •						
85.316±0.093±0.049	78k	[1] ABREU	01M	DLPH	1992–1995 LEP runs	NOTFITTED
85.274±0.105±0.073		[2] ACHARD	01D	L3	1992–1995 LEP runs	NOTFITTED
84.48 ±0.27 ±0.23		ACTON	92H	OPAL	1990–1991 LEP runs	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
85.45 $^{+0.69}_{-0.73}$ ±0.65		DECAMP	92C	ALEP	Repl. by SCHAEL 05C	

[1] The correlation coefficients between this measurement and the ABREU 01M measurements of B($\tau \rightarrow$ 3-prong) and B($\tau \rightarrow$ 5-prong) are −0.98 and −0.08 respectively. NODE=S035B75;LINKAGE=M1

[2] The correlation coefficients between this measurement and the ACHARD 01D measurements of B($\tau \rightarrow$ "3-prong") and B($\tau \rightarrow$ "5-prong") are −0.978 and −0.082 respectively. NODE=S035B75;LINKAGE=CH



$\Gamma(\text{particle}^- \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$ Γ_2/Γ

NODE=S035R24

$\Gamma_2/\Gamma = (\Gamma_3+\Gamma_5+\Gamma_9+\Gamma_{10}+\Gamma_{14}+\Gamma_{16}+\Gamma_{20}+\Gamma_{23}+\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.6534\Gamma_{36}+0.6534\Gamma_{38}+0.6534\Gamma_{41}+0.6534\Gamma_{43}+0.6534\Gamma_{45}+0.0942\Gamma_{48}+0.3069\Gamma_{49}+\Gamma_{50}+0.0942\Gamma_{52}+0.3069\Gamma_{56}+\Gamma_{57}+0.7195\Gamma_{150}+0.7195\Gamma_{152}+0.7195\Gamma_{154}+0.4701\Gamma_{156}+0.1049\Gamma_{170}+0.0833\Gamma_{178}+0.0833\Gamma_{179}+0.0833\Gamma_{180})/\Gamma$

NODE=S035R24

NODE=S035R24

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
84.58±0.06 OUR FIT	(Produced by HFLAV)					
85.1 ±0.4 OUR AVERAGE						
• • • We use the following data for averages but not for fits. • • •						
85.6 ±0.6 ±0.3	3300	[1] ADEVA	91F	L3	E^{ee}_{cm}= 88.3–94.3 GeV	NOTFITTED
84.9 ±0.4 ±0.3		BEHREND	89B	CELL	E^{ee}_{cm}= 14–47 GeV	NOTFITTED
84.7 ±0.8 ±0.6		[2] AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
86.4 ±0.3 ±0.3		ABACHI	89B	HRS	E^{ee}_{cm}= 29 GeV	
87.1 ±1.0 ±0.7		[3] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
87.2 ±0.5 ±0.8		SCHMIDKE	86	MRK2	E^{ee}_{cm}= 29 GeV	
84.7 ±1.1 $^{+1.6}_{-1.3}$	169	[4] ALTHOFF	85	TASS	E^{ee}_{cm}= 34.5 GeV	
86.1 ±0.5 ±0.9		BARTEL	85F	JADE	E^{ee}_{cm}= 34.6 GeV	
87.8 ±1.3 ±3.9		[5] BERGER	85	PLUT	E^{ee}_{cm}= 34.6 GeV	
86.7 ±0.3 ±0.6		FERNANDEZ	85	MAC	E^{ee}_{cm}= 29 GeV	

[1] Not independent of ADEVA 91F $\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$ value. NODE=S035R24;LINKAGE=A

[2] Not independent of AIHARA 87B $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$, $\Gamma(e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$, and $\Gamma(h^- \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$ values. NODE=S035R24;LINKAGE=L

[3] Not independent of SCHMIDKE 86 value (also not independent of BURCHAT 87 value for $\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$. NODE=S035R24;LINKAGE=K

[4] Not independent of ALTHOFF 85 $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$, $\Gamma(e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$, $\Gamma(h^- \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$, and $\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals } \geq 0K^0_L\nu_\tau)/\Gamma_{total}$ values. NODE=S035R24;LINKAGE=F

[5] Not independent of (1-prong + $0\pi^0$) and (1-prong + $\geq 1\pi^0$) values. NODE=S035R24;LINKAGE=G

$\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$ Γ_3/Γ

NODE=S035R1

To minimize the effect of experiments with large systematic errors, we exclude experiments which together would contribute 5% of the weight in the average.

NODE=S035R1

NODE=S035R1

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
17.39 ±0.04 OUR FIT	(Produced by HFLAV)					
17.33 ±0.05 OUR AVERAGE						
17.319±0.070±0.032	54k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs	
17.34 ±0.09 ±0.06	31.4k	ABBIENDI	03	OPAL	1990-1995 LEP runs	
17.342±0.110±0.067	21.5k	[2] ACCIARRI	01F	L3	1991-1995 LEP runs	
17.325±0.095±0.077	27.7k	ABREU	99X	DLPH	1991-1995 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
17.37 ±0.08 ±0.18		[3] ANASTASSOV	97	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
17.31 ±0.11 ±0.05	20.7k	BUSKULIC	96C	ALEP	Repl. by SCHAEL 05C	
17.02 ±0.19 ±0.24	6586	ABREU	95T	DLPH	Repl. by ABREU 99X	
17.36 ±0.27	7941	AKERS	95I	OPAL	Repl. by ABBIENDI 03	
17.6 ±0.4 ±0.4	2148	ADRIANI	93M	L3	Repl. by ACCIARRI 01F	
17.4 ±0.3 ±0.5		[4] ALBRECHT	93G	ARG	E^{ee}_{cm}= 9.4–10.6 GeV	
17.35 ±0.41 ±0.37		DECAMP	92C	ALEP	1989-1990 LEP runs	
17.7 ±0.8 ±0.4	568	BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV	
17.4 ±1.0	2197	ADEVA	88	MRKJ	E^{ee}_{cm}= 14–16 GeV	
17.7 ±1.2 ±0.7		AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV	
18.3 ±0.9 ±0.8		BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
18.6 ±0.8 ±0.7	558	[5] BARTEL	86D	JADE	E^{ee}_{cm}= 34.6 GeV	NOTFITTED
12.9 ±1.7 $^{+0.7}_{-0.5}$		ALTHOFF	85	TASS	E^{ee}_{cm}= 34.5 GeV	
18.0 ±0.9 ±0.5	473	[5] ASH	85B	MAC	E^{ee}_{cm}= 29 GeV	NOTFITTED
18.0 ±1.0 ±0.6		[6] BALTRUSAIT...	85	MRK3	E^{ee}_{cm}= 3.77 GeV	
19.4 ±1.6 ±1.7	153	BERGER	85	PLUT	E^{ee}_{cm}= 34.6 GeV	
17.6 ±2.6 ±2.1	47	BEHREND	83C	CELL	E^{ee}_{cm}= 34 GeV	
17.8 ±2.0 ±1.8		BERGER	81B	PLUT	E^{ee}_{cm}= 9–32 GeV	

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035R1;LINKAGE=SC

[2] The correlation coefficient between this measurement and the ACCIARRI 01F measurement of $B(\tau^- \to e^- \overline{\nu}_e \nu_\tau)$ is 0.08. NODE=S035R1;LINKAGE=FA

[3] The correlation coefficients between this measurement and the ANASTASSOV 97 measurements of $B(e\overline{\nu}_e \nu_\tau)$, $B(\mu\overline{\nu}_\mu \nu_\tau)/B(e\overline{\nu}_e \nu_\tau)$, $B(h^- \nu_\tau)$, and $B(h^- \nu_\tau)/B(e\overline{\nu}_e \nu_\tau)$ are 0.50, 0.58, 0.50, and 0.08 respectively. NODE=S035R1;LINKAGE=N1

[4] Not independent of ALBRECHT 92D $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau)/\Gamma(e^- \overline{\nu}_e \nu_\tau)$ and ALBRECHT 93G $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau) \times \Gamma(e^- \overline{\nu}_e \nu_\tau)/\Gamma^2_{\text{total}}$ values. NODE=S035R1;LINKAGE=BB

[5] Modified using $B(e^- \overline{\nu}_e \nu_\tau)$/B("1 prong") and B("1 prong") ,= 0.855. NODE=S035R1;LINKAGE=Q

[6] Error correlated with BALTRUSAITIS 85 $e\nu\overline{\nu}$ value. NODE=S035R1;LINKAGE=H

$\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau \gamma)/\Gamma_{\text{total}}$ — Γ_4/Γ

NODE=S035B81
NODE=S035B81

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.367±0.008 OUR AVERAGE					
0.363±0.002±0.015	22k	[1] SHIMIZU	18A	BELL	711 fb^{-1} E^{ee}_{cm}=10.6 GeV
0.369±0.003±0.010	16k	[2] LEES	15G	BABR	431 fb^{-1} E^{ee}_{cm}=10.6 GeV
0.361±0.016±0.035		[3] BERGFELD	00	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.30 ±0.04 ±0.05	116	[4] ALEXANDER	96S	OPAL	1991–1994 LEP runs
0.23 ±0.10	10	[5] WU	90	MRK2	E^{ee}_{cm}= 29 GeV

[1] SHIMIZU 18A impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E^*_γ > 10 MeV. NODE=S035B81;LINKAGE=E

[2] LEES 15G impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E^*_γ > 10 MeV. NODE=S035B81;LINKAGE=D

[3] BERGFELD 00 impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff $E^*_\gamma > 10$ MeV. For $E^*_\gamma > 20$ MeV, they quote $(3.04 \pm 0.14 \pm 0.30) \times 10^{-3}$. NODE=S035B81;LINKAGE=C

[4] ALEXANDER 96S impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E_γ >20 MeV. NODE=S035B81;LINKAGE=A

[5] WU 90 reports $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau \gamma)/\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau) = 0.013 \pm 0.006$, which is converted to $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau \gamma)/\Gamma_{\text{total}}$ using $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau \gamma)/\Gamma_{\text{total}} = 17.35\%$. Requirements on detected γ's correspond to a τ rest frame energy cutoff E_γ > 37 MeV. NODE=S035B81;LINKAGE=B

$\Gamma(e^- \overline{\nu}_e \nu_\tau)/\Gamma_{\text{total}}$ — Γ_5/Γ

NODE=S035R2

To minimize the effect of experiments with large systematic errors, we exclude experiments which together would contribute 5% of the weight in the average. NODE=S035R2

NODE=S035R2

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
17.82 ±0.04 OUR FIT (Produced by HFLAV)						
17.82 ±0.05 OUR AVERAGE						
17.837±0.072±0.036	56k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs	
17.806±0.104±0.076	24.7k	[2] ACCIARRI	01F	L3	1991–1995 LEP runs	
17.81 ±0.09 ±0.06	33.1k	ABBIENDI	99H	OPAL	1991–1995 LEP runs	
17.877±0.109±0.110	23.3k	ABREU	99X	DLPH	1991–1995 LEP runs	
17.76 ±0.06 ±0.17		[3] ANASTASSOV	97	CLEO	E^{ee}_{cm}= 10.6 GeV	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
17.78 ±0.10 ±0.09	25.3k	ALEXANDER	96D	OPAL	Repl. by ABBIENDI 99H	
17.79 ±0.12 ±0.06	20.6k	BUSKULIC	96C	ALEP	Repl. by SCHAEL 05C	
17.51 ±0.23 ±0.31	5059	ABREU	95T	DLPH	Repl.. by ABREU 99X	
17.9 ±0.4 ±0.4	2892	ADRIANI	93M	L3	Repl. by ACCIARRI 01F	
17.5 ±0.3 ±0.5		[4] ALBRECHT	93G	ARG	E^{ee}_{cm}= 9.4–10.6 GeV	
17.97 ±0.14 ±0.23	3970	AKERIB	92	CLEO	Repl. by ANASTASSOV 97	
19.1 ±0.4 ±0.6	2960	[5] AMMAR	92	CLEO	E^{ee}_{cm}= 10.5–10.9 GeV	NOTFITTED
18.09 ±0.45 ±0.45		DECAMP	92C	ALEP	Repl. by SCHAEL 05C	
17.0 ±0.5 ±0.6	1.7k	ABACHI	90	HRS	E^{ee}_{cm}= 29 GeV	
18.4 ±0.8 ±0.4	644	BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV	
16.3 ±0.3 ±3.2		JANSSEN	89	CBAL	E^{ee}_{cm}= 9.4–10.6 GeV	
18.4 ±1.2 ±1.0		AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV	
19.1 ±0.8 ±1.1		BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
16.8 ±0.7 ±0.9	515	[5] BARTEL	86D	JADE	E^{ee}_{cm}= 34.6 GeV	NOTFITTED
20.4 ±3.0 $^{+1.4}_{-0.9}$		ALTHOFF	85	TASS	E^{ee}_{cm}= 34.5 GeV	

17.8	±0.9	±0.6	390	[5] ASH	85B	MAC	E^{ee}_{cm}= 29 GeV	NOTFITTED
18.2	±0.7	±0.5		[6] BALTRUSAIT...	85	MRK3	E^{ee}_{cm}= 3.77 GeV	
13.0	±1.9	±2.9		BERGER	85	PLUT	E^{ee}_{cm}= 34.6 GeV	
18.3	±2.4	±1.9	60	BEHREND	83C	CELL	E^{ee}_{cm}= 34 GeV	
16.0	±1.3		459	[7] BACINO	78B	DLCO	E^{ee}_{cm}= 3.1–7.4 GeV	

[1] Correlation matrix for SCHAEL 05C branching fractions, in percent: NODE=S035R2;LINKAGE=SC

(1) $\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$
(2) $\Gamma(\tau^- \to \mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$
(3) $\Gamma(\tau^- \to \pi^-\nu_\tau)/\Gamma_{total}$
(4) $\Gamma(\tau^- \to \pi^-\pi^0\nu_\tau)/\Gamma_{total}$
(5) $\Gamma(\tau^- \to \pi^-2\pi^0\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$
(6) $\Gamma(\tau^- \to \pi^-3\pi^0\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$
(7) $\Gamma(\tau^- \to h^-4\pi^0\nu_\tau\,(\text{ex.}K^0,\eta))/\Gamma_{total}$
(8) $\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau\,(\text{ex.}K^0,\omega))/\Gamma_{total}$
(9) $\Gamma(\tau^- \to \pi^-\pi^+\pi^-\pi^0\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$
(10) $\Gamma(\tau^- \to h^-h^-h^+2\pi^0\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$
(11) $\Gamma(\tau^- \to h^-h^-h^+3\pi^0\nu_\tau)/\Gamma_{total}$
(12) $\Gamma(\tau^- \to 3h^-2h^+\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$
(13) $\Gamma(\tau^- \to 3h^-2h^+\pi^0\nu_\tau\,(\text{ex.}K^0))/\Gamma_{total}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(2)	-20											
(3)	-9	-6										
(4)	-16	-12	2									
(5)	-5	-5	-17	-37								
(6)	0	-4	-15	2	-27							
(7)	-2	-4	-24	-15	20	-47						
(8)	-14	-9	15	-5	-17	-14	-8					
(9)	-13	-12	-25	-30	4	-2	16	-15				
(10)	0	-2	-23	-14	4	10	13	-6	-17			
(11)	1	0	-5	1	4	6	0	-9	-2	-11		
(12)	0	1	9	4	-8	-4	-6	9	-5	-4	-2	
(13)	1	-4	-3	-5	3	2	-4	-3	-1	4	1	-24

[2] The correlation coefficient between this measurement and the ACCIARRI 01F measurement of $B(\tau^- \to \mu^-\overline{\nu}_\mu\nu_\tau)$ is 0.08. NODE=S035R2;LINKAGE=FA

[3] The correlation coefficients between this measurement and the ANASTASSOV 97 measurements of $B(\mu\overline{\nu}_\mu\nu_\tau)$, $B(\mu\overline{\nu}_\mu\nu_\tau)/B(e\overline{\nu}_e\nu_\tau)$, $B(h^-\nu_\tau)$, and $B(h^-\nu_\tau)/B(e\overline{\nu}_e\nu_\tau)$ are 0.50, −0.42, 0.48, and −0.39 respectively. NODE=S035R2;LINKAGE=N1

[4] Not independent of ALBRECHT 92D $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ and ALBRECHT 93G $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)\times\Gamma(e^-\overline{\nu}_e\nu_\tau)/\Gamma^2_{total}$ values. NODE=S035R2;LINKAGE=BB

[5] Modified using $B(e^-\overline{\nu}_e\nu_\tau)$/B("1 prong") and B("1 prong") ,= 0.855. NODE=S035R2;LINKAGE=Q

[6] Error correlated with BALTRUSAITIS 85 $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$. NODE=S035R2;LINKAGE=H

[7] BACINO 78B value comes from fit to events with $e^\pm$ and one other nonelectron charged prong. NODE=S035R2;LINKAGE=B

$\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ Γ_3/Γ_5

NODE=S035R5

Standard Model prediction including mass effects is 0.9726. NODE=S035R5

NODE=S035R5

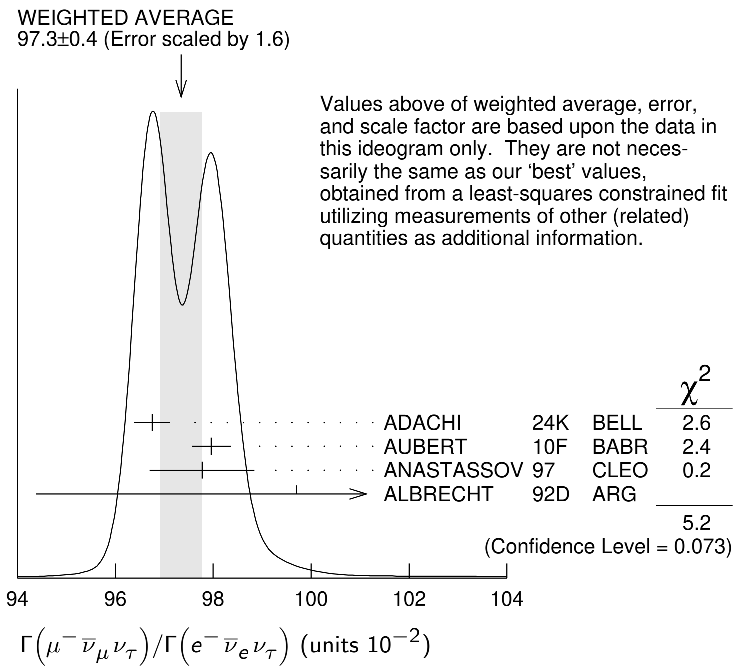
VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
97.62±0.28 OUR FIT	(Produced by HFLAV)				
97.3 ±0.4 OUR AVERAGE	Error includes scale factor of 1.6. See the ideogram below.				
96.75±0.07±0.36	333E6	ADACHI	24K	BELL	
97.96±0.16±0.36	731k	[1] AUBERT	10F	BABR	467 fb^{-1} E^{ee}_{cm}= 10.6 GeV
97.77±0.63±0.87		[2] ANASTASSOV	97	CLEO	E^{ee}_{cm}= 10.6 GeV
99.7 ±3.5 ±4.0		ALBRECHT	92D	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

[1] Correlation matrix for AUBERT 10F branching fractions: NODE=S035R5;LINKAGE=AU

(1) $\Gamma(\tau^- \to \mu^-\overline{\nu}_\mu\nu_\tau)\,/\,\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)$
(2) $\Gamma(\tau^- \to \pi^-\nu_\tau)\,/\,\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)$
(3) $\Gamma(\tau^- \to K^-\nu_\tau)\,/\,\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)$

	(1)	(2)
(2)	0.25	
(3)	0.12	0.33

[2] The correlation coefficients between this measurement and the ANASTASSOV 97 measurements of B($\mu\overline{\nu}_\mu\nu_\tau$), B($e\overline{\nu}_e\nu_\tau$), B($h^-\nu_\tau$), and B($h^-\nu_\tau$)/B($e\overline{\nu}_e\nu_\tau$) are 0.58, −0.42, 0.07, and 0.45 respectively. NODE=S035R5;LINKAGE=N1



$\Gamma(e^-\overline{\nu}_e\nu_\tau\gamma)/\Gamma_{\text{total}}$ — Γ_6/Γ

NODE=S035C39

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.83 ±0.05 OUR AVERAGE					
1.79 ±0.02 ±0.10	12k	[1] SHIMIZU	18A	BELL	711 fb^{-1} $E^{ee}_{\rm cm}$=10.6 GeV
1.847±0.015±0.052	18k	[2] LEES	15G	BABR	431 fb^{-1} $E^{ee}_{\rm cm}$=10.6 GeV
1.75 ±0.06 ±0.17		[3] BERGFELD	00	CLEO	$E^{ee}_{\rm cm}$= 10.6 GeV

[1] SHIMIZU 18A impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E^*_γ > 10 MeV. NODE=S035C39;LINKAGE=B

[2] LEES 15G impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E^*_γ > 10 MeV. NODE=S035C39;LINKAGE=A

[3] BERGFELD 00 impose requirements on detected γ's corresponding to a τ-rest-frame energy cutoff E^*_γ > 10 MeV. NODE=S035C39;LINKAGE=C

$\Gamma(h^- \geq 0K^0_L\,\nu_\tau)/\Gamma_{\text{total}}$ — Γ_7/Γ

NODE=S035R43

$\Gamma_7/\Gamma = (\Gamma_9+\Gamma_{10}+\frac{1}{2}\Gamma_{36}+\frac{1}{2}\Gamma_{38}+\Gamma_{50})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
12.03±0.05 OUR FIT	(Produced by HFLAV)				
12.2 ±0.4 OUR AVERAGE					
12.47±0.26±0.43	2967	[1] ACCIARRI	95	L3	1992 LEP run
12.4 ±0.7 ±0.7	283	[2] ABREU	92N	DLPH	1990 LEP run
12.1 ±0.7 ±0.5	309	ALEXANDER	91D	OPAL	1990 LEP run
• • • We use the following data for averages but not for fits. • • •					
11.3 ±0.5 ±0.8	798	[3] FORD	87	MAC	$E^{ee}_{\rm cm}$= 29 GeV (NOTFITTED)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
12.44±0.11±0.11	15k	[4] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
11.7 ±0.6 ±0.8		[5] ALBRECHT	92D	ARG	$E^{ee}_{\rm cm}$= 9.4–10.6 GeV
12.98±0.44±0.33		[6] DECAMP	92C	ALEP	Repl. by SCHAEL 05C
12.3 ±0.9 ±0.5	1338	BEHREND	90	CELL	$E^{ee}_{\rm cm}$= 35 GeV
11.1 ±1.1 ±1.4		[7] BURCHAT	87	MRK2	$E^{ee}_{\rm cm}$= 29 GeV
12.3 ±0.6 ±1.1	328	[8] BARTEL	86D	JADE	$E^{ee}_{\rm cm}$= 34.6 GeV
13.0 ±2.0 ±4.0		BERGER	85	PLUT	$E^{ee}_{\rm cm}$= 34.6 GeV
11.2 ±1.7 ±1.2	34	[9] BEHREND	83C	CELL	$E^{ee}_{\rm cm}$= 34 GeV

[1] ACCIARRI 95 with 0.65% added to remove their correction for $\pi^- K^0_L$ backgrounds. NODE=S035R43;LINKAGE=C

[2] ABREU 92N with 0.5% added to remove their correction for $K^*(892)^-$ backgrounds. NODE=S035R43;LINKAGE=E

[3] FORD 87 result for B($\pi^- \nu_\tau$) with 0.67% added to remove their K^- correction and adjusted for 1992 B("1 prong"). NODE=S035R43;LINKAGE=B

[4] BUSKULIC 96 quote 11.78 $\pm$ 0.11 $\pm$ 0.13 We add 0.66 to undo their correction for unseen K^0_L and modify the systematic error accordingly. NODE=S035R43;LINKAGE=F

[5] Not independent of ALBRECHT 92D $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau)/\Gamma(e^- \overline{\nu}_e \nu_\tau)$, $\Gamma(\mu^- \overline{\nu}_\mu \nu_\tau) \times \Gamma(e^- \overline{\nu}_e \nu_\tau)$, and $\Gamma(h^- \geq 0 K^0_L \nu_\tau)/\Gamma(e^- \overline{\nu}_e \nu_\tau)$ values. NODE=S035R43;LINKAGE=BB

[6] DECAMP 92C quote B($h^- \geq 0 K^0_L \geq 0 (K^0_S \rightarrow \pi^+ \pi^-) \nu_\tau$) $= 13.32 \pm 0.44 \pm 0.33$. We subtract 0.35 to correct for their inclusion of the K^0_S decays. NODE=S035R43;LINKAGE=Q

[7] BURCHAT 87 with 1.1% added to remove their correction for K^- and $K^*(892)^-$ backgrounds. NODE=S035R43;LINKAGE=A

[8] BARTEL 86D result for B($\pi^- \nu_\tau$) with 0.59% added to remove their K^- correction and adjusted for 1992 B("1 prong"). NODE=S035R43;LINKAGE=D

[9] BEHREND 83C quote B($\pi^- \nu_\tau$) $= 9.9 \pm 1.7 \pm 1.3$ after subtracting 1.3 ± 0.5 to correct for B($K^- \nu_\tau$). NODE=S035R43;LINKAGE=Q1

$\Gamma(h^- \nu_\tau)/\Gamma_{total}$ $\qquad$ $\Gamma_8/\Gamma = (\Gamma_9+\Gamma_{10})/\Gamma$

NODE=S035B73
NODE=S035B73

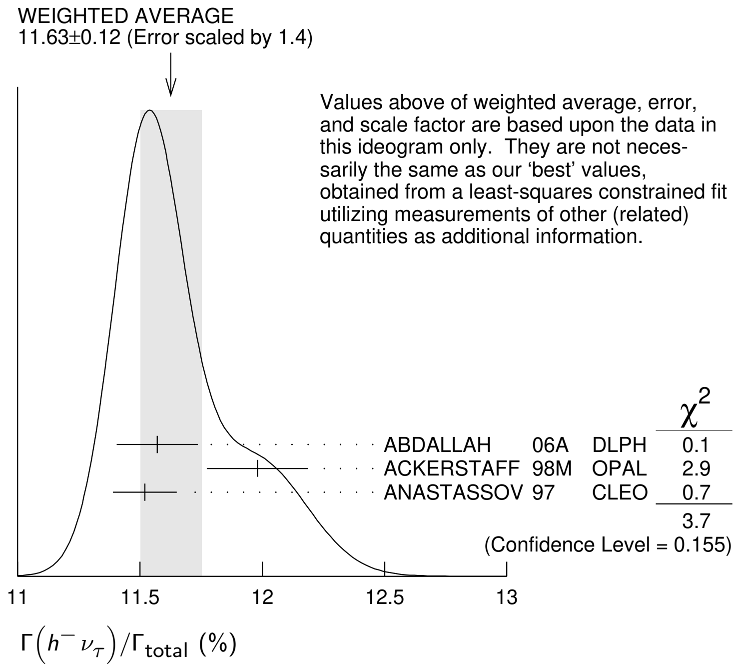
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
11.51 ±0.05 OUR FIT (Produced by HFLAV)				
11.63 ±0.12 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.				
11.571±0.120±0.114	19k	[1] ABDALLAH 06A	DLPH	1992–1995 LEP runs
11.98 ±0.13 ±0.16		ACKERSTAFF 98M	OPAL	1991–1995 LEP runs
11.52 ±0.05 ±0.12		[2] ANASTASSOV 97	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] Correlation matrix for ABDALLAH 06A branching fractions, in percent: NODE=S035B73;LINKAGE=SC

(1) $\Gamma(\tau^- \rightarrow h^- \nu_\tau)/\Gamma_{total}$
(2) $\Gamma(\tau^- \rightarrow h^- \pi^0 \nu_\tau)/\Gamma_{total}$
(3) $\Gamma(\tau^- \rightarrow h^- \geq 1\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$
(4) $\Gamma(\tau^- \rightarrow h^- 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$
(5) $\Gamma(\tau^- \rightarrow h^- \geq 3\pi^0 \nu_\tau (\text{ex.}\ K^0))/\Gamma_{total}$
(6) $\Gamma(\tau^- \rightarrow h^- h^- h^+ \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$
(7) $\Gamma(\tau^- \rightarrow h^- h^- h^+ \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$
(8) $\Gamma(\tau^- \rightarrow h^- h^- h^+ \geq 1\pi^0 \nu_\tau (\text{ex.}\ K^0))/\Gamma_{total}$
(9) $\Gamma(\tau^- \rightarrow h^- h^- h^+ \geq 2\pi^0 \nu_\tau (\text{ex.}\ K^0))/\Gamma_{total}$
(10) $\Gamma(\tau^- \rightarrow 3h^- 2h^+ \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$
(11) $\Gamma(\tau^- \rightarrow 3h^- 2h^+ \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(2)	-34									
(3)	-47	56								
(4)	6	-66	15							
(5)	-6	38	11	-86						
(6)	-7	-8	15	0	-2					
(7)	-2	-1	-5	-3	3	-53				
(8)	-4	-4	-13	-4	-2	-56	75			
(9)	-1	-1	-4	3	-6	26	-78	-16		
(10)	-1	-1	1	0	0	-2	-3	-1	3	
(11)	0	0	0	0	0	1	0	-5	5	-57

[2] The correlation coefficients between this measurement and the ANASTASSOV 97 measurements of B($\mu \overline{\nu}_\mu \nu_\tau$), B($e \overline{\nu}_e \nu_\tau$), B($\mu \overline{\nu}_\mu \nu_\tau$)/B($e \overline{\nu}_e \nu_\tau$), and B($h^- \nu_\tau$)/B($e \overline{\nu}_e \nu_\tau$) are 0.50, 0.48, 0.07, and 0.63 respectively. NODE=S035B73;LINKAGE=N1



$\Gamma(h^-\nu_\tau)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ $\Gamma_8/\Gamma_5 = (\Gamma_9+\Gamma_{10})/\Gamma_5$

NODE=S035B97
NODE=S035B97

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
64.61±0.33 OUR FIT	(Produced by HFLAV)				
64.0 ±0.7 OUR AVERAGE	Error includes scale factor of 1.6.				
• • • We use the following data for averages but not for fits. • • •					
63.33±0.14±0.61	394k	[1] AUBERT	10F	BABR	467 fb^{-1} E^{ee}_{cm}=10.6 GeV
64.84±0.41±0.60		[2] ANASTASSOV	97	CLEO	E^{ee}_{cm}= 10.6 GeV

NOTFITTED
NOTFITTED

[1] Not independent of AUBERT 10F $\Gamma(\tau^- \rightarrow \pi^-\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$ and $\Gamma(\tau^- \rightarrow K^-\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$.
NODE=S035B97;LINKAGE=AU

[2] The correlation coefficients between this measurement and the ANASTASSOV 97 measurements of B($\mu\overline{\nu}_\mu\nu_\tau$), B($e\overline{\nu}_e\nu_\tau$), B($\mu\overline{\nu}_\mu\nu_\tau$)/B($e\overline{\nu}_e\nu_\tau$), and B($h^-\nu_\tau$) are 0.08, −0.39, 0.45, and 0.63 respectively.
NODE=S035B97;LINKAGE=N1

$\Gamma(\pi^-\nu_\tau)/\Gamma_{total}$ Γ_9/Γ

NODE=S035R6
NODE=S035R6

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
10.82 ±0.05 OUR FIT	(Produced by HFLAV)				
10.828±0.070±0.078	38k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
11.06 ±0.11 ±0.14		[2] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
11.7 ±0.4 ±1.8	1138	BLOCKER	82D	MRK2	E^{ee}_{cm}= 3.5–6.7 GeV

NOTFITTED

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements.
NODE=S035R6;LINKAGE=SC

[2] Not independent of BUSKULIC 96 B($h^-\nu_\tau$) and B($K^-\nu_\tau$) values.
NODE=S035R6;LINKAGE=D

$\Gamma(\pi^-\nu_\tau)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ Γ_9/Γ_5

NODE=S035C78
NODE=S035C78

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
60.71±0.32 OUR FIT	(Produced by HFLAV)				
59.45±0.14±0.61	369k	[1] AUBERT	10F	BABR	467 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] See footnote to AUBERT 10F $\Gamma(\tau^- \rightarrow \mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$ for correlations with other measurements.
NODE=S035C78;LINKAGE=AU

$\Gamma(K^-\nu_\tau)/\Gamma_{total}$ Γ_{10}/Γ

NODE=S035R7
NODE=S035R7

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.696±0.010 OUR FIT	(Produced by HFLAV)				
0.685±0.023 OUR AVERAGE					
0.658±0.027±0.029		[1] ABBIENDI	01J	OPAL	1990–1995 LEP runs
0.696±0.025±0.014	2032	BARATE	99K	ALEP	1991–1995 LEP runs
0.85 ±0.18	27	ABREU	94K	DLPH	LEP 1992 Z data
0.66 ±0.07 ±0.09	99	BATTLE	94	CLEO	E^{ee}_{cm} ≈ 10.6 GeV

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

0.72 ±0.04 ±0.04	728	BUSKULIC	96	ALEP	Repl. by BARATE 99K
0.59 ±0.18	16	MILLS	84	DLCO	E^{ee}_{cm}= 29 GeV
1.3 ±0.5	15	BLOCKER	82B	MRK2	E^{ee}_{cm}= 3.9–6.7 GeV

[1] The correlation coefficient between this measurement and the ABBIENDI 01J B($\tau^- \rightarrow K^- \geq 0\pi^0 \geq 0K^0 \geq 0\gamma\ \nu_\tau$) is 0.60. NODE=S035R7;LINKAGE=AJ

$\Gamma(K^-\nu_\tau)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ Γ_{10}/Γ_5

NODE=S035C79
NODE=S035C79

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.91 ±0.05 OUR FIT (Produced by HFLAV)					
3.882±0.032±0.057	25k	[1] AUBERT	10F	BABR	467 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] See footnote to AUBERT 10F $\Gamma(\tau^- \rightarrow \mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$ for correlations with other measurements. NODE=S035C79;LINKAGE=AU

$\Gamma(K^-\nu_\tau)/\Gamma(\pi^-\nu_\tau)$ Γ_{10}/Γ_9

NODE=S035C80
NODE=S035C80

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
6.44 ±0.09 OUR FIT (Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •				
6.531±0.056±0.093	[1] AUBERT	10F	BABR	467 fb^{-1} E^{ee}_{cm}= 10.6 GeV

NOTFITTED

[1] Not independent of AUBERT 10F $\Gamma(\tau^- \rightarrow \pi^-\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$ and $\Gamma(\tau^- \rightarrow K^-\nu_\tau)/\Gamma(\tau^- \rightarrow e^-\overline{\nu}_e\nu_\tau)$. NODE=S035C80;LINKAGE=AU

$\Gamma(h^- \geq 1\,\text{neutrals}\,\nu_\tau)/\Gamma_{\text{total}}$ Γ_{11}/Γ

NODE=S035R42

$\Gamma_{11}/\Gamma = (\Gamma_{14}+\Gamma_{16}+\Gamma_{20}+\Gamma_{23}+\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.15344\Gamma_{36}+0.15344\Gamma_{38}+0.15344\Gamma_{41}+0.15344\Gamma_{43}+0.0942\Gamma_{48}+0.0942\Gamma_{52}+0.7195\Gamma_{150}+0.7195\Gamma_{152}+0.7195\Gamma_{154}+0.1107\Gamma_{156}+0.0833\Gamma_{178}+0.0833\Gamma_{179}+0.0833\Gamma_{180})/\Gamma$ NODE=S035R42

NODE=S035R42

VALUE (%)	DOCUMENT ID		TECN	COMMENT
37.00±0.09 OUR FIT (Produced by HFLAV)				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
36.14±0.33±0.58	[1] AKERS	94E	OPAL	1991–1992 LEP runs
38.4 ±1.2 ±1.0	[2] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV
42.7 ±2.0 ±2.9	BERGER	85	PLUT	E^{ee}_{cm}= 34.6 GeV

[1] Not independent of ACKERSTAFF 98M B($h^-\pi^0\nu_\tau$) and B($h^- \geq 2\pi^0\nu_\tau$) values. NODE=S035R42;LINKAGE=AE

[2] BURCHAT 87 quote for B($\pi^\pm \geq 1$ neutralν_τ) = 0.378 ± 0.012 ± 0.010. We add 0.006 to account for contribution from ($K^{*-}\nu_\tau$) which they fixed at BR = 0.013. NODE=S035R42;LINKAGE=B

$\Gamma(h^- \geq 1\pi^0\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{12}/Γ

NODE=S035C01

$\Gamma_{12}/\Gamma = (\Gamma_{14}+\Gamma_{16}+\Gamma_{20}+\Gamma_{23}+\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.3256\Gamma_{150}+0.3256\Gamma_{152}+0.3256\Gamma_{154})/\Gamma$ NODE=S035C01

NODE=S035C01

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
36.50 ±0.09 OUR FIT (Produced by HFLAV)					
• • • We use the following data for averages but not for fits. • • •					
36.641±0.155±0.127	45k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs

NOTFITTED

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \rightarrow h^-\nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035C01;LINKAGE=AH

$\Gamma(h^-\pi^0\nu_\tau)/\Gamma_{\text{total}}$ $\Gamma_{13}/\Gamma = (\Gamma_{14}+\Gamma_{16})/\Gamma$

NODE=S035R84
NODE=S035R84

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
25.93 ±0.09 OUR FIT (Produced by HFLAV)					
25.73 ±0.16 OUR AVERAGE					
25.67 ±0.01 ±0.39	5.4M	FUJIKAWA	08	BELL	72 fb^{-1} E^{ee}_{cm}=10.6GeV
25.740±0.201±0.138	35k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs
25.89 ±0.17 ±0.29		ACKERSTAFF	98M	OPAL	1991–1995 LEP runs
25.05 ±0.35 ±0.50	6613	ACCIARRI	95	L3	1992 LEP run
25.87 ±0.12 ±0.42	51k	[2] ARTUSO	94	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
25.76 ±0.15 ±0.13	31k	BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
25.98 ±0.36 ±0.52		[3] AKERS	94E	OPAL	Repl. by ACKERSTAFF 98M
22.9 ±0.8 ±1.3	283	[4] ABREU	92N	DLPH	E^{ee}_{cm}= 88.2–94.2 GeV
23.1 ±0.4 ±0.9	1249	[5] ALBRECHT	92Q	ARG	E^{ee}_{cm}= 10 GeV
25.02 ±0.64 ±0.88	1849	DECAMP	92C	ALEP	1989–1990 LEP runs
22.0 ±0.8 ±1.9	779	ANTREASYAN	91	CBAL	E^{ee}_{cm}= 9.4–10.6 GeV
22.6 ±1.5 ±0.7	1101	BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV
23.1 ±1.9 ±1.6		BEHREND	84	CELL	E^{ee}_{cm}= 14,22 GeV

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035R84;LINKAGE=AH

[2] ARTUSO 94 reports the combined result from three independent methods, one of which (23% of the $\tau^- \to h^- \pi^0 \nu_\tau$) is normalized to the inclusive one-prong branching fraction, taken as 0.854 ± 0.004. Renormalization to the present value causes negligible change. NODE=S035R84;LINKAGE=D

[3] AKERS 94E quote $(26.25 \pm 0.36 \pm 0.52) \times 10^{-2}$; we subtract 0.27% from their number to correct for $\tau^- \to h^- K^0_L \nu_\tau$. NODE=S035R84;LINKAGE=F

[4] ABREU 92N with 0.5% added to remove their correction for $K^*(892)^-$ backgrounds. NODE=S035R84;LINKAGE=E

[5] ALBRECHT 92Q with 0.5% added to remove their correction for $\tau^- \to K^*(892)^- \nu_\tau$ background. NODE=S035R84;LINKAGE=C

$\Gamma(\pi^- \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{14}/Γ

NODE=S035R8
NODE=S035R8

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
25.49 ±0.09 OUR FIT (Produced by HFLAV)						
25.46 ±0.12 OUR AVERAGE						
25.471±0.097±0.085	81k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
25.36 ±0.44		[2] ARTUSO	94	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
25.30 ±0.15 ±0.13		[3] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C	NOTFITTED
21.5 ±0.4 ±1.9	4400	[4,5] ALBRECHT	88L	ARG	E^{ee}_{cm}= 10 GeV	
23.0 ±1.3 ±1.7	582	ADLER	87B	MRK3	E^{ee}_{cm}= 3.77 GeV	
25.8 ±1.7 ±2.5		[6] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
22.3 ±0.6 ±1.4	629	[5] YELTON	86	MRK2	E^{ee}_{cm}= 29 GeV	

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035R8;LINKAGE=SC

[2] Not independent of ARTUSO 94 $B(h^- \pi^0 \nu_\tau)$ and BATTLE 94 $B(K^- \pi^0 \nu_\tau)$ values. NODE=S035R8;LINKAGE=F

[3] Not independent of BUSKULIC 96 $B(h^- \pi^0 \nu_\tau)$ and $B(K^- \pi^0 \nu_\tau)$ values. NODE=S035R8;LINKAGE=D

[4] The authors divide by $(\Gamma_3 + \Gamma_5 + \Gamma_9 + \Gamma_{10})/\Gamma = 0.467$ to obtain this result. NODE=S035R8;LINKAGE=AL

[5] Experiment had no hadron identification. Kaon corrections were made, but insufficient information is given to permit their removal. NODE=S035R8;LINKAGE=Q

[6] BURCHAT 87 value is not independent of YELTON 86 value. Nonresonant decays included. NODE=S035R8;LINKAGE=B

$\Gamma(\pi^- \pi^0 \text{non-}\rho(770) \nu_\tau)/\Gamma_{total}$ — Γ_{15}/Γ

NODE=S035R19
NODE=S035R19

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.3±0.1±0.3	[1] BEHREND	84	CELL	E^{ee}_{cm}= 14,22 GeV

[1] BEHREND 84 assume a flat nonresonant mass distribution down to the $\rho(770)$ mass, using events with mass above 1300 to set the level. NODE=S035R19;LINKAGE=Q

$\Gamma(K^- \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{16}/Γ

NODE=S035B29
NODE=S035B29

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.433±0.015 OUR FIT (Produced by HFLAV)					
0.426±0.016 OUR AVERAGE					
0.416±0.003±0.018	78k	AUBERT	07AP	BABR	230 fb^{-1} E^{ee}_{cm}= 10.6 GeV
0.471±0.059±0.023	360	ABBIENDI	04J	OPAL	1991-1995 LEP runs
0.444±0.026±0.024	923	BARATE	99K	ALEP	1991-1995 LEP runs
0.51 ±0.10 ±0.07	37	BATTLE	94	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.52 ±0.04 ±0.05	395	BUSKULIC	96	ALEP	Repl. by BARATE 99K

$\Gamma(h^- \geq 2\pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{17}/Γ

NODE=S035R44

$\Gamma_{17}/\Gamma = (\Gamma_{20}+\Gamma_{23}+\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.15344\Gamma_{36}+0.15344\Gamma_{38}+0.15344\Gamma_{41}+ 0.15344\Gamma_{43}+0.09419\Gamma_{48}+0.0942\Gamma_{52}+0.3256\Gamma_{150}+0.3256\Gamma_{152}+0.3256\Gamma_{154})/\Gamma$ NODE=S035R44

NODE=S035R44

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
10.81±0.09 OUR FIT (Produced by HFLAV)						
9.91±0.31±0.27		ACKERSTAFF	98M	OPAL	1991–1995 LEP runs	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
9.89±0.34±0.55		[1] AKERS	94E	OPAL	Repl. by ACKERSTAFF 98M	NOTFITTED
14.0 ±1.2 ±0.6	938	[2] BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV	NOTFITTED
12.0 ±1.4 ±2.5		[3] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
13.9 ±2.0 $^{+1.9}_{-2.2}$		[4] AIHARA	86E	TPC	E^{ee}_{cm}= 29 GeV	

[1] AKERS 94E not independent of AKERS 94E $B(h^- \geq 1\pi^0 \nu_\tau)$ and $B(h^- \pi^0 \nu_\tau)$ measurements. NODE=S035R44;LINKAGE=C

[2] No independent of BEHREND 90 $\Gamma(h^- 2\pi^0 \nu_\tau (\text{exp. } K^0))$ and $\Gamma(h^- \geq 3\pi^0 \nu_\tau)$. NODE=S035R44;LINKAGE=BB

[3] Error correlated with BURCHAT 87 $\Gamma(\rho^- \nu_e)/\Gamma(\text{total})$ value. NODE=S035R44;LINKAGE=B

[4] AIHARA 86E (TPC) quote $B(2\pi^0 \pi^- \nu_\tau) + 1.6B(3\pi^0 \pi^- \nu_\tau) + 1.1B(\pi^0 \eta \pi^- \nu_\tau)$. NODE=S035R44;LINKAGE=A

$\Gamma(h^- 2\pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{18}/Γ

NODE=S035B74

$\Gamma_{18}/\Gamma = (\Gamma_{20}+\Gamma_{23}+0.15344\Gamma_{36}+0.15344\Gamma_{38})/\Gamma$

NODE=S035B74

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.48±0.10 OUR FIT	(Produced by HFLAV)				
• • • We do not use the following data for averages, fits, limits, etc. • • •					
9.48±0.13±0.10	12k	[1] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C

NODE=S035B74

[1] BUSKULIC 96 quote 9.29 ± 0.13 ± 0.10. We add 0.19 to undo their correction for $\tau^- \to h^- K^0 \nu_\tau$. NODE=S035B74;LINKAGE=E

$\Gamma(h^- 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ Γ_{19}/Γ

NODE=S035R20

$\Gamma_{19}/\Gamma = (\Gamma_{20}+\Gamma_{23})/\Gamma$

NODE=S035R20

NODE=S035R20

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.32 ±0.10 OUR FIT	(Produced by HFLAV)				
9.17 ±0.27 OUR AVERAGE					
9.498±0.320±0.275	9.5k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs
8.88 ±0.37 ±0.42	1060	ACCIARRI	95	L3	1992 LEP run
• • • We use the following data for averages but not for fits. • • •					
8.96 ±0.16 ±0.44		[2] PROCARIO	93	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
10.38 ±0.66 ±0.82	809	[3] DECAMP	92C	ALEP	Repl. by SCHAEL 05C
5.7 ±0.5 $^{+1.7}_{-1.0}$	133	[4] ANTREASYAN	91	CBAL	E^{ee}_{cm}= 9.4–10.6 GeV
10.0 ±1.5 ±1.1	333	[5] BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV
8.7 ±0.4 ±1.1	815	[6] BAND	87	MAC	E^{ee}_{cm}= 29 GeV
6.2 ±0.6 ±1.2		[7] GAN	87	MRK2	E^{ee}_{cm}= 29 GeV
6.0 ±3.0 ±1.8		BEHREND	84	CELL	E^{ee}_{cm}= 14,22 GeV

NOTFITTED (PROCARIO 93)

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035R20;LINKAGE=AH

[2] PROCARIO 93 entry is obtained from $B(h^- 2\pi^0 \nu_\tau)/B(h^- \pi^0 \nu_\tau)$ using ARTUSO 94 result for $B(h^- \pi^0 \nu_\tau)$. NODE=S035R20;LINKAGE=D

[3] We subtract 0.0015 to account for $\tau^- \to K^*(892)^- \nu_\tau$ contribution. NODE=S035R20;LINKAGE=I

[4] ANTREASYAN 91 subtract 0.001 to account for the $\tau^- \to K^*(892)^- \nu_\tau$ contribution. NODE=S035R20;LINKAGE=AB

[5] BEHREND 90 subtract 0.002 to account for the $\tau^- \to K^*(892)^- \nu_\tau$ contribution. NODE=S035R20;LINKAGE=H

[6] BAND 87 assume $B(\pi^- 3\pi^0 \nu_\tau) = 0.01$ and $B(\pi^- \pi^0 \eta \nu_\tau) = 0.005$. NODE=S035R20;LINKAGE=G

[7] GAN 87 analysis use photon multiplicity distribution. NODE=S035R20;LINKAGE=C

$\Gamma(h^- 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma(h^- \pi^0 \nu_\tau)$ Γ_{19}/Γ_{13}

NODE=S035B21

$\Gamma_{19}/\Gamma_{13} = (\Gamma_{20}+\Gamma_{23})/(\Gamma_{14}+\Gamma_{16})$

NODE=S035B21

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
36.0±0.4 OUR FIT	(Produced by HFLAV)			
34.2±0.6±1.6	[1] PROCARIO	93	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV

NODE=S035B21

[1] PROCARIO 93 quote 0.345 ± 0.006 ± 0.016 after correction for 2 kaon backgrounds assuming $B(K^{*-} \nu_\tau)$=1.42 ± 0.18% and $B(h^- K^0 \pi^0 \nu_\tau)$=0.48 ± 0.48%. We multiply by 0.990 ± 0.010 to remove these corrections to $B(h^- \pi^0 \nu_\tau)$. NODE=S035B21;LINKAGE=A

$\Gamma(\pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ Γ_{20}/Γ

NODE=S035B55

NODE=S035B55

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.26 ±0.10 OUR FIT	(Produced by HFLAV)				
9.239±0.086±0.090	31k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
9.21 ±0.13 ±0.11		[2] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C

NOTFITTED (BUSKULIC 96)

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035B55;LINKAGE=SC

[2] Not independent of BUSKULIC 96 $B(h^- 2\pi^0 \nu_\tau (\text{ex. } K^0))$ and $B(K^- 2\pi^0 \nu_\tau (\text{ex. } K^0))$ values. NODE=S035B55;LINKAGE=A

$\Gamma(\pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0), \text{scalar})/\Gamma(\pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0))$ Γ_{21}/Γ_{20}

NODE=S035C48

NODE=S035C48

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.094	95	[1] BROWDER	00	CLEO	4.7 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] Model-independent limit from structure function analysis on contribution to $B(\tau^- \to \pi^- 2\pi^0 \nu_\tau (\text{ex. } K^0))$ from scalars. NODE=S035C48;LINKAGE=A

$\Gamma(\pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0), \text{vector})/\Gamma(\pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0))$ Γ_{22}/Γ_{20}

NODE=S035C49
NODE=S035C49

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.073	95	[1] BROWDER	00	CLEO	4.7 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] Model-independent limit from structure function analysis on contribution to $B(\tau^- \to \pi^- 2\pi^0 \nu_\tau (\text{ex. } K^0))$ from vectors. NODE=S035C49;LINKAGE=A

$\Gamma(K^- 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ Γ_{23}/Γ

NODE=S035B30
NODE=S035B30

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.5± 2.2 OUR FIT (Produced by HFLAV)					
5.8± 2.4 OUR AVERAGE					
5.6± 2.0±1.5	131	BARATE	99K	ALEP	1991–1995 LEP runs
9 ±10 ±3	3	[1] BATTLE	94	CLEO	$E^{ee}_{cm}\approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8 ± 2 ±2	59	BUSKULIC	96	ALEP	Repl. by BARATE 99K

[1] BATTLE 94 quote $(14 \pm 10 \pm 3) \times 10^{-4}$ or $< 30 \times 10^{-4}$ at 90% CL. We subtract $(5 \pm 2) \times 10^{-4}$ to account for $\tau^- \to K^- (K^0 \to \pi^0 \pi^0) \nu_\tau$ background. NODE=S035B30;LINKAGE=A

$\Gamma(h^- \geq 3\pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{24}/Γ

NODE=S035R97

$\Gamma_{24}/\Gamma = (\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.15344\Gamma_{41}+0.15344\Gamma_{43}+0.0942\Gamma_{48}+0.0942\Gamma_{52}+0.3256\Gamma_{150}+0.3256\Gamma_{152}+0.3256\Gamma_{154}+0.0501\Gamma_{156})/\Gamma$ NODE=S035R97

NODE=S035R97

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.34±0.07 OUR FIT (Produced by HFLAV)					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.53±0.40±0.46	186	DECAMP	92C	ALEP	Repl. by SCHAEL 05C
3.2 ±1.0 ±1.0		BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV

$\Gamma(h^- \geq 3\pi^0 \nu_\tau (\text{ex. } K^0))/\Gamma_{total}$ Γ_{25}/Γ

NODE=S035C02

$\Gamma_{25}/\Gamma = (\Gamma_{27}+\Gamma_{28}+\Gamma_{30}+0.3256\Gamma_{150}+0.3256\Gamma_{152}+0.3256\Gamma_{154})/\Gamma$ NODE=S035C02

NODE=S035C02

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.25 ±0.07 OUR FIT (Produced by HFLAV)					
1.403±0.214±0.224	1.1k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035C02;LINKAGE=AH

$\Gamma(h^- 3\pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{26}/Γ

NODE=S035R21

$\Gamma_{26}/\Gamma = (\Gamma_{27}+\Gamma_{28}+0.15344\Gamma_{41}+0.15344\Gamma_{43}+0.3256\Gamma_{152})/\Gamma$ NODE=S035R21

NODE=S035R21

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.18±0.07 OUR FIT (Produced by HFLAV)					
1.21±0.17 OUR AVERAGE Error includes scale factor of 1.2.					
1.70±0.24±0.38	293	ACCIARRI	95	L3	1992 LEP run
• • • We use the following data for averages but not for fits. • • •					
1.15±0.08±0.13		[1] PROCARIO	93	CLEO	$E^{ee}_{cm}\approx$ 10.6 GeV (NOTFITTED)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.24±0.09±0.11	2.3k	[2] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
$0.0 {}^{+1.4}_{-0.1} {}^{+1.1}_{-0.1}$		[3] GAN	87	MRK2	E^{ee}_{cm}= 29 GeV

[1] PROCARIO 93 entry is obtained from $B(h^- 3\pi^0 \nu_\tau)/B(h^- \pi^0 \nu_\tau)$ using ARTUSO 94 result for $B(h^- \pi^0 \nu_\tau)$. NODE=S035R21;LINKAGE=D

[2] BUSKULIC 96 quote $B(h^- 3\pi^0 \nu_\tau (\text{ex. } K^0)) = 1.17 \pm 0.09 \pm 0.11$. We add 0.07 to remove their correction for K^0 backgrounds. NODE=S035R21;LINKAGE=C

[3] Highly correlated with GAN 87 $\Gamma(\eta\pi^-\pi^0\nu_\tau)/\Gamma_{total}$ value. Authors quote $B(\pi^\pm 3\pi^0 \nu_\tau) + 0.67 B(\pi^\pm \eta \pi^0 \nu_\tau) = 0.047 \pm 0.010 \pm 0.011$. NODE=S035R21;LINKAGE=B

$\Gamma(h^- 3\pi^0 \nu_\tau)/\Gamma(h^- \pi^0 \nu_\tau)$ Γ_{26}/Γ_{13}

NODE=S035B22

$\Gamma_{26}/\Gamma_{13} = (\Gamma_{27}+\Gamma_{28}+0.15344\Gamma_{41}+0.15344\Gamma_{43}+0.3256\Gamma_{152})/(\Gamma_{14}+\Gamma_{16})$ NODE=S035B22

NODE=S035B22

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.54±0.28 OUR FIT (Produced by HFLAV)				
4.4 ±0.3 ±0.5	[1] PROCARIO	93	CLEO	$E^{ee}_{cm}\approx$ 10.6 GeV

[1] PROCARIO 93 quote $0.041 \pm 0.003 \pm 0.005$ after correction for 2 kaon backgrounds assuming $B(K^{*-}\nu_\tau)$=1.42 ± 0.18% and $B(h^- K^0 \pi^0 \nu_\tau)$=0.48 ± 0.48%. We add 0.003 ± 0.003 and multiply the sum by 0.990 ± 0.010 to remove these corrections. NODE=S035B22;LINKAGE=A

$\Gamma(\pi^- 3\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ — Γ_{27}/Γ

NODE=S035B56
NODE=S035B56

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.04 ±0.07 OUR FIT	(Produced by HFLAV)				
0.977±0.069±0.058	6.1k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035B56;LINKAGE=SC

$\Gamma(K^- 3\pi^0 \nu_\tau (\text{ex.}K^0, \eta))/\Gamma_{\text{total}}$ — Γ_{28}/Γ

NODE=S035B31
NODE=S035B31

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.8± 2.1 OUR FIT	(Produced by HFLAV)				
3.7± 2.1±1.1	22	BARATE	99K	ALEP	1991–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5 ±13		[1] BUSKULIC	94E	ALEP	Repl. by BARATE 99K

[1] BUSKULIC 94E quote $B(K^- \geq 0\pi^0 \geq 0K^0 \nu_\tau) - [B(K^- \nu_\tau) + B(K^- \pi^0 \nu_\tau) + B(K^- K^0 \nu_\tau) + B(K^- \pi^0 \pi^0 \nu_\tau) + B(K^- \pi^0 K^0 \nu_\tau)] = (5 \pm 13) \times 10^{-4}$ accounting for common systematic errors in BUSKULIC 94E and BUSKULIC 94F measurements of these modes. We assume $B(K^- \geq 2K^0 \nu_\tau)$ and $B(K^- \geq 4\pi^0 \nu_\tau)$ are negligible. NODE=S035B31;LINKAGE=A

$\Gamma(h^- 4\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ — Γ_{29}/Γ

NODE=S035B79

$\Gamma_{29}/\Gamma = (\Gamma_{30}+0.3256\Gamma_{150}+0.3256\Gamma_{154})/\Gamma$ NODE=S035B79

NODE=S035B79

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.16±0.04 OUR FIT	(Produced by HFLAV)				
0.16±0.05±0.05		[1] PROCARIO	93	CLEO	$E^{ee}_{\text{cm}} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.16±0.04±0.09	232	[2] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C

[1] PROCARIO 93 quotes $B(h^- 4\pi^0 \nu_\tau)/B(h^- \pi^0 \nu_\tau) = 0.006 \pm 0.002 \pm 0.002$. We multiply by the ARTUSO 94 result for $B(h^- \pi^0 \nu_\tau)$ to obtain $B(h^- 4\pi^0 \nu_\tau)$. PROCARIO 93 assume $B(h^- \geq 5\ \pi^0 \nu_\tau)$ is small and do not correct for it. NODE=S035B79;LINKAGE=A

[2] BUSKULIC 96 quote result for $\tau^- \to h^- \geq 4\pi^0 \nu_\tau$. We assume $B(h^- \geq 5\pi^0 \nu_\tau)$ is negligible. NODE=S035B79;LINKAGE=D

$\Gamma(h^- 4\pi^0 \nu_\tau (\text{ex.}K^0,\eta))/\Gamma_{\text{total}}$ — Γ_{30}/Γ

NODE=S035B23
NODE=S035B23

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.11 ±0.04 OUR FIT	(Produced by HFLAV)				
0.112±0.037±0.035	957	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035B23;LINKAGE=SC

$\Gamma(a_1(1260)\nu_\tau \to \pi^- \gamma \nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{31}/\Gamma = (0.0022\Gamma_{20}+0.0022\Gamma_{70})/\Gamma$

NODE=S035R08

In the fit, $\Gamma(\tau^- \to a_1(1260)\nu_\tau \to \pi^- \gamma \nu_\tau)/\Gamma_{\text{total}}$ is set equal to $(\Gamma(\tau^- \to \pi^- 2\pi^0 \nu_\tau (\text{ex.}K^0)) + \Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0,\omega))/\Gamma_{\text{total}} \times B(a_1(1260) \to \pi\gamma)/(1 - B(a_1(1260) \to \pi\gamma))$ and $B(a_1(1260) \to \pi\gamma) = \Gamma(a_1(1260) \to \pi\gamma)/\Gamma^{a_1(1260)}_{\text{total}}$ is a nuisance fit variable with a χ^2 term corresponding to its estimate in reference SCHAEL 05C. NODE=S035R08

NODE=S035R08

VALUE (units 10^{-4})	DOCUMENT ID
4.0±1.5 OUR FIT	(Produced by HFLAV)

$\Gamma(K^- \geq 0\pi^0 \geq 0K^0 \geq 0\gamma\ \nu_\tau)/\Gamma_{\text{total}}$ — Γ_{32}/Γ

NODE=S035R26

$\Gamma_{32}/\Gamma = (\Gamma_{10}+\Gamma_{16}+\Gamma_{23}+\Gamma_{28}+\Gamma_{38}+\Gamma_{43}+0.7195\Gamma_{152}+0.1049\Gamma_{170})/\Gamma$ NODE=S035R26

NODE=S035R26

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
1.552±0.029 OUR FIT	(Produced by HFLAV)					
1.53 ±0.04 OUR AVERAGE						
1.528±0.039±0.040		[1] ABBIENDI	01J	OPAL	1990–1995 LEP runs	
1.54 ±0.24		ABREU	94K	DLPH	LEP 1992 Z data	
1.70 ±0.12 ±0.19	202	[2] BATTLE	94	CLEO	$E^{ee}_{\text{cm}} \approx$ 10.6 GeV	
• • • We use the following data for averages but not for fits. • • •						
1.520±0.040±0.041	4006	[3] BARATE	99K	ALEP	1991–1995 LEP runs	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.70 ±0.05 ±0.06	1610	[4] BUSKULIC	96	ALEP	Repl. by BARATE 99K	NOTFITTED
1.6 ±0.4 ±0.2	35	AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV	
1.71 ±0.29	53	MILLS	84	DLCO	E^{ee}_{cm}= 29 GeV	

[1] The correlation coefficient between this measurement and the ABBIENDI 01J B($\tau^- \to K^- \nu_\tau$) is 0.60. NODE=S035R26;LINKAGE=AJ

[2] BATTLE 94 quote $1.60 \pm 0.12 \pm 0.19$. We add 0.10 ± 0.02 to correct for their rejection of $K^0_S \to \pi^+\pi^-$ decays. NODE=S035R26;LINKAGE=C

[3] Not independent of BARATE 99K B($K^- \nu_\tau$), B($K^- \pi^0 \nu_\tau$), B($K^- 2\pi^0 \nu_\tau$ (ex. K^0)), B($K^- 3\pi^0 \nu_\tau$ (ex. K^0)), B($K^- K^0 \nu_\tau$), and B($K^- K^0 \pi^0 \nu_\tau$) values. NODE=S035R26;LINKAGE=9K

[4] Not independent of BUSKULIC 96 B($K^- \nu_\tau$), B($K^- \pi^0 \nu_\tau$), B($K^- 2\pi^0 \nu_\tau$), B($K^- K^0 \nu_\tau$), and B($K^- K^0 \pi^0 \nu_\tau$) values. NODE=S035R26;LINKAGE=AA

$\Gamma(K^- \geq 1\,(\pi^0 \text{ or } K^0 \text{ or } \gamma)\,\nu_\tau)/\Gamma_{\text{total}}$ — Γ_{33}/Γ

NODE=S035R27

$\Gamma_{33}/\Gamma = (\Gamma_{16}+\Gamma_{23}+\Gamma_{28}+\Gamma_{38}+\Gamma_{43}+0.7195\Gamma_{152}+0.7195\Gamma_{154}+0.1049\Gamma_{170})/\Gamma$ NODE=S035R27

NODE=S035R27

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.859±0.028 OUR FIT	(Produced by HFLAV)					
0.86 ±0.05 OUR AVERAGE						
• • • We use the following data for averages but not for fits. • • •						
0.869±0.031±0.034		[1] ABBIENDI	01J	OPAL	1990–1995 LEP runs	NOTFITTED
0.69 ±0.25		[2] ABREU	94K	DLPH	LEP 1992 Z data	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.2 ±0.5 $^{+0.2}_{-0.4}$	9	AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV	

[1] Not independent of ABBIENDI 01J B($\tau^- \to K^- \nu_\tau$) and B($\tau^- \to K^- \geq 0\pi^0 \geq 0K^0 \geq 0\gamma\ \nu_\tau$) values. NODE=S035R27;LINKAGE=AB

[2] Not independent of ABREU 94K B($K^- \nu_\tau$) and B($K^- \geq 0$ neutralsν_τ) measurements. NODE=S035R27;LINKAGE=A

$\Gamma(K^0_S\,(\text{particles})^-\,\nu_\tau)/\Gamma_{\text{total}}$ — Γ_{34}/Γ

NODE=S035B43

$\Gamma_{34}/\Gamma = (\frac{1}{2}\Gamma_{36}+\frac{1}{2}\Gamma_{38}+\frac{1}{2}\Gamma_{41}+\frac{1}{2}\Gamma_{43}+\frac{1}{2}\Gamma_{45}+\Gamma_{48}+\Gamma_{49}+\Gamma_{52}+\Gamma_{56}+0.3597\Gamma_{156}+0.336\Gamma_{170})/\Gamma$ NODE=S035B43

NODE=S035B43

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.943±0.028 OUR FIT	(Produced by HFLAV)					
0.918±0.015 OUR AVERAGE						
0.970±0.058±0.062	929	BARATE	98E	ALEP	1991–1995 LEP runs	
0.97 ±0.09 ±0.06	141	AKERS	94G	OPAL	E^{ee}_{cm}= 88–94 GeV	
• • • We use the following data for averages but not for fits. • • •						
0.915±0.001±0.015	398k	[1] RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV	NOTFITTED

[1] Not independent of RYU 14 measurements of B($\tau^- \to \pi^- \overline{K}^0 \nu_\tau$), B($\tau^- \to K^- K^0 \nu_\tau$), B($\tau^- \to \pi^- \overline{K}^0 \pi^0 \nu_\tau$), B($\tau^- \to K^- K^0 \pi^0 \nu_\tau$), B($\tau^- \to \pi^- K^0_S K^0_S \nu_\tau$), and B($\tau^- \to \pi^- K^0_S K^0_S \pi^0 \nu_\tau$). NODE=S035B43;LINKAGE=RY

$\Gamma(h^- \overline{K}^0 \nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{35}/\Gamma = (\Gamma_{36}+\Gamma_{38})/\Gamma$

NODE=S035B67
NODE=S035B67

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.987±0.014 OUR FIT	(Produced by HFLAV)					
0.90 ±0.07 OUR AVERAGE						
0.855±0.036±0.073	1242	COAN	96	CLEO	$E^{ee}_{\text{cm}} \approx$ 10.6 GeV	
• • • We use the following data for averages but not for fits. • • •						
1.01 ±0.11 ±0.07	555	[1] BARATE	98E	ALEP	1991–1995 LEP runs	NOTFITTED

[1] Not independent of BARATE 98E B($\tau^- \to \pi^- \overline{K}^0 \nu_\tau$) and B($\tau^- \to K^- K^0 \nu_\tau$) values. NODE=S035B67;LINKAGE=B9

$\Gamma(\pi^- \overline{K}^0 \nu_\tau)/\Gamma_{\text{total}}$ — Γ_{36}/Γ

NODE=S035B32
NODE=S035B32

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT	
8.38±0.14 OUR FIT	(Produced by HFLAV)					
8.39±0.22 OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.					
8.32±0.02±0.16	158k	[1] RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV	
9.33±0.68±0.49	377	ABBIENDI	00C	OPAL	1991–1995 LEP runs	
9.28±0.45±0.34	937	[2] BARATE	99K	ALEP	1991–1995 LEP runs	
9.5 ±1.5 ±0.6		[3] ACCIARRI	95F	L3	1991–1993 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
8.55±1.17±0.66	509	[4] BARATE	98E	ALEP	1991–1995 LEP runs	NOTFITTED
7.04±0.41±0.72		[5] COAN	96	CLEO	$E^{ee}_{\text{cm}} \approx$ 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
8.08±0.04±0.26	53k	EPIFANOV	07	BELL	Repl. by RYU 14	
7.9 ±1.0 ±0.9	98	[6] BUSKULIC	96	ALEP	Repl. by BARATE 99K	

[1] RYU 14 reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035B32;LINKAGE=C

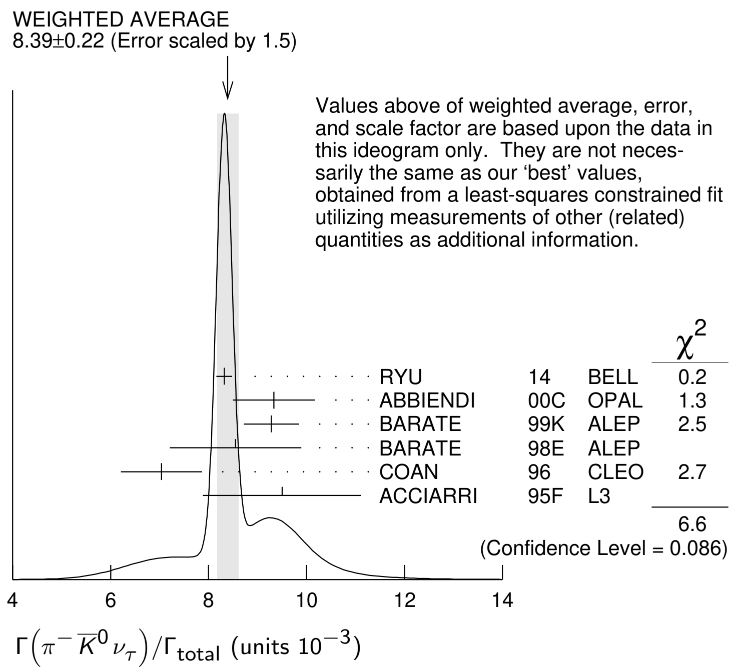
[2] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B32;LINKAGE=9K

[3] ACCIARRI 95F do not identify π^-/K^- and assume B($K^- K^0 \nu_\tau$) = (0.29 ± 0.12)%. NODE=S035B32;LINKAGE=A

[4] BARATE 98E reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays. Not independent of BARATE 98E B(K^0 particles$^-$ ν_τ) value. NODE=S035B32;LINKAGE=B9

[5] Not independent of COAN 96 B($h^- K^0 \nu_\tau$) and B($K^- K^0 \nu_\tau$) measurements. NODE=S035B32;LINKAGE=B

[6] BUSKULIC 96 measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B32;LINKAGE=B6



$\Gamma(\pi^- \overline{K}^0 (\text{non-}K^*(892)^-) \nu_\tau)/\Gamma_{\text{total}}$ Γ_{37}/Γ

NODE=S035B52
NODE=S035B52

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
5.4±2.1		[1] EPIFANOV	07	BELL	351 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<17	95	ACCIARRI	95F	L3	1991–1993 LEP runs

[1] EPIFANOV 07 quote B($\tau^- \to K^*(892)^- \nu_\tau$) B($K^*(892)^- \to K^0_S \pi^-$) / B($\tau^- \to K^0_S \pi^- \nu_\tau$) = 0.933 ± 0.027. We multiply their B($\tau^- \to \overline{K}^0 \pi^- \nu_\tau$) by [1−(0.933 ± 0.027)] to obtain this result. NODE=S035B52;LINKAGE=EP

$\Gamma(K^- K^0 \nu_\tau)/\Gamma_{\text{total}}$ Γ_{38}/Γ

NODE=S035R46
NODE=S035R46

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
14.86±0.34 OUR FIT	(Produced by HFLAV)				
14.83±0.35 OUR AVERAGE					
14.78±0.22±0.40	29k	[1] LEES	18B	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV
14.80±0.14±0.54	33k	[2] RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV
16.2 ±2.1 ±1.1	150	[3] BARATE	99K	ALEP	1991–1995 LEP runs
15.8 ±4.2 ±1.7	46	[4] BARATE	98E	ALEP	1991–1995 LEP runs
15.1 ±2.1 ±2.2	111	COAN	96	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
26 ±9 ±2	13	[5] BUSKULIC	96	ALEP	Repl. by BARATE 99K

OCCUR=2

[1] LEES 18B reconstructs K^0_S's using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035R46;LINKAGE=C

[2] RYU 14 reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035R46;LINKAGE=A

[3] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035R46;LINKAGE=9K

[4] BARATE 98E reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035R46;LINKAGE=B9

[5] BUSKULIC 96 measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035R46;LINKAGE=B6

$\Gamma(K^- K^0 \geq 0\pi^0 \nu_\tau)/\Gamma_{\text{total}}$ $\Gamma_{39}/\Gamma = (\Gamma_{38}+\Gamma_{43})/\Gamma$

NODE=S035C38
NODE=S035C38

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.299±0.007 OUR FIT	(Produced by HFLAV)				
0.330±0.055±0.039	124	ABBIENDI	00C	OPAL	1991–1995 LEP runs

$\Gamma(h^- \overline{K}^0 \pi^0 \nu_\tau)/\Gamma_{total}$ — $\Gamma_{40}/\Gamma = (\Gamma_{41}+\Gamma_{43})/\Gamma$

NODE=S035B68

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.532±0.013 OUR FIT	(Produced by HFLAV)				
0.50 ±0.06 OUR AVERAGE	Error includes scale factor of 1.2.				
0.562±0.050±0.048	264	COAN	96	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We use the following data for averages but not for fits. • • •					
0.446±0.052±0.046	157	[1] BARATE	98E	ALEP	1991–1995 LEP runs	NOTFITTED

[1] Not independent of BARATE 98E B($\tau^- \rightarrow \pi^- \overline{K}^0 \pi^0 \tau$) and B($\tau^- \rightarrow K^- K^0 \pi^0 \nu_\tau$) values. NODE=S035B68;LINKAGE=B9

$\Gamma(\pi^- \overline{K}^0 \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{41}/Γ

NODE=S035B33

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.382±0.013 OUR FIT	(Produced by HFLAV)				
0.383±0.014 OUR AVERAGE					
0.386±0.004±0.014	27k	[1] RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV
0.347±0.053±0.037	299	[2] BARATE	99K	ALEP	1991–1995 LEP runs
0.294±0.073±0.037	142	[3] BARATE	98E	ALEP	1991–1995 LEP runs
0.41 ±0.12 ±0.03		[4] ACCIARRI	95F	L3	1991–1993 LEP runs
• • • We use the following data for averages but not for fits. • • •					
0.417±0.058±0.044		[5] COAN	96	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32 ±0.11 ±0.05	23	[6] BUSKULIC	96	ALEP	Repl. by BARATE 99K

NOTFITTED

[1] RYU 14 reconstruct K^0's using $K^0_S \rightarrow \pi^+\pi^-$ decays. NODE=S035B33;LINKAGE=C

[2] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B33;LINKAGE=9K

[3] BARATE 98E reconstruct K^0's using $K^0_S \rightarrow \pi^+\pi^-$ decays. NODE=S035B33;LINKAGE=B9

[4] ACCIARRI 95F do not identify π^-/K^- and assume B($K^- K^0 \pi^0 \nu_\tau$) = (0.05 ± 0.05)%. NODE=S035B33;LINKAGE=A

[5] Not independent of COAN 96 B($h^- K^0 \pi^0 \nu_\tau$) and B($K^- K^0 \pi^0 \nu_\tau$) measurements. NODE=S035B33;LINKAGE=B

[6] BUSKULIC 96 measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B33;LINKAGE=B6

$\Gamma(\overline{K}^0 \rho^- \nu_\tau)/\Gamma_{total}$ — Γ_{42}/Γ

NODE=S035C10

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.22 ±0.05 OUR AVERAGE				
0.250±0.057±0.044	[1] BARATE	99K	ALEP	1991–1995 LEP runs
0.188±0.054±0.038	[2] BARATE	98E	ALEP	1991–1995 LEP runs

[1] BARATE 99K measure K^0's by detecting K^0_L's in hadron calorimeter. They determine the $\overline{K}^0 \rho^-$ fraction in $\tau^- \rightarrow \pi^- \overline{K}^0 \pi^0 \nu_\tau$ decays to be (0.72 ± 0.12 ± 0.10) and multiply their B($\pi^- \overline{K}^0 \pi^0 \nu_\tau$) measurement by this fraction to obtain the quoted result. NODE=S035C10;LINKAGE=9K

[2] BARATE 98E reconstruct K^0's using $K^0_S \rightarrow \pi^+\pi^-$ decays. They determine the $\overline{K}^0 \rho^-$ fraction in $\tau^- \rightarrow \pi^- \overline{K}^0 \pi^0 \nu_\tau$ decays to be (0.64 ± 0.09 ± 0.10) and multiply their B($\pi^- \overline{K}^0 \pi^0 \nu_\tau$) measurement by this fraction to obtain the quoted result. NODE=S035C10;LINKAGE=B9

$\Gamma(K^- K^0 \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{43}/Γ

NODE=S035B34

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
15.0 ±0.7 OUR FIT	(Produced by HFLAV)				
14.9 ±0.7 OUR AVERAGE					
14.96±0.20±0.74	8.3k	[1] RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV
14.3 ±2.5 ±1.5	78	[2] BARATE	99K	ALEP	1991–1995 LEP runs
15.2 ±7.6 ±2.1	15	[3] BARATE	98E	ALEP	1991–1995 LEP runs
14.5 ±3.6 ±2.0	32	COAN	96	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
10 ±5 ±3	5	[4] BUSKULIC	96	ALEP	Repl. by BARATE 99K

[1] RYU 14 reconstruct K^0's using $K^0_S \rightarrow \pi^+\pi^-$ decays. NODE=S035B34;LINKAGE=A

[2] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B34;LINKAGE=9K

[3] BARATE 98E reconstruct K^0's using $K^0_S \rightarrow \pi^+\pi^-$ decays. NODE=S035B34;LINKAGE=B9

[4] BUSKULIC 96 measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B34;LINKAGE=B6

$\Gamma(\pi^- \overline{K}^0 \geq 1\pi^0 \nu_\tau)/\Gamma_{total}$ — $\Gamma_{44}/\Gamma = (\Gamma_{41}+\Gamma_{45})/\Gamma$

NODE=S035C37

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.408±0.025 OUR FIT	(Produced by HFLAV)				
0.324±0.074±0.066	148	ABBIENDI	00C	OPAL	1991–1995 LEP runs

$\Gamma(\pi^- \overline{K}^0 \pi^0 \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ — Γ_{45}/Γ

NODE=S035B98

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.26±0.23 OUR FIT (Produced by HFLAV)						
0.26±0.24			[1] BARATE	99R	ALEP	1991–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.66	95	17	[2] BARATE	99K	ALEP	1991–1995 LEP runs
0.58±0.33±0.14		5	[3] BARATE	98E	ALEP	1991–1995 LEP runs

[1] BARATE 99R combine the BARATE 98E and BARATE 99K measurements to obtain this value. NODE=S035B98;LINKAGE=BB

[2] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. NODE=S035B98;LINKAGE=9K

[3] BARATE 98E reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035B98;LINKAGE=B9

$\Gamma(K^- K^0 \pi^0 \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ — Γ_{46}/Γ

NODE=S035B99

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.16 × 10⁻³	95	[1] BARATE	99R	ALEP	1991–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.18 × 10⁻³	95	[2] BARATE	99K	ALEP	1991–1995 LEP runs
<0.39 × 10⁻³	95	[3] BARATE	98E	ALEP	1991–1995 LEP runs

[1] BARATE 99R combine the BARATE 98E and BARATE 99K bounds to obtain this value. NODE=S035B99;LINKAGE=BB

[2] BARATE 99K measure K^0's by detecting K^0_L's in hadron calorimeter. NODE=S035B99;LINKAGE=9K

[3] BARATE 98E reconstruct K^0's by using $K^0_S \to \pi^+\pi^-$ decays. NODE=S035B99;LINKAGE=B

$\Gamma(\pi^- K^0 \overline{K}^0 \nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{47}/\Gamma = (\Gamma_{48}+\Gamma_{49}+\Gamma_{50})/\Gamma$

NODE=S035B51

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.155±0.024 OUR FIT (Produced by HFLAV)					
• • • We use the following data for averages but not for fits. • • •					
0.153±0.030±0.016	74	[1] BARATE	98E	ALEP	1991–1995 LEP runs (NOTFITTED)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.31 ±0.12 ±0.04		[2] ACCIARRI	95F	L3	1991–1993 LEP runs

[1] BARATE 98E obtain this value by adding twice their B($\pi^- K^0_S K^0_S \nu_\tau$) value to their B($\pi^- K^0_S K^0_L \nu_\tau$) value. NODE=S035B51;LINKAGE=B9

[2] ACCIARRI 95F assume B($\pi^- K^0_S K^0_S \nu$)= B($\pi^- K^0_S K^0_L \nu$) = 1/2B($\pi^- K^0_S K^0_L \nu$). NODE=S035B51;LINKAGE=KF

$\Gamma(\pi^- K^0_S K^0_S \nu_\tau)/\Gamma_{\text{total}}$ — Γ_{48}/Γ

NODE=S035B69

Bose-Einstein correlations might make the mixing fraction different than 1/4.

NODE=S035B69

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.35±0.06 OUR FIT (Produced by HFLAV)					
2.32±0.06 OUR AVERAGE					
2.33±0.03±0.09	6.7k	RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV
2.31±0.04±0.08	5.0k	[1] LEES	12Y	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV
2.6 ±1.0 ±0.5	6	BARATE	98E	ALEP	1991–1995 LEP runs
2.3 ±0.5 ±0.3	42	COAN	96	CLEO	$E^{ee}_{\text{cm}} \approx$ 10.6 GeV

[1] The correlation coefficient between this measurement and the LEES 12Y $\Gamma(\tau^- \to \pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ one is 0.0828. NODE=S035B69;LINKAGE=A

$\Gamma(\pi^- K^0_S K^0_L \nu_\tau)/\Gamma_{\text{total}}$ — Γ_{49}/Γ

NODE=S035C1

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
10.8±2.4 OUR FIT (Produced by HFLAV)					
10.1±2.3±1.3	68	BARATE	98E	ALEP	1991–1995 LEP runs

$\Gamma(\pi^- K^0_L K^0_L \nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{50}/\Gamma = \Gamma_{48}/\Gamma$

NODE=S035R06

VALUE (units 10^{-4})	DOCUMENT ID
2.35±0.06 OUR FIT (Produced by HFLAV)	

$\Gamma(\pi^- K^0 \overline{K}^0 \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{51}/\Gamma = (\Gamma_{52}+\Gamma_{56}+\Gamma_{57})/\Gamma$

NODE=S035C44

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
3.6±1.2 OUR FIT (Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •				
3.1±2.3	[1] BARATE	99R	ALEP	1991–1995 LEP runs (NOTFITTED)

[1] BARATE 99R combine BARATE 98E $\Gamma(\pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ and $\Gamma(\pi^- K^0_S K^0_L \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ measurements to obtain this value. NODE=S035C44;LINKAGE=A

$\Gamma(\pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{52}/Γ

NODE=S035C2
NODE=S035C2

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
1.82±0.21 OUR FIT (Produced by HFLAV)						
1.80±0.21 OUR AVERAGE						
2.00±0.22±0.20		303	RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV
1.60±0.20±0.22		409	[1] LEES	12Y	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<20	95		BARATE	98E	ALEP	1991–1995 LEP runs

[1] The correlation coefficient between this measurement and the LEES 12Y $\Gamma(\tau^- \to \pi^- K^0_S K^0_S \nu_\tau)/\Gamma_{total}$ one is 0.0828.

NODE=S035C2;LINKAGE=A

$\Gamma(K^{*-} K^0 \pi^0 \nu_\tau \to \pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{53}/Γ

NODE=S035R01
NODE=S035R01

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
10.8±1.4±1.5	RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV

$\Gamma(f_1(1285)\pi^- \nu_\tau \to \pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{54}/Γ

NODE=S035R02
NODE=S035R02

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
6.8±1.3±0.7	RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV

$\Gamma(f_1(1420)\pi^- \nu_\tau \to \pi^- K^0_S K^0_S \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{55}/Γ

NODE=S035R03
NODE=S035R03

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
2.4±0.5±0.6	RYU	14	BELL	669 fb^{-1} E^{ee}_{cm}=10.6 GeV

$\Gamma(\pi^- K^0_S K^0_L \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{56}/Γ

NODE=S035C3
NODE=S035C3

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.2±1.2 OUR FIT (Produced by HFLAV)					
3.1±1.1±0.5	11	BARATE	98E	ALEP	1991–1995 LEP runs

$\Gamma(\pi^- K^0_L K^0_L \pi^0 \nu_\tau)/\Gamma_{total}$ — $\Gamma_{57}/\Gamma = \Gamma_{52}/\Gamma$

NODE=S035R07
NODE=S035R07

VALUE (units 10^{-5})	DOCUMENT ID
1.82±0.21 OUR FIT (Produced by HFLAV)	

$\Gamma(K^- K^0_S K^0_S \nu_\tau)/\Gamma_{total}$ — Γ_{58}/Γ

NODE=S035C99
NODE=S035C99

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.3 × 10^{-7}	90	LEES	12Y	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV

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

NODE=S035D01
NODE=S035D01

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.0 × 10^{-7}	90	LEES	12Y	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV

$\Gamma(K^0 h^+ h^- h^- \geq 0 \text{ neutrals } \nu_\tau)/\Gamma_{total}$ — Γ_{60}/Γ

NODE=S035R37
NODE=S035R37

VALUE (%)	CL%	DOCUMENT ID		TECN	COMMENT
<0.17	95	TSCHIRHART	88	HRS	E^{ee}_{cm}= 29 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.27	90	BELTRAMI	85	HRS	E^{ee}_{cm}= 29 GeV

$\Gamma(K^0 h^+ h^- h^- \nu_\tau)/\Gamma_{total}$ — Γ_{61}/Γ

NODE=S035C5
NODE=S035C5

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.5±2.0 OUR FIT (Produced by HFLAV)					
2.3±1.9±0.7	6	[1] BARATE	98E	ALEP	1991–1995 LEP runs

[1] BARATE 98E reconstruct K^0's using $K^0_S \to \pi^+\pi^-$ decays.

NODE=S035C5;LINKAGE=B9

$\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals } \geq 0 K^0_L \nu_\tau)/\Gamma_{total}$ — Γ_{62}/Γ

NODE=S035R31

$\Gamma_{62}/\Gamma = (0.34598\Gamma_{36}+0.34598\Gamma_{38}+0.34598\Gamma_{41}+0.34598\Gamma_{43}+0.4247\Gamma_{48}+0.6920\Gamma_{49}+0.4247\Gamma_{52}+0.6920\Gamma_{56}+0.6534\Gamma_{61}+\Gamma_{70}+\Gamma_{78}+\Gamma_{85}+\Gamma_{86}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{150}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.2628\Gamma_{156}+0.7259\Gamma_{170}+0.9078\Gamma_{178}+0.9078\Gamma_{179}+0.9078\Gamma_{180})/\Gamma$

NODE=S035R31

NODE=S035R31

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
15.20± 0.06 OUR FIT (Produced by HFLAV)					
14.8 ± 0.4 OUR AVERAGE					
14.4 ± 0.6 ±0.3		ADEVA	91F	L3	E^{ee}_{cm}= 88.3–94.3 GeV
15.0 ± 0.4 ±0.3		BEHREND	89B	CELL	E^{ee}_{cm}= 14–47 GeV
15.1 ± 0.8 ±0.6		AIHARA	87B	TPC	E^{ee}_{cm}= 29 GeV

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

13.5 ± 0.3 ±0.3		ABACHI	89B	HRS	E^{ee}_{cm}= 29 GeV
12.8 ± 1.0 ±0.7		[1] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV
12.1 ± 0.5 ±1.2		RUCKSTUHL	86	DLCO	E^{ee}_{cm}= 29 GeV
12.8 ± 0.5 ±0.8	1420	SCHMIDKE	86	MRK2	E^{ee}_{cm}= 29 GeV
15.3 ± 1.1 $^{+1.3}_{-1.6}$	367	ALTHOFF	85	TASS	E^{ee}_{cm}= 34.5 GeV
13.6 ± 0.5 ±0.8		BARTEL	85F	JADE	E^{ee}_{cm}= 34.6 GeV
12.2 ± 1.3 ±3.9		[2] BERGER	85	PLUT	E^{ee}_{cm}= 34.6 GeV
13.3 ± 0.3 ±0.6		FERNANDEZ	85	MAC	E^{ee}_{cm}= 29 GeV
24 ± 6	35	BRANDELIK	80	TASS	E^{ee}_{cm}= 30 GeV
32 ± 5	692	[3] BACINO	78B	DLCO	E^{ee}_{cm}= 3.1–7.4 GeV
35 ±11		[3] BRANDELIK	78	DASP	Assumes $V-A$ decay
18 ± 6.5	33	[3] JAROS	78	LGW	E^{ee}_{cm} > 6 GeV

[1] BURCHAT 87 value is not independent of SCHMIDKE 86 value. NODE=S035R31;LINKAGE=K

[2] Not independent of BERGER 85 $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)/\Gamma_{total}$, $\Gamma(e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$, $\Gamma(h^- \geq 1\ \text{neutrals}\,\nu_\tau)/\Gamma_{total}$, and $\Gamma(h^- \geq 0K^0_L\ \nu_\tau)/\Gamma_{total}$, and therefore not used in the fit. NODE=S035R31;LINKAGE=G

[3] Low energy experiments are not in average or fit because the systematic errors in background subtraction are judged to be large. NODE=S035R31;LINKAGE=E

$\Gamma(h^- h^- h^+ \geq 0\ \text{neutrals}\ \nu_\tau\ (\text{ex.}\ K^0_S \to \pi^+\pi^-)(\text{“3-prong”}))/\Gamma_{total}$ Γ_{63}/Γ

NODE=S035B63

$\Gamma_{63}/\Gamma = (\Gamma_{70}+\Gamma_{78}+\Gamma_{85}+\Gamma_{86}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{150}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.499\Gamma_{170}+0.9078\Gamma_{178}+0.9078\Gamma_{179}+0.9078\Gamma_{180})/\Gamma$ NODE=S035B63

NODE=S035B63

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
14.55 ±0.06 OUR FIT (Produced by HFLAV)					
14.61 ±0.06 OUR AVERAGE					
14.556±0.105±0.076		[1] ACHARD	01D	L3	1992–1995 LEP runs
14.96 ±0.09 ±0.22	10.4k	AKERS	95Y	OPAL	1991–1994 LEP runs
• • • We use the following data for averages but not for fits. • • •					
14.652±0.067±0.086		SCHAEL	05C	ALEP	1991–1995 LEP runs NOTFITTED
14.569±0.093±0.048	23k	[2] ABREU	01M	DLPH	1992–1995 LEP runs NOTFITTED
14.22 ±0.10 ±0.37		[3] BALEST	95C	CLEO	$E^{ee}_{cm}\approx$ 10.6 GeV NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •					
15.26 ±0.26 ±0.22		ACTON	92H	OPAL	Repl. by AKERS 95Y
13.3 ±0.3 ±0.8		[4] ALBRECHT	92D	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
14.35 $^{+0.40}_{-0.45}$ ±0.24		DECAMP	92C	ALEP	1989–1990 LEP runs

[1] The correlation coefficients between this measurement and the ACHARD 01D measurements of B($\tau \to$ “1-prong”) and B($\tau \to$ “5-prong”) are −0.978 and −0.19 respectively. NODE=S035B63;LINKAGE=CH

[2] The correlation coefficients between this measurement and the ABREU 01M measurements of B($\tau \to$ 1-prong) and B($\tau \to$ 5-prong) are −0.98 and −0.08 respectively. NODE=S035B63;LINKAGE=M1

[3] Not independent of BALEST 95C B($h^- h^- h^+ \nu_\tau$) and B($h^- h^- h^+ \pi^0 \nu_\tau$) values, and BORTOLETTO 93 B($h^- h^- h^+ 2\pi^0 \nu_\tau$)/B($h^- h^- h^+ \geq 0$ neutrals ν_τ) value. NODE=S035B63;LINKAGE=B

[4] This ALBRECHT 92D value is not independent of their $\Gamma(\mu^-\overline{\nu}_\mu\nu_\tau)\Gamma(e^-\overline{\nu}_e\nu_\tau)/\Gamma^2_{total}$ value. NODE=S035B63;LINKAGE=A

$\Gamma(h^- h^- h^+ \nu_\tau)/\Gamma_{total}$ Γ_{64}/Γ

NODE=S035R28

$\Gamma_{64}/\Gamma = (0.34598\Gamma_{36}+0.34598\Gamma_{38}+\Gamma_{70}+\Gamma_{97}+\Gamma_{106}+0.499\Gamma_{170}+0.0153\Gamma_{178}+0.0153\Gamma_{179})/\Gamma$ NODE=S035R28

NODE=S035R28

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.80±0.05 OUR FIT (Produced by HFLAV)					
• • • We use the following data for averages but not for fits. • • •					
7.6 ±0.1 ±0.5	7.5k	[1] ALBRECHT	96E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •					
9.92±0.10±0.09	11.2k	[2] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
9.49±0.36±0.63		DECAMP	92C	ALEP	Repl. by SCHAEL 05C
8.7 ±0.7 ±0.3	694	[3] BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV
7.0 ±0.3 ±0.7	1566	[4] BAND	87	MAC	E^{ee}_{cm}= 29 GeV
6.7 ±0.8 ±0.9		[5] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV
6.4 ±0.4 ±0.9		[6] RUCKSTUHL	86	DLCO	E^{ee}_{cm}= 29 GeV
7.8 ±0.5 ±0.8	890	SCHMIDKE	86	MRK2	E^{ee}_{cm}= 29 GeV
8.4 ±0.4 ±0.7	1255	[6] FERNANDEZ	85	MAC	E^{ee}_{cm}= 29 GeV
9.7 ±2.0 ±1.3		BEHREND	84	CELL	E^{ee}_{cm}= 14,22 GeV

[1] ALBRECHT 96E not independent of ALBRECHT 93C $\Gamma(h^- h^- h^+ \nu_\tau (\text{ex. } K^0) \times \Gamma(\text{particle}^- \geq 0 \text{ neutrals } \geq 0 K^0_L \nu_\tau)/\Gamma^2_{\text{total}}$ value. NODE=S035R28;LINKAGE=BB

[2] BUSKULIC 96 quote $B(h^- h^- h^+ \nu_\tau (\text{ex. } K^0)) = 9.50 \pm 0.10 \pm 0.11$. We add 0.42 to remove their K^0 correction and reduce the systematic error accordingly. NODE=S035R28;LINKAGE=EE

[3] BEHREND 90 subtract 0.3% to account for the $\tau^- \to K^*(892)^- \nu_\tau$ contribution to measured events. NODE=S035R28;LINKAGE=E

[4] BAND 87 subtract for charged kaon modes; not independent of FERNANDEZ 85 value. NODE=S035R28;LINKAGE=B

[5] BURCHAT 87 value is not independent of SCHMIDKE 86 value. NODE=S035R28;LINKAGE=D

[6] Value obtained by multiplying paper's $R = B(h^- h^- h^+ \nu_\tau)/B(\text{3-prong})$ by B(3-prong) = 0.143 and subtracting 0.3% for $K^*(892)$ background. NODE=S035R28;LINKAGE=F

$\Gamma(h^- h^- h^+ \nu_\tau (\text{ex.} K^0))/\Gamma_{\text{total}}$ Γ_{65}/Γ

NODE=S035B62

$\Gamma_{65}/\Gamma = (\Gamma_{70}+\Gamma_{97}+\Gamma_{106}+0.499\Gamma_{170}+0.0153\Gamma_{178}+0.0153\Gamma_{179})/\Gamma$ NODE=S035B62

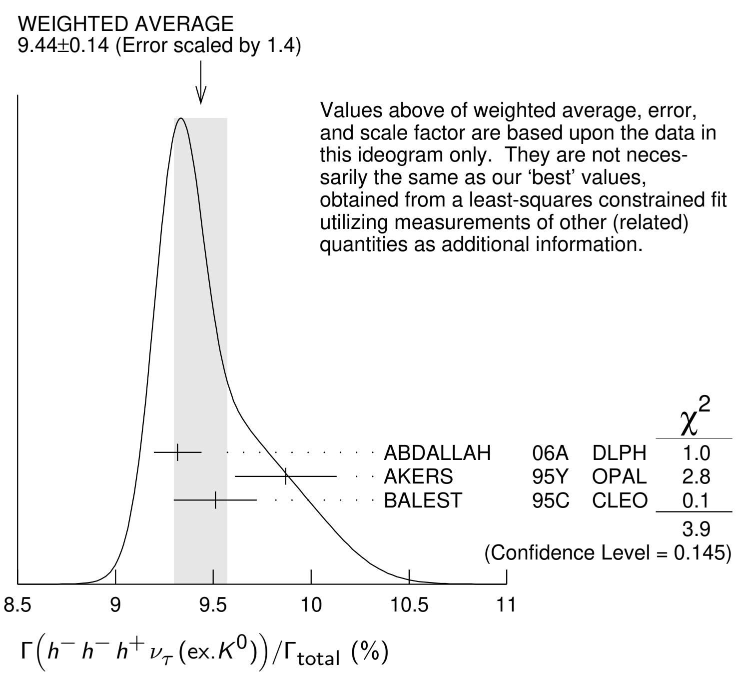
NODE=S035B62

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	
9.46 ±0.05 OUR FIT		(Produced by HFLAV)			
9.44 ±0.14 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.			
9.317±0.090±0.082	12.2k	[1] ABDALLAH 06A	DLPH	1992–1995 LEP runs	
9.51 ±0.07 ±0.20	37.7k	BALEST 95C	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV	
• • • We use the following data for averages but not for fits. • • •					
9.87 ±0.10 ±0.24		[2] AKERS 95Y	OPAL	1991–1994 LEP runs	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •					
9.50 ±0.10 ±0.11	11.2k	[3] BUSKULIC 96	ALEP	Repl. by SCHAEL 05C	NOTFITTED

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035B62;LINKAGE=AH

[2] Not independent of AKERS 95Y $B(h^- h^- h^+ \geq 0 \text{ neutrals} \nu_\tau (\text{ex. } K^0_S \to \pi^+ \pi^-))$ and $B(h^- h^- h^+ \nu_\tau (\text{ex. } K^0))/B(h^- h^- h^+ \geq 0 \text{ neutrals} \nu_\tau (\text{ex. } K^0_S \to \pi^+ \pi^-))$ values. NODE=S035B62;LINKAGE=A

[3] Not independent of BUSKULIC 96 $B(h^- h^- h^+ \nu_\tau)$ value. NODE=S035B62;LINKAGE=B



$\Gamma(h^- h^- h^+ \nu_\tau (\text{ex.} K^0))/\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals } \nu_\tau (\text{ex. } K^0_S \to \pi^+ \pi^-)$ ("3-prong")) Γ_{65}/Γ_{63}

NODE=S035B64

$\Gamma_{65}/\Gamma_{63} = (\Gamma_{70}+\Gamma_{97}+\Gamma_{106}+0.499\Gamma_{170}+0.0153\Gamma_{178}+0.0153\Gamma_{179})/(0.4247\Gamma_{52}+\Gamma_{70}+\Gamma_{78}+\Gamma_{85}+\Gamma_{89}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{150}+0.2302\Gamma_{151}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.1131\Gamma_{156}+0.3256\Gamma_{160}+0.499\Gamma_{170}+0.9078\Gamma_{178}+0.9078\Gamma_{179}+0.9078\Gamma_{180}+0.892\Gamma_{182})$ NODE=S035B64

NODE=S035B64

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
64.98±0.31 OUR FIT	(Produced by HFLAV)		
66.0 ±0.4 ±1.4	AKERS 95Y	OPAL	1991–1994 LEP runs

$\Gamma(h^- h^- h^+ \nu_\tau (\text{ex.}K^0,\omega))/\Gamma_{\text{total}}$ Γ_{66}/Γ NODE=S035B71

$\Gamma_{66}/\Gamma = (\Gamma_{70}+\Gamma_{97}+\Gamma_{106}+0.499\Gamma_{170})/\Gamma$ NODE=S035B71

VALUE (%)	DOCUMENT ID
9.43±0.05 OUR FIT	(Produced by HFLAV)

NODE=S035B71

$\Gamma(\pi^- \pi^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$ $\Gamma_{67}/\Gamma = (0.34598\Gamma_{36}+\Gamma_{70}+0.0153\Gamma_{178})/\Gamma$ NODE=S035C18

VALUE (%)	DOCUMENT ID
9.31±0.05 OUR FIT	(Produced by HFLAV)

NODE=S035C18

$\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ $\Gamma_{68}/\Gamma = (\Gamma_{70}+0.0153\Gamma_{178})/\Gamma$ NODE=S035C19

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.02±0.05 OUR FIT	(Produced by HFLAV)				
8.77±0.13 OUR AVERAGE	Error includes scale factor of 1.1.				
$8.42\pm0.00^{+0.26}_{-0.25}$	8.9M	[1] LEE	10	BELL	666 fb^{-1} $E^{ee}_{\text{cm}} = 10.6$ GeV
8.83±0.01±0.13	1.6M	[2] AUBERT	08	BABR	342 fb^{-1} $E^{ee}_{\text{cm}} = 10.6$ GeV
9.13±0.05±0.46	43k	[3] BRIERE	03	CLE3	$E^{ee}_{\text{cm}} = 10.6$ GeV

NODE=S035C19

[1] Quoted statistical error is 0.003%. Correlation matrix for LEE 10 branching fractions: NODE=S035C19;LINKAGE=LE

(1) $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$
(2) $\Gamma(\tau^- \to K^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$
(3) $\Gamma(\tau^- \to K^- K^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$
(4) $\Gamma(\tau^- \to K^- K^+ K^- \nu_\tau)/\Gamma_{\text{total}}$

	(1)	(2)	(3)
(2)	0.175		
(3)	0.049	0.080	
(4)	-0.053	0.035	-0.008

[2] Correlation matrix for AUBERT 08 branching fractions: NODE=S035C19;LINKAGE=AU

(1) $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$
(2) $\Gamma(\tau^- \to K^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$
(3) $\Gamma(\tau^- \to K^- K^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$
(4) $\Gamma(\tau^- \to K^- K^+ K^- \nu_\tau)/\Gamma_{\text{total}}$

	(1)	(2)	(3)
(2)	0.544		
(3)	0.390	0.177	
(4)	0.031	0.093	0.087

[3] 47% correlated with BRIERE 03 $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ and 71% correlated with $\tau^- \to K^- K^+ \pi^- \nu_\tau$ because of a common 5% normalization error. NODE=S035C19;LINKAGE=A

$\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0), \text{non-axial vector})/\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$ Γ_{69}/Γ_{68} NODE=S035C50

$\Gamma_{69}/\Gamma_{68} = \Gamma_{69}/(\Gamma_{70}+0.0153\Gamma_{177})$ NODE=S035C50

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.261	95	[1] ACKERSTAFF	97R	OPAL	1992–1994 LEP runs

NODE=S035C50

[1] Model-independent limit from structure function analysis on contribution to B($\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau$ (ex. K^0)) from non-axial vectors. NODE=S035C50;LINKAGE=A

$\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0,\omega))/\Gamma_{\text{total}}$ Γ_{70}/Γ NODE=S035C20

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
8.99 ±0.05 OUR FIT	(Produced by HFLAV)				
9.041±0.060±0.076	29k	[1] SCHAEL	05C	ALEP	1991-1995 LEP runs

NODE=S035C20

[1] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^- \overline{\nu}_e \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035C20;LINKAGE=SC

$\Gamma(h^- h^- h^+ \geq 1 \text{ neutrals } \nu_\tau)/\Gamma_{\text{total}}$ Γ_{71}/Γ NODE=S035R30

$\Gamma_{71}/\Gamma = (0.34598\Gamma_{41}+0.34598\Gamma_{43}+0.4247\Gamma_{48}+0.4247\Gamma_{52}+\Gamma_{78}+\Gamma_{85}+\Gamma_{86}+\Gamma_{103}+\Gamma_{107}+0.2805\Gamma_{150}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.2926\Gamma_{156}+0.892\Gamma_{178}+0.892\Gamma_{179}+0.9078\Gamma_{180})/\Gamma$ NODE=S035R30

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
5.29±0.05 OUR FIT	(Produced by HFLAV)			

NODE=S035R30

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

5.6 ±0.7 ±0.3	352	[1] BEHREND	90	CELL	E^{ee}_{cm}= 35 GeV	NOTFITTED
4.2 ±0.5 ±0.9	203	[2] ALBRECHT	87L	ARG	E^{ee}_{cm}= 10 GeV	
6.1 ±0.8 ±0.9		[3] BURCHAT	87	MRK2	E^{ee}_{cm}= 29 GeV	
7.6 ±0.4 ±0.9		[4,5] RUCKSTUHL	86	DLCO	E^{ee}_{cm}= 29 GeV	NOTFITTED
4.7 ±0.5 ±0.8	530	[6] SCHMIDKE	86	MRK2	E^{ee}_{cm}= 29 GeV	
5.6 ±0.4 ±0.7		[5] FERNANDEZ	85	MAC	E^{ee}_{cm}= 29 GeV	
6.2 ±2.3 ±1.7		BEHREND	84	CELL	E^{ee}_{cm}= 14,22 GeV	

[1] BEHREND 90 value is not independent of BEHREND 90 B($3h\nu_\tau$ $\geq$ 1 neutrals) + B(5-prong). NODE=S035R30;LINKAGE=E

[2] ALBRECHT 87L measure the product of branching ratios B($3\pi^\pm\pi^0\nu_\tau$) B(($e\overline{\nu}$ or $\mu\overline{\nu}$ or π or K or ρ)ν_τ) = 0.029 and use the PDG 86 values for the second branching ratio which sum to 0.69 ± 0.03 to get the quoted value. NODE=S035R30;LINKAGE=C

[3] BURCHAT 87 value is not independent of SCHMIDKE 86 value. NODE=S035R30;LINKAGE=D

[4] Contributions from kaons and from $>1\pi^0$ are subtracted. Not independent of (3-prong + $0\pi^0$) and (3-prong + $\geq 0\pi^0$) values. NODE=S035R30;LINKAGE=A

[5] Value obtained using paper's R = B($h^- h^- h^+ \nu_\tau$)/B(3-prong) and current B(3-prong) = 0.143. NODE=S035R30;LINKAGE=Q

[6] Not independent of SCHMIDKE 86 $h^- h^- h^+ \nu_\tau$ and $h^- h^- h^+ (\geq 0\pi^0)\nu_\tau$ values. NODE=S035R30;LINKAGE=S

$\Gamma(h^- h^- h^+ \geq 1\pi^0 \nu_\tau (\text{ex. } K^0))/\Gamma_{total}$ Γ_{72}/Γ

NODE=S035B78

$\Gamma_{72}/\Gamma = (\Gamma_{78}+\Gamma_{85}+\Gamma_{86}+\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{150}+0.2302\Gamma_{152}+0.2302\Gamma_{154}+0.892\Gamma_{178}+0.892\Gamma_{179}+0.9078\Gamma_{180})/\Gamma$ NODE=S035B78

VALUE (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*	NODE=S035B78
5.09 ±0.05 OUR FIT	(Produced by HFLAV)					
5.10 ±0.12 OUR AVERAGE						
• • • We use the following data for averages but not for fits. • • •						
5.106±0.083±0.103	10.1k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs	NOTFITTED
5.09 ±0.10 ±0.23		[2] AKERS	95Y	OPAL	1991–1994 LEP runs	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
4.95 ±0.29 ±0.65	570	DECAMP	92C	ALEP	Repl. by SCHAEL 05C	

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035B78;LINKAGE=AH

[2] Not independent of AKERS 95Y B($h^- h^- h^+ \geq 0$ neutralsν_τ (ex. $K^0_S \to \pi^+\pi^-$)) and B($h^- h^- h^+ \geq 0$ neutralsν_τ (ex. K^0))/B($h^- h^- h^+ \geq 0$ neutralsν_τ (ex. $K^0_S \to \pi^+\pi^-$)) values. NODE=S035B78;LINKAGE=A

$\Gamma(h^- h^- h^+ \pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{73}/Γ

NODE=S035B76

$\Gamma_{73}/\Gamma = (0.34598\Gamma_{41}+0.34598\Gamma_{43}+\Gamma_{78}+\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152}+0.892\Gamma_{178}+0.892\Gamma_{179}+0.0153\Gamma_{180})/\Gamma$ NODE=S035B76

VALUE (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*	NODE=S035B76
4.76±0.05 OUR FIT	(Produced by HFLAV)					
• • • We do not use the following data for averages, fits, limits, etc. • • •						
4.45±0.09±0.07	6.1k	[1] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C	

[1] BUSKULIC 96 quote B($h^- h^- h^+ \pi^0 \nu_\tau$ (ex. K^0)) = 4.30 ± 0.09 ± 0.09. We add 0.15 to remove their K^0 correction and reduce the systematic error accordingly. NODE=S035B76;LINKAGE=A

$\Gamma(h^- h^- h^+ \pi^0 \nu_\tau (\text{ex.} K^0))/\Gamma_{total}$ Γ_{74}/Γ

NODE=S035B53

$\Gamma_{74}/\Gamma = (\Gamma_{78}+\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152}+0.892\Gamma_{178}+0.892\Gamma_{179}+0.0153\Gamma_{180})/\Gamma$ NODE=S035B53

VALUE (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*	NODE=S035B53
4.57 ±0.05 OUR FIT	(Produced by HFLAV)					
4.45 ±0.14 OUR AVERAGE	Error includes scale factor of 1.2.					
4.545±0.106±0.103	8.9k	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs	
4.23 ±0.06 ±0.22	7.2k	BALEST	95C	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV	

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035B53;LINKAGE=AH

$\Gamma(h^- h^- h^+ \pi^0 \nu_\tau (\text{ex. } K^0, \omega))/\Gamma_{total}$

$\Gamma_{75}/\Gamma = (\Gamma_{78}+\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152})/\Gamma$ NODE=S035B54

VALUE (%)	*DOCUMENT ID*	NODE=S035B54
2.79±0.07 OUR FIT	(Produced by HFLAV)	

$\Gamma(\pi^-\pi^+\pi^-\pi^0\nu_\tau)/\Gamma_{total}$ Γ_{76}/Γ

NODE=S035C22

$\Gamma_{76}/\Gamma = (0.34598\Gamma_{41}+\Gamma_{78}+0.892\Gamma_{178}+0.0153\Gamma_{180})/\Gamma$

VALUE (%)	DOCUMENT ID
4.62±0.05 OUR FIT	(Produced by HFLAV)

$\Gamma(\pi^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0))/\Gamma_{total}$ Γ_{77}/Γ

NODE=S035C23

$\Gamma_{77}/\Gamma = (\Gamma_{78}+0.892\Gamma_{178}+0.0153\Gamma_{180})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
4.49 ±0.05 OUR FIT	(Produced by HFLAV)			
4.55 ±0.13 OUR AVERAGE	Error includes scale factor of 1.6.			
4.598±0.057±0.064	16k	[1] SCHAEL 05C	ALEP	1991-1995 LEP runs
4.19 ±0.10 ±0.21		[2] EDWARDS 00A	CLEO	4.7 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] SCHAEL 05C quote (4.590 ± 0.057 ± 0.064)%. We add 0.008% to remove their correction for $\tau^- \to \pi^-\pi^0\omega\nu_\tau \to \pi^-\pi^0\pi^+\pi^-\nu_\tau$ decays. See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements.

NODE=S035C23;LINKAGE=SC

[2] EDWARDS 00A quote (4.19 ± 0.10) × 10^{-2} with a 5% systematic error.

NODE=S035C23;LINKAGE=EE

$\Gamma(\pi^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0,\omega))/\Gamma_{total}$ Γ_{78}/Γ

NODE=S035C24

VALUE (%)	DOCUMENT ID
2.74±0.07 OUR FIT	(Produced by HFLAV)

$\Gamma(h^-\rho\pi^0\nu_\tau)/\Gamma(h^-h^-h^+\pi^0\nu_\tau)$ Γ_{79}/Γ_{73}

NODE=S035R98

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.30±0.04±0.02	393	ALBRECHT 91D	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

$\Gamma(h^-\rho^+h^-\nu_\tau)/\Gamma(h^-h^-h^+\pi^0\nu_\tau)$ Γ_{80}/Γ_{73}

NODE=S035S99

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.10±0.03±0.04	142	ALBRECHT 91D	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

$\Gamma(h^-\rho^-h^+\nu_\tau)/\Gamma(h^-h^-h^+\pi^0\nu_\tau)$ Γ_{81}/Γ_{73}

NODE=S035B0

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.26±0.05±0.01	370	ALBRECHT 91D	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

$\Gamma(h^-h^-h^+\geq 2\pi^0\nu_\tau(\text{ex. }K^0))/\Gamma_{total}$ Γ_{82}/Γ

NODE=S035C03

$\Gamma_{82}/\Gamma = (\Gamma_{85}+\Gamma_{86}+0.2302\Gamma_{150}+0.2302\Gamma_{154}+0.892\Gamma_{180})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
0.517±0.031 OUR FIT	(Produced by HFLAV)			
0.561±0.068±0.095	1.3k	[1] ABDALLAH 06A	DLPH	1992–1995 LEP runs

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^-\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements.

NODE=S035C03;LINKAGE=AH

$\Gamma(h^-h^-h^+2\pi^0\nu_\tau)/\Gamma_{total}$ Γ_{83}/Γ

NODE=S035B77

$\Gamma_{83}/\Gamma = (0.4247\Gamma_{48}+\Gamma_{85}+0.2302\Gamma_{150}+0.2302\Gamma_{154}+0.892\Gamma_{180})/\Gamma$

VALUE (%)	DOCUMENT ID
0.505±0.031 OUR FIT	(Produced by HFLAV)

$\Gamma(h^-h^-h^+2\pi^0\nu_\tau(\text{ex.}K^0))/\Gamma_{total}$ Γ_{84}/Γ

NODE=S035B59

$\Gamma_{84}/\Gamma = (\Gamma_{85}+0.2302\Gamma_{150}+0.2302\Gamma_{154}+0.892\Gamma_{180})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
0.495±0.031 OUR FIT	(Produced by HFLAV)			
0.435±0.030±0.035	2.6k	[1] SCHAEL 05C	ALEP	1991-1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.50 ±0.07 ±0.07	1.8k	BUSKULIC 96	ALEP	Repl. by SCHAEL 05C

[1] SCHAEL 05C quote (0.392 ± 0.030 ± 0.035)%. We add 0.043% to remove their correction for $\tau^- \to \pi^-\eta\pi^0\nu_\tau \to \pi^-\pi^+\pi^-2\pi^0\nu_\tau$ and $\tau^- \to K^*(892)^-\eta\nu_\tau \to K^-\pi^+\pi^-2\pi^0\nu_\tau$ decays. See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements.

NODE=S035B59;LINKAGE=SC

$\Gamma(h^- h^- h^+ 2\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma(h^- h^- h^+ \geq 0 \text{ neutrals} \geq 0K^0_L \nu_\tau)$ Γ_{84}/Γ_{62} NODE=S035B25

$\Gamma_{84}/\Gamma_{62} = (\Gamma_{85}+0.2302\Gamma_{150}+0.2302\Gamma_{154}+0.892\Gamma_{180})/(0.34598\Gamma_{36}+0.34598\Gamma_{38}+0.34598\Gamma_{41}+0.34598\Gamma_{43}+0.4247\Gamma_{48}+0.6920\Gamma_{49}+0.8494\Gamma_{52}+0.6920\Gamma_{56}+0.6534\Gamma_{61}+\Gamma_{70}+\Gamma_{78}+\Gamma_{85}+\Gamma_{89}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{150}+0.2302\Gamma_{151}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.3759\Gamma_{156}+0.3256\Gamma_{160}+0.7259\Gamma_{170}+0.9078\Gamma_{178}+0.9078\Gamma_{179}+0.9078\Gamma_{180}+0.892\Gamma_{182})$ NODE=S035B25

NODE=S035B25

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
3.26±0.20 OUR FIT	(Produced by HFLAV)			
3.4 ±0.2 ±0.3	668	BORTOLETTO93	CLEO	$E^{ee}_{cm} \approx 10.6$ GeV

$\Gamma(h^- h^- h^+ 2\pi^0 \nu_\tau (\text{ex.}K^0,\omega,\eta))/\Gamma_{total}$ Γ_{85}/Γ NODE=S035B72

NODE=S035B72

VALUE (units 10^{-4})	DOCUMENT ID
10±4 OUR FIT	(Produced by HFLAV)

$\Gamma(h^- h^- h^+ 3\pi^0 \nu_\tau)/\Gamma_{total}$ $\Gamma_{86}/\Gamma = (0.4247\Gamma_{52}+\Gamma_{87}+0.1131\Gamma_{156})/\Gamma$ NODE=S035B57

NODE=S035B57

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.13±0.30 OUR FIT		(Produced by HFLAV)				
2.2 ±0.3 ±0.4		139	ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<4.9	95		SCHAEL	05C	ALEP	1991-1995 LEP runs
2.85±0.56±0.51		57	ANDERSON	97	CLEO	Repl. by ANASTASSOV 01
11 ±4 ±5		440	[1] BUSKULIC	96	ALEP	Repl. by SCHAEL 05C

[1] BUSKULIC 96 state their measurement is for B($h^- h^- h^+ \geq 3\pi^0 \nu_\tau$). We assume that B($h^- h^- h^+ \geq 4\pi^0 \nu_\tau$) is very small. NODE=S035B57;LINKAGE=B

$\Gamma(2\pi^- \pi^+ 3\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ Γ_{87}/Γ NODE=S035C85

$\Gamma_{87}/\Gamma = (\Gamma_{89}+0.2302\Gamma_{151}+0.3256\Gamma_{160}+0.892\Gamma_{182})/\Gamma$ NODE=S035C85

NODE=S035C85

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.94±0.30 OUR FIT	(Produced by HFLAV)			
• • • We use the following data for averages but not for fits. • • •				
2.07±0.18±0.37	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

NOTFITTED

[1] Not independent of LEES 12X $\Gamma(\tau^- \to \eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma$, $\Gamma(\tau^- \to \eta\pi^-\pi^0\pi^0\nu_\tau)/\Gamma$, $\Gamma(\tau^- \to \pi^-\omega 2\pi^0\nu_\tau)/\Gamma$, and $\Gamma(\tau^- \to f_1(1285)\pi^-\nu_\tau \to \eta\pi^-\pi^+\pi^-\nu_\tau)/\Gamma$ values. NODE=S035C85;LINKAGE=LE

$\Gamma(2\pi^- \pi^+ 3\pi^0 \nu_\tau (\text{ex.}K^0, \eta, f_1(1285)))/\Gamma_{total}$ Γ_{88}/Γ NODE=S035C86

NODE=S035C86

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.69±0.08±0.43	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(2\pi^- \pi^+ 3\pi^0 \nu_\tau (\text{ex.}K^0, \eta, \omega, f_1(1285)))/\Gamma_{total}$ Γ_{89}/Γ NODE=S035C87

NODE=S035C87

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.4±2.7 OUR FIT	(Produced by HFLAV)			
1.0±0.8±3.0	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] LEES 12X meaurement corresponds to the lower limit of < 5.8×10^{-5} at 90% CL. NODE=S035C87;LINKAGE=LE

$\Gamma(K^- h^+ h^- \geq 0 \text{ neutrals } \nu_\tau)/\Gamma_{total}$ Γ_{90}/Γ NODE=S035R34

$\Gamma_{90}/\Gamma = (0.34598\Gamma_{38}+0.34598\Gamma_{43}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{152}+0.499\Gamma_{170}+0.9078\Gamma_{179})/\Gamma$ NODE=S035R34

NODE=S035R34

VALUE (%)	CL%	DOCUMENT ID		TECN	COMMENT
0.629±0.014 OUR FIT	(Produced by HFLAV)				
<0.6	90	AIHARA	84C	TPC	E^{ee}_{cm}= 29 GeV

$\Gamma(K^- h^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ $\Gamma_{91}/\Gamma = (\Gamma_{97}+\Gamma_{106}+0.0153\Gamma_{179})/\Gamma$ NODE=S035C31

NODE=S035C31

VALUE (%)	DOCUMENT ID
0.437±0.007 OUR FIT	(Produced by HFLAV)

$\Gamma(K^- h^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$ Γ_{91}/Γ_{68} NODE=S035C32

$\Gamma_{91}/\Gamma_{68} = (\Gamma_{97}+\Gamma_{106}+0.0153\Gamma_{179})/(\Gamma_{70}+0.0153\Gamma_{178})$ NODE=S035C32

NODE=S035C32

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
4.84±0.08 OUR FIT	(Produced by HFLAV)				
5.44±0.21±0.53	7.9k	RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(K^- h^+ \pi^- \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{92}/Γ

NODE=S035C33

$\Gamma_{92}/\Gamma = (\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152}+0.892\Gamma_{179})/\Gamma$

VALUE (units 10^{-4})	DOCUMENT ID
8.6±1.2 OUR FIT	(Produced by HFLAV)

$\Gamma(K^- h^+ \pi^- \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma(\pi^- \pi^+ \pi^- \pi^0 \nu_\tau (\text{ex.}K^0))$ Γ_{92}/Γ_{77}

NODE=S035C34

$\Gamma_{92}/\Gamma_{77} = (\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152}+0.892\Gamma_{179})/(\Gamma_{78}+0.892\Gamma_{178}+0.0153\Gamma_{180})$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.91±0.26 OUR FIT	(Produced by HFLAV)				
2.61±0.45±0.42	719	RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(K^- \pi^+ \pi^- \geq 0 \text{ neutrals } \nu_\tau)/\Gamma_{\text{total}}$ Γ_{93}/Γ

NODE=S035R41

$\Gamma_{93}/\Gamma = (0.34598\Gamma_{38}+0.34598\Gamma_{43}+\Gamma_{97}+\Gamma_{103}+0.2805\Gamma_{152}+0.9078\Gamma_{179})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.477±0.014 OUR FIT	(Produced by HFLAV)				
0.58 $^{+0.15}_{-0.13}$ ±0.12	20	[1] BAUER	94	TPC	E^{ee}_{cm}= 29 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.22 $^{+0.16}_{-0.13}$ ±0.05	9	[2] MILLS	85	DLCO	E^{ee}_{cm}= 29 GeV

[1] We multiply 0.58% by 0.20, the relative systematic error quoted by BAUER 94, to obtain the systematic error. NODE=S035R41;LINKAGE=A

[2] Error correlated with MILLS 85 ($K K \pi \nu$) value. We multiply 0.22% by 0.23, the relative systematic error quoted by MILLS 85, to obtain the systematic error. NODE=S035R41;LINKAGE=M

$\Gamma(K^- \pi^+ \pi^- \geq 0\pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{94}/Γ

NODE=S035C40

$\Gamma_{94}/\Gamma = (\Gamma_{97}+\Gamma_{103}+0.2302\Gamma_{152}+0.9078\Gamma_{179})/\Gamma$

VALUE (%)	DOCUMENT ID		TECN	COMMENT	
0.373±0.013 OUR FIT	(Produced by HFLAV)				
0.30 ±0.05 OUR AVERAGE					
• • • We use the following data for averages but not for fits. • • •					
0.343±0.073±0.031	ABBIENDI	00D	OPAL	1990–1995 LEP runs	NOTFITTED
0.275±0.064	[1] BARATE	98	ALEP	1991–1995 LEP runs	NOTFITTED

[1] Not independent of BARATE 98 $\Gamma(\tau^- \to K^- \pi^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$ and $\Gamma(\tau^- \to K^- \pi^+ \pi^- \pi^0 \nu_\tau)/\Gamma_{\text{total}}$ values. NODE=S035C40;LINKAGE=B8

$\Gamma(K^- \pi^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$ $\Gamma_{95}/\Gamma = (0.34598\Gamma_{38}+\Gamma_{97}+0.0153\Gamma_{179})/\Gamma$

NODE=S035C6

VALUE (%)	DOCUMENT ID
0.345±0.007 OUR FIT	(Produced by HFLAV)

$\Gamma(K^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ $\Gamma_{96}/\Gamma = (\Gamma_{97}+0.0153\Gamma_{179})/\Gamma$

NODE=S035C21

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.293±0.007 OUR FIT	(Produced by HFLAV)					
0.290±0.018 OUR AVERAGE	Error includes scale factor of 2.4. See the ideogram below.					
0.330±0.001 $^{+0.016}_{-0.017}$	794k	[1] LEE	10	BELL	666 fb^{-1} E^{ee}_{cm}=10.6 GeV	
0.273±0.002±0.009	70k	[2] AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm}=10.6 GeV	
0.415±0.053±0.040	269	ABBIENDI	04J	OPAL	1991-1995 LEP runs	
0.384±0.014±0.038	3.5k	[3] BRIERE	03	CLE3	E^{ee}_{cm}= 10.6 GeV	
0.214±0.037±0.029		BARATE	98	ALEP	1991–1995 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
0.346±0.023±0.056	158	[4] RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.360±0.082±0.048		ABBIENDI	00D	OPAL	1990–1995 LEP runs	

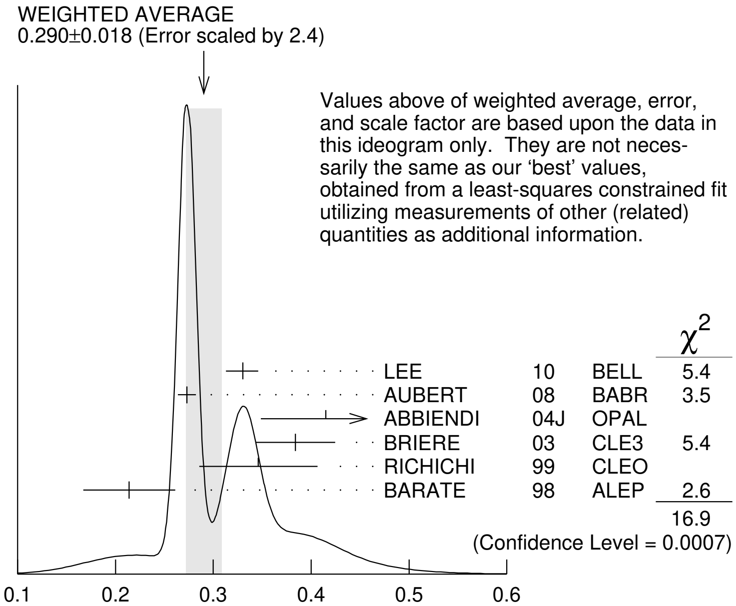
[1] See footnote to LEE 10 $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ measurement for correlations with other measurements. Not independent of LEE 10 $\Gamma(\tau^- \to K^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$ value. NODE=S035C21;LINKAGE=LE

[2] See footnote to AUBERT 08 $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035C21;LINKAGE=AU

[3] 47% correlated with BRIERE 03 $\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau$ and 34% correlated with $\tau^- \to K^- K^+ \pi^- \nu_\tau$ because of a common 5% normalization error. NODE=S035C21;LINKAGE=A

[4] Not independent of RICHICHI 99 $\Gamma(\tau^- \to K^- h^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$, $\Gamma(\tau^- \to$ NODE=S035C21;LINKAGE=R1

$K^- K^+ \pi^- \nu_\tau)/\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))$ and BALEST 95C $\Gamma(\tau^- \to h^- h^- h^+ \nu_\tau(\text{ex.}K^0))/\Gamma_{total}$ values.



$\Gamma\left(K^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0)\right)/\Gamma_{total}$ (%)

$\Gamma(K^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))/\Gamma(\pi^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))$ — Γ_{96}/Γ_{68}

NODE=S035C76

$\Gamma_{96}/\Gamma_{68} = (\Gamma_{97}+0.0153\Gamma_{179})/(\Gamma_{70}+0.0153\Gamma_{178})$

NODE=S035C76

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
3.25±0.07 OUR FIT (Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •				
3.92±0.02$^{+0.15}_{-0.16}$	794k	[1] LEE 10	BELL	666 fb^{-1} E^{ee}_{cm} = 10.6 GeV

NODE=S035C76

NOTFITTED

[1] Not independent of LEE 10 $\Gamma(\tau^- \to K^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))/\Gamma_{total}$ and $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))/\Gamma_{total}$ values.

NODE=S035C76;LINKAGE=LE

$\Gamma(K^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0,\omega))/\Gamma_{total}$ — Γ_{97}/Γ

NODE=S035R04
NODE=S035R04

VALUE (units 10^{-3})	DOCUMENT ID
2.93±0.07 OUR FIT (Produced by HFLAV)	

$\Gamma(K^- \rho^0 \nu_\tau \to K^- \pi^+ \pi^- \nu_\tau)/\Gamma(K^- \pi^+ \pi^- \nu_\tau(\text{ex.}K^0))$ — Γ_{98}/Γ_{96}

NODE=S035C52
NODE=S035C52

VALUE	DOCUMENT ID	TECN	COMMENT
0.48±0.14±0.10	[1] ASNER 00B	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.39±0.14	[2] BARATE 99R	ALEP	1991–1995 LEP runs

[1] ASNER 00B assume $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ (ex. K^0) decays proceed only through $K\rho$ and $K^*\pi$ intermediate states. They assume the resonance structure of $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ (ex. K^0) decays is dominated by $K_1(1270)^-$ and $K_1(1400)^-$ resonances, and assume $B(K_1(1270) \to K^*(892)\pi) = (16 \pm 5)\%$, $B(K_1(1270) \to K\rho) = (42 \pm 6)\%$, and $B(K_1(1400) \to K\rho) = 0$.

NODE=S035C52;LINKAGE=BA

[2] BARATE 99R assume $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ (ex. K^0) decays proceed only through $K\rho$ and $K^*\pi$ intermediate states. The quoted error is statistical only.

NODE=S035C52;LINKAGE=AB

$\Gamma(K^- \pi^+ \pi^- \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{99}/Γ

NODE=S035C7

$\Gamma_{99}/\Gamma = (0.34598\Gamma_{43}+\Gamma_{103}+0.2302\Gamma_{152}+0.892\Gamma_{179})/\Gamma$

NODE=S035C7

NODE=S035C7

VALUE (units 10^{-4})	DOCUMENT ID
13.1±1.2 OUR FIT (Produced by HFLAV)	

$\Gamma(K^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ — Γ_{100}/Γ

NODE=S035C25

$\Gamma_{100}/\Gamma = (\Gamma_{103}+0.2302\Gamma_{152}+0.892\Gamma_{179})/\Gamma$

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT	
7.9±1.2 OUR FIT	(Produced by HFLAV)					
7.3±1.2 OUR AVERAGE						
7.4±0.8±1.1		[1] ARMS	05	CLE3	7.6 fb^{-1}, E^{ee}_{cm}= 10.6 GeV	
6.1±3.9±1.8		BARATE	98	ALEP	1991–1995 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
7.5±2.6±1.8		[2] RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<17	95	ABBIENDI	00D	OPAL	1990–1995 LEP runs	

[1] Not independent of ARMS 05 $\Gamma(\tau^- \to K^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0,\omega))$ / Γ_{total} and $\Gamma(\tau^- \to K^-\omega\nu_\tau)$ / Γ_{total} values. NODE=S035C25;LINKAGE=AR

[2] Not independent of RICHICHI 99 $\Gamma(\tau^- \to K^-h^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$, $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ and BALEST 95C $\Gamma(\tau^- \to h^-h^-h^+\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ values. NODE=S035C25;LINKAGE=R1

$\Gamma(K^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0,\eta))/\Gamma_{\text{total}}$ — $\Gamma_{101}/\Gamma = (\Gamma_{103}+0.892\Gamma_{179})/\Gamma$

NODE=S035C54

VALUE (units 10^{-4})	DOCUMENT ID
7.6±1.2 OUR FIT	(Produced by HFLAV)

$\Gamma(K^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0,\omega))/\Gamma_{\text{total}}$ — Γ_{102}/Γ

NODE=S035C60

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.7±0.5±0.8	833	ARMS	05	CLE3	7.6 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(K^-\pi^+\pi^-\pi^0\nu_\tau(\text{ex.}K^0,\omega,\eta))/\Gamma_{\text{total}}$ — Γ_{103}/Γ

NODE=S035R05

VALUE (units 10^{-4})	DOCUMENT ID
3.9±1.4 OUR FIT	(Produced by HFLAV)

$\Gamma(K^-\pi^+K^- \geq 0\text{ neut. }\nu_\tau)/\Gamma_{\text{total}}$ — Γ_{104}/Γ

NODE=S035B38

VALUE (%)	CL%	DOCUMENT ID		TECN	COMMENT
<0.09	95	BAUER	94	TPC	E^{ee}_{cm}= 29 GeV

$\Gamma(K^-K^+\pi^- \geq 0\text{ neut. }\nu_\tau)/\Gamma_{\text{total}}$ — $\Gamma_{105}/\Gamma = (\Gamma_{106}+\Gamma_{107})/\Gamma$

NODE=S035B37

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.1496±0.0033 OUR FIT	(Produced by HFLAV)					
0.203 ±0.031 OUR AVERAGE						
0.159 ±0.053 ±0.020		ABBIENDI	00D	OPAL	1990–1995 LEP runs	
0.15 $^{+0.09}_{-0.07}$ ±0.03	4	[1] BAUER	94	TPC	E^{ee}_{cm}= 29 GeV	
• • • We use the following data for averages but not for fits. • • •						
0.238 ±0.042		[2] BARATE	98	ALEP	1991–1995 LEP runs	NOTFITTED

[1] We multiply 0.15% by 0.20, the relative systematic error quoted by BAUER 94, to obtain the systematic error. NODE=S035B37;LINKAGE=A

[2] Not independent of BARATE 98 $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma_{\text{total}}$ and $\Gamma(\tau^- \to K^-K^+\pi^-\pi^0\nu_\tau)/\Gamma_{\text{total}}$ values. NODE=S035B37;LINKAGE=B8

$\Gamma(K^-K^+\pi^-\nu_\tau)/\Gamma_{\text{total}}$ — Γ_{106}/Γ

NODE=S035R40

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT	
1.435±0.027 OUR FIT	(Produced by HFLAV)					
1.43 ±0.07 OUR AVERAGE	Error includes scale factor of 2.4. See the ideogram below.					
1.55 ±0.01 $^{+0.06}_{-0.05}$	108k	[1] LEE	10	BELL	666 fb^{-1} E^{ee}_{cm}=10.6 GeV	
1.346±0.010±0.036	18k	[2] AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm}= 10.6 GeV	
1.55 ±0.06 ±0.09	932	[3] BRIERE	03	CLE3	E^{ee}_{cm}= 10.6 GeV	
1.63 ±0.21 ±0.17		BARATE	98	ALEP	1991–1995 LEP runs	
• • • We use the following data for averages but not for fits. • • •						
0.87 ±0.56 ±0.40		ABBIENDI	00D	OPAL	1990–1995 LEP runs	NOTFITTED
1.45 ±0.13 ±0.28	2.3k	[4] RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
2.2 $^{+1.7}_{-1.1}$ ±0.5	9	[5] MILLS	85	DLCO	E^{ee}_{cm}= 29 GeV	

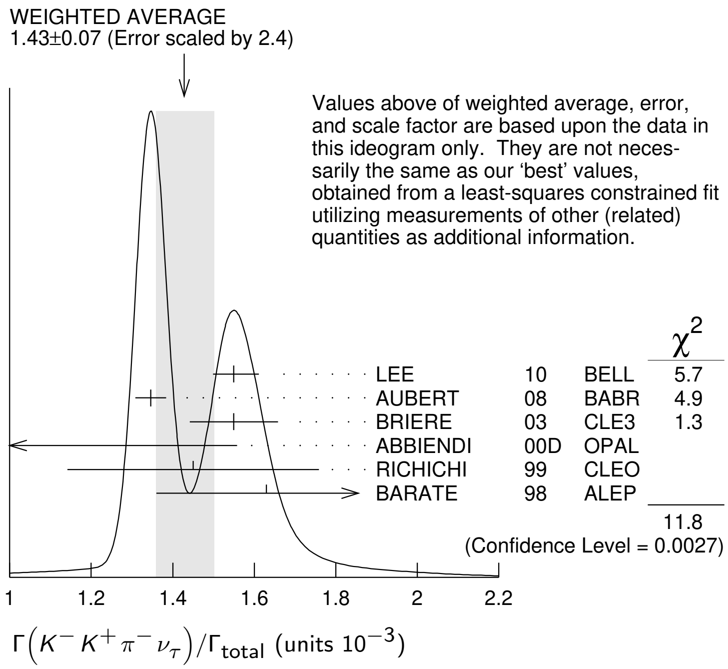
[1] See footnote to LEE 10 $\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ measurement for correlations with other measurements. Not independent of LEE 10 $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ value. NODE=S035R40;LINKAGE=LE

[2] See footnote to AUBERT 08 $\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ measurement for correlations with other measurements. NODE=S035R40;LINKAGE=AU

[3] 71% correlated with BRIERE 03 $\tau^- \to \pi^-\pi^+\pi^-\nu_\tau$ and 34% correlated with $\tau \to K^-\pi^+\pi^-\nu_\tau$ because of a common 5% normalization error. NODE=S035R40;LINKAGE=A

[4] Not independent of RICHICHI 99 $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ and BALEST 95C $\Gamma(\tau^- \to h^-h^-h^+\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ values. NODE=S035R40;LINKAGE=R1

[5] Error correlated with MILLS 85 ($K\pi\pi\pi^0\nu$) value. We multiply 0.22% by 0.23, the relative systematic error quoted by MILLS 85, to obtain the systematic error. NODE=S035R40;LINKAGE=M



$\Gamma(K^-K^+\pi^-\nu_\tau)/\Gamma(\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ Γ_{106}/Γ_{68}

NODE=S035C35

$\Gamma_{106}/\Gamma_{68} = \Gamma_{106}/(\Gamma_{70}+0.0153\Gamma_{178})$ NODE=S035C35

NODE=S035C35

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
1.592±0.030 OUR FIT (Produced by HFLAV)				
1.83 ±0.05 OUR AVERAGE				
1.60 ±0.15 ±0.30	2.3k	RICHICHI 99	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We use the following data for averages but not for fits. • • •				
1.84 ±0.01 ±0.05	108k	[1] LEE 10	BELL	666 fb^{-1} E^{ee}_{cm}= 10.6 GeV

NOTFITTED

[1] Not independent of LEE 10 $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma_{\text{total}}$ and $\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ values. NODE=S035C35;LINKAGE=LE

$\Gamma(K^-K^+\pi^-\pi^0\nu_\tau)/\Gamma_{\text{total}}$ Γ_{107}/Γ

NODE=S035C8
NODE=S035C8

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
0.61±0.18 OUR FIT (Produced by HFLAV)					
0.60±0.18 OUR AVERAGE					
0.55±0.14±0.12		48	ARMS 05	CLE3	7.6 fb^{-1},E^{ee}_{cm}=10.6 GeV
7.5 ±2.9 ±1.5			BARATE 98	ALEP	1991–1995 LEP runs
• • • We use the following data for averages but not for fits. • • •					
3.3 ±1.8 ±0.7		158	[1] RICHICHI 99	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<27	95		ABBIENDI 00D	OPAL	1990–1995 LEP runs

NOTFITTED

[1] Not independent of RICHICHI 99 $\Gamma(\tau^- \to K^-K^+\pi^-\nu_\tau)/\Gamma(\tau^- \to \pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ and BALEST 95C $\Gamma(\tau^- \to h^-h^-h^+\nu_\tau(\text{ex.}K^0))/\Gamma_{\text{total}}$ values. NODE=S035C8;LINKAGE=R1

$\Gamma(K^- K^+ \pi^- \pi^0 \nu_\tau)/\Gamma(\pi^- \pi^+ \pi^- \pi^0 \nu_\tau (\text{ex.}K^0))$ — Γ_{107}/Γ_{77}

NODE=S035C36

$\Gamma_{107}/\Gamma_{77} = \Gamma_{107}/(\Gamma_{78}+0.892\Gamma_{178}+0.0153\Gamma_{180})$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.14±0.04 OUR FIT	(Produced by HFLAV)				
0.79±0.44±0.16	158	[1] RICHICHI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] RICHICHI 99 also quote a 95%CL upper limit of 0.0157 for this measurement.

NODE=S035C36;LINKAGE=R1

$\Gamma(K^- K^+ K^- \nu_\tau)/\Gamma_{total}$ — $\Gamma_{108}/\Gamma = 0.499\Gamma_{170}/\Gamma$

NODE=S035C9

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.2 ±0.8 OUR FIT	Error includes scale factor of 5.4. (Produced by HFLAV)					
2.1 ±0.8 OUR AVERAGE	Error includes scale factor of 5.4.					
$3.29\pm0.17^{+0.19}_{-0.20}$		3.2k	[1] LEE	10	BELL	666 fb^{-1} E^{ee}_{cm} = 10.6 GeV
1.58±0.13±0.12		275	[2] AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 3.7	90		BRIERE	03	CLE3	E^{ee}_{cm}= 10.6 GeV
< 19	90		BARATE	98	ALEP	1991–1995 LEP runs

[1] See footnote to LEE 10 $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ measurement for correlations with other measurements. Not independent of LEE 10 $\Gamma(\tau^- \to K^- K^+ K^- \nu_\tau)/\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$ value.

NODE=S035C9;LINKAGE=LE

[2] See footnote to AUBERT 08 $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ measurement for correlations with other measurements.

NODE=S035C9;LINKAGE=AU

$\Gamma(K^- K^+ K^- \nu_\tau)/\Gamma(\pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))$ — Γ_{108}/Γ_{68}

NODE=S035C77

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$3.90\pm0.02^{+0.22}_{-0.23}$	3.2k	[1] LEE	10	BELL	666 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] Not independent of LEE 10 $\Gamma(\tau^- \to K^- K^+ K^- \nu_\tau)/\Gamma_{total}$ and $\Gamma(\tau^- \to \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ values.

NODE=S035C77;LINKAGE=LE

$\Gamma(K^- K^+ K^- \nu_\tau (\text{ex. } \phi))/\Gamma_{total}$ — Γ_{109}/Γ

NODE=S035C67

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.5 × 10^{-6}	90	AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(K^- K^+ K^- \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{110}/Γ

NODE=S035C62

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.8 × 10^{-6}	90	ARMS	05	CLE3	7.6 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(\pi^- K^+ \pi^- \geq 0 \text{ neut. } \nu_\tau)/\Gamma_{total}$ — Γ_{111}/Γ

NODE=S035B36

VALUE (%)	CL%	DOCUMENT ID		TECN	COMMENT
<0.25	95	BAUER	94	TPC	E^{ee}_{cm}= 29 GeV

$\Gamma(e^- e^- e^+ \overline{\nu}_e \nu_\tau)/\Gamma_{total}$ — Γ_{112}/Γ

NODE=S035B65

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
2.8±1.4±0.4	5	ALAM	96	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^- e^- e^+ \overline{\nu}_\mu \nu_\tau)/\Gamma_{total}$ — Γ_{113}/Γ

NODE=S035B66

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<3.2	90	ALAM	96	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\pi^- e^- e^+ \nu_\tau)/\Gamma_{total}$ — Γ_{114}/Γ

NODE=S035P01

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
seen	400	[1] JIN	19	BELL	562 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.46±0.13±0.21	400	[1] JIN	19	BELL	axial-vector, 562 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
3.01±0.27±0.43	400	[1] JIN	19	BELL	vector, 562 fb^{-1}, E^{ee}_{cm} = 10.6 GeV

OCCUR=4

OCCUR=2

[1] JIN 19 measures $B(\tau^- \to \pi^- e^- e^+ \nu_\tau (m_{\pi^- e^- e^+} > 1.05 \text{GeV}/c^2)) = (5.90 \pm 0.53 \pm 0.86) \times 10^{-6}$, which is only sensitive to the structure-dependent contribution, and assumes that the decay proceeds with either a pure axial-vector current or a pure vector current to obtain the two respective branching fraction measurements for this mode, which are 100% correlated.

NODE=S035P01;LINKAGE=A

$\Gamma(\pi^-\mu^-\mu^+\nu_\tau)/\Gamma_{total}$ — Γ_{115}/Γ

NODE=S035P00

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.14 × 10^{-5}	90	JIN	19	BELL	562 fb^{-1}, E^{ee}_{cm} = 10.6 GeV

$\Gamma(3h^-2h^+ \geq 0$ neutrals ν_τ (ex. $K^0_S \to \pi^-\pi^+$)("5-prong"))/Γ_{total} — Γ_{116}/Γ

NODE=S035R33

$\Gamma_{116}/\Gamma = (\Gamma_{117}+\Gamma_{123})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT	
0.099±0.004 OUR FIT (Produced by HFLAV)						
0.107±0.007 OUR AVERAGE Error includes scale factor of 1.1.						
0.170±0.022±0.026		[1] ACHARD	01D	L3	1992–1995 LEP runs	
0.097±0.005±0.011	419	GIBAUT	94B	CLEO	E^{ee}_{cm}= 10.6 GeV	
0.102±0.029	13	BYLSMA	87	HRS	E^{ee}_{cm}= 29 GeV	
• • • We use the following data for averages but not for fits. • • •						
0.093±0.009±0.012		SCHAEL	05C	ALEP	1991-1995 LEP runs	NOTFITTED
0.115±0.013±0.006	112	[2] ABREU	01M	DLPH	1992–1995 LEP runs	NOTFITTED
0.119±0.013±0.008	119	[3] ACKERSTAFF	99E	OPAL	1991–1995 LEP runs	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.26 ±0.06 ±0.05		ACTON	92H	OPAL	E^{ee}_{cm}= 88.2–94.2 GeV	
0.10 $^{+0.05}_{-0.04}$ ±0.03		DECAMP	92C	ALEP	1989–1990 LEP runs	
0.16 ±0.13 ±0.04		BEHREND	89B	CELL	E^{ee}_{cm}= 14–47 GeV	
0.3 ±0.1 ±0.2		BARTEL	85F	JADE	E^{ee}_{cm}= 34.6 GeV	
0.13 ±0.04	10	BELTRAMI	85	HRS	Repl. by BYLSMA 87	
0.16 ±0.08 ±0.04	4	BURCHAT	85	MRK2	E^{ee}_{cm}= 29 GeV	
1.0 ±0.4	10	BEHREND	82	CELL	Repl. by BEHREND 89B	

[1] The correlation coefficients between this measurement and the ACHARD 01D measurements of B($\tau \to$ "1-prong") and B($\tau \to$ "3-prong") are −0.082 and −0.19 respectively. NODE=S035R33;LINKAGE=CH

[2] The correlation coefficients between this measurement and the ABREU 01M measurements of B($\tau \to$ 1-prong) and B($\tau \to$ 3-prong) are −0.08 and −0.08 respectively. NODE=S035R33;LINKAGE=M1

[3] Not independent of ACKERSTAFF 99E B($\tau^- \to 3h^-2h^+\nu_\tau$(ex. K^0)) and B($\tau^- \to 3h^-2h^+\pi^0\nu_\tau$(ex. K^0)) measurements. NODE=S035R33;LINKAGE=A

$\Gamma(3h^-2h^+\nu_\tau$(ex.K^0))/Γ_{total} — $\Gamma_{117}/\Gamma = (\Gamma_{118}+\Gamma_{120}+0.0153\Gamma_{185})/\Gamma$

NODE=S035R38

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT	
8.29±0.31 OUR FIT (Produced by HFLAV)						
8.32±0.35 OUR AVERAGE						
9.7 ±1.5 ±0.5	96	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs	
7.2 ±0.9 ±1.2	165	[2] SCHAEL	05C	ALEP	1991-1995 LEP runs	
9.1 ±1.4 ±0.6	97	ACKERSTAFF	99E	OPAL	1991–1995 LEP runs	
7.7 ±0.5 ±0.9	295	GIBAUT	94B	CLEO	E^{ee}_{cm}= 10.6 GeV	
6.4 ±2.3 ±1.0	12	ALBRECHT	88B	ARG	E^{ee}_{cm}= 10 GeV	
5.1 ±2.0	7	BYLSMA	87	HRS	E^{ee}_{cm}= 29 GeV	
• • • We use the following data for averages but not for fits. • • •						
8.56±0.05±0.42	34k	AUBERT,B	05W	BABR	232 fb^{-1}, E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
8.0 ±1.1 ±1.3	58	BUSKULIC	96	ALEP	Repl. by SCHAEL 05C	
6.7 ±3.0	5	[3] BELTRAMI	85	HRS	Repl. by BYLSMA 87	

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^-\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035R38;LINKAGE=AH

[2] See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)/\Gamma_{total}$ measurement for correlations with other measurements. NODE=S035R38;LINKAGE=SC

[3] The error quoted is statistical only. NODE=S035R38;LINKAGE=B

$\Gamma(3\pi^-2\pi^+\nu_\tau$(ex.$K^0,\omega$))/$\Gamma_{total}$ — $\Gamma_{118}/\Gamma = (\Gamma_{119}+\Gamma_{173})/\Gamma$

NODE=S035C88

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT	
8.27±0.31 OUR FIT (Produced by HFLAV)					
• • • We use the following data for averages but not for fits. • • •					
8.33±0.04±0.43	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV	NOTFITTED

[1] Not independent of LEES 12X $\Gamma(\tau^- \to f_1(1285)\pi^-\nu_\tau \to 3\pi^-2\pi^+\nu_\tau)/\Gamma$ and $\Gamma(\tau^- \to 3\pi^-2\pi^+\nu_\tau$(ex.$K^0$, ω, f_1(1285)))/Γ values. NODE=S035C88;LINKAGE=LE

$\Gamma(3\pi^-2\pi^+\nu_\tau$(ex.$K^0,\omega,f_1$(1285)))/$\Gamma_{total}$ — Γ_{119}/Γ

NODE=S035C89

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.75±0.30 OUR FIT (Produced by HFLAV)					
7.68±0.04±0.40	69k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(K^- 2\pi^- 2\pi^+ \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{120}/Γ

NODE=S035C94

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
0.6±1.2 OUR FIT	(Produced by HFLAV)			
0.6±0.5±1.1	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] LEES 12X meaurement corresponds to the lower limit of $< 2.4 \times 10^{-6}$ at 90% CL.

NODE=S035C94;LINKAGE=LE

$\Gamma(K^+ 3\pi^- \pi^+ \nu_\tau)/\Gamma_{\text{total}}$ Γ_{121}/Γ

NODE=S035C95

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.0 × 10^{-6}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(K^+ K^- 2\pi^- \pi^+ \nu_\tau)/\Gamma_{\text{total}}$ Γ_{122}/Γ

NODE=S035C96

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.5 × 10^{-7}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(3h^- 2h^+ \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ $\Gamma_{123}/\Gamma = (\Gamma_{124}+\Gamma_{127})/\Gamma$

NODE=S035R39

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.65±0.11 OUR FIT		(Produced by HFLAV)			
1.74±0.27 OUR AVERAGE					
1.6 ±1.2 ±0.6	13	[1] ABDALLAH	06A	DLPH	1992–1995 LEP runs
2.1 ±0.7 ±0.9	95	[2] SCHAEL	05C	ALEP	1991-1995 LEP runs
1.7 ±0.2 ±0.2	231	ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV
2.7 ±1.8 ±0.9	23	ACKERSTAFF	99E	OPAL	1991–1995 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.8 ±0.7 ±1.2	18	BUSKULIC	96	ALEP	Repl. by SCHAEL 05C
1.9 ±0.4 ±0.4	31	GIBAUT	94B	CLEO	Repl. by ANASTASSOV 01
5.1 ±2.2	6	BYLSMA	87	HRS	E^{ee}_{cm}= 29 GeV
6.7 ±3.0	5	[3] BELTRAMI	85	HRS	Repl. by BYLSMA 87

[1] See footnote to ABDALLAH 06A $\Gamma(\tau^- \to h^- \nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements.

NODE=S035R39;LINKAGE=AH

[2] SCHAEL 05C quote $(1.4 \pm 0.7 \pm 0.9) \times 10^{-4}$. We add 0.7×10^{-4} to remove their correction for $\tau^- \to \eta\pi^-\pi^+\pi^-\nu_\tau \to 3\pi^-2\pi^+\pi^0\nu_\tau$ and $\tau^- \to K^*(892)^-\eta\nu_\tau \to 3\pi^-2\pi^+\pi^0\nu_\tau$ decays. See footnote to SCHAEL 05C $\Gamma(\tau^- \to e^-\overline{\nu}_e\nu_\tau)/\Gamma_{\text{total}}$ measurement for correlations with other measurements.

NODE=S035R39;LINKAGE=SC

[3] The error quoted is statistical only.

NODE=S035R39;LINKAGE=B

$\Gamma(3\pi^- 2\pi^+ \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{124}/Γ

NODE=S035C90

$\Gamma_{124}/\Gamma = (\Gamma_{126}+0.2302\Gamma_{160}+0.892\Gamma_{185})/\Gamma$

NODE=S035C90

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.64±0.11 OUR FIT	(Produced by HFLAV)			
• • • We use the following data for averages but not for fits. • • •				
1.65±0.05±0.09	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

NOTFITTED

[1] Not independent of LEES 12X measurements of $\Gamma(\tau^- \to 2\pi^-\pi^+\omega\nu_\tau(\text{ex.}K^0))/\Gamma$, $\Gamma(\tau^- \to \eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))/\Gamma$, and $\Gamma(\tau^- \to 3\pi^-2\pi^+\pi^0\nu_\tau(\text{ex.}K^0, \eta, \omega, f_1(1285)))/\Gamma$.

NODE=S035C90;LINKAGE=LE

$\Gamma(3\pi^- 2\pi^+ \pi^0 \nu_\tau (\text{ex.}K^0, \eta, f_1(1285)))/\Gamma_{\text{total}}$ Γ_{125}/Γ

NODE=S035C91

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.11±0.04±0.09	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] Not independent of LEES 12X $\Gamma(\tau^- \to 2\pi^-\pi^+\omega\nu_\tau(\text{ex.}K^0))/\Gamma$ and $\Gamma(\tau^- \to 3\pi^-2\pi^+\pi^0\nu_\tau(\text{ex.}K^0, \eta, \omega, f_1(1285)))/\Gamma$ values.

NODE=S035C91;LINKAGE=LE

$\Gamma(3\pi^- 2\pi^+ \pi^0 \nu_\tau (\text{ex.}K^0, \eta, \omega, f_1(1285)))/\Gamma_{\text{total}}$ Γ_{126}/Γ

NODE=S035C92

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.38±0.09 OUR FIT		(Produced by HFLAV)			
0.36±0.03±0.09	7.3k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(K^- 2\pi^- 2\pi^+ \pi^0 \nu_\tau (\text{ex.}K^0))/\Gamma_{\text{total}}$ Γ_{127}/Γ

NODE=S035C97

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
1.1±0.6 OUR FIT	(Produced by HFLAV)			
1.1±0.4±0.4	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] LEES 12X meaurement corresponds to the lower limit of $< 1.9 \times 10^{-6}$ at 90% CL.

NODE=S035C97;LINKAGE=LE

$\Gamma(K^+ 3\pi^- \pi^+ \pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{128}/Γ

NODE=S035C98

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8 × 10^{-7}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(3h^- 2h^+ 2\pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{129}/Γ

NODE=S035B44

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.4 × 10^{-6}	90	AUBERT,B	06	BABR	232 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.1 × 10^{-4}	90	GIBAUT	94B	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma((5\pi)^- \nu_\tau)/\Gamma_{total}$ Γ_{130}/Γ

NODE=S035B45

$\Gamma_{130}/\Gamma = (\Gamma_{30}+\frac{1}{2}\Gamma_{45}+\Gamma_{48}+\frac{1}{2}\Gamma_{61}+\Gamma_{85}+\Gamma_{117}+0.5559\Gamma_{150}+0.892\Gamma_{180})/\Gamma$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.78±0.05 OUR FIT (Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •				
0.61±0.06±0.08	[1] GIBAUT	94B	CLEO	E^{ee}_{cm}= 10.6 GeV

NOTFITTED

[1] Not independent of GIBAUT 94B B($3h^- 2h^+ \nu_\tau$), PROCARIO 93 B($h^- 4\pi^0 \nu_\tau$), and BORTOLETTO 93 B($2h^- h^+ 2\pi^0 \nu_\tau$)/B("3prong") measurements. Result is corrected for η contributions.

NODE=S035B45;LINKAGE=A

$\Gamma(4h^- 3h^+ \geq 0$ neutrals ν_τ ("7-prong"))/Γ_{total} Γ_{131}/Γ

NODE=S035R36

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-7}	90	AUBERT,B	05F	BABR	232 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.8 × 10^{-5}	95	ACKERSTAFF	97J	OPAL	1990–1995 LEP runs
<2.4 × 10^{-6}	90	EDWARDS	97B	CLEO	E^{ee}_{cm}= 10.6 GeV
<2.9 × 10^{-4}	90	BYLSMA	87	HRS	E^{ee}_{cm}= 29 GeV

$\Gamma(4h^- 3h^+ \nu_\tau)/\Gamma_{total}$ Γ_{132}/Γ

NODE=S035C63

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.3 × 10^{-7}	90	AUBERT,B	05F	BABR	232 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(4h^- 3h^+ \pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{133}/Γ

NODE=S035C57

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.5 × 10^{-7}	90	AUBERT,B	05F	BABR	232 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(X^-(S{=}-1)\nu_\tau)/\Gamma_{total}$ Γ_{134}/Γ

NODE=S035C47

$\Gamma_{134}/\Gamma = (\Gamma_{10}+\Gamma_{16}+\Gamma_{23}+\Gamma_{28}+\Gamma_{36}+\Gamma_{41}+\Gamma_{45}+\Gamma_{61}+\Gamma_{97}+\Gamma_{103}+\Gamma_{120}+\Gamma_{127}+\Gamma_{152}+\Gamma_{154}+\Gamma_{156}+0.8312\Gamma_{170}+\Gamma_{179})/\Gamma$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
2.92±0.04 OUR FIT (Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •				
2.87±0.12	[1] BARATE	99R	ALEP	1991–1995 LEP runs

NOTFITTED

[1] BARATE 99R perform a combined analysis of all ALEPH LEP 1 data on τ branching fraction measurements for decay modes having total strangeness equal to -1.

NODE=S035C47;LINKAGE=A

$\Gamma(K^*(892)^- \geq 0$ neutrals $\geq 0K^0_L \nu_\tau)/\Gamma_{total}$ Γ_{135}/Γ

NODE=S035R45

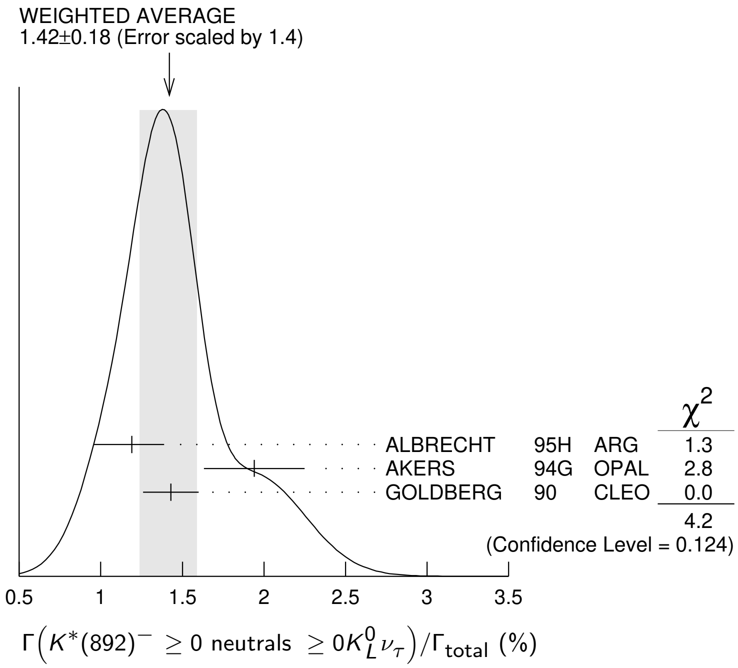
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.42±0.18 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.					
$1.19\pm0.15^{+0.13}_{-0.18}$	104	ALBRECHT	95H	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
1.94±0.27±0.15	74	[1] AKERS	94G	OPAL	E^{ee}_{cm}= 88–94 GeV
1.43±0.11±0.13	475	[2] GOLDBERG	90	CLEO	E^{ee}_{cm}= 9.4–10.9 GeV

[1] AKERS 94G reject events in which a K^0_S accompanies the $K^*(892)^-$. We do not correct for them.

NODE=S035R45;LINKAGE=B

[2] GOLDBERG 90 estimates that 10% of observed $K^*(892)$ are accompanied by a π^0.

NODE=S035R45;LINKAGE=A



$\Gamma\big(K^*(892)^- \nu_\tau\big)/\Gamma_{\rm total}$ — Γ_{136}/Γ

NODE=S035R9
NODE=S035R9

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.20 ±0.07 OUR AVERAGE		Error includes scale factor of 1.8. See the ideogram below.			
1.131±0.006±0.051	49k	[1] EPIFANOV	07	BELL	351 fb^{-1} $E^{ee}_{\rm cm}$=10.6 GeV
1.326±0.063		BARATE	99R	ALEP	1991–1995 LEP runs
1.11 ±0.12		[2] COAN	96	CLEO	$E^{ee}_{\rm cm}\approx$ 10.6 GeV
1.42 ±0.22 ±0.09		[3] ACCIARRI	95F	L3	1991–1993 LEP runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.39 ±0.09 ±0.10		[4] BUSKULIC	96	ALEP	Repl. by BARATE 99R
1.45 ±0.13 ±0.11	273	[5] BUSKULIC	94F	ALEP	Repl. by BUSKULIC 96
1.23 ±0.21 $^{+0.11}_{-0.21}$	54	[6] ALBRECHT	88L	ARG	$E^{ee}_{\rm cm}$= 10 GeV
1.9 ±0.3 ±0.4	44	[7] TSCHIRHART	88	HRS	$E^{ee}_{\rm cm}$= 29 GeV
1.5 ±0.4 ±0.4	15	[8] AIHARA	87C	TPC	$E^{ee}_{\rm cm}$= 29 GeV
1.3 ±0.3 ±0.3	31	YELTON	86	MRK2	$E^{ee}_{\rm cm}$= 29 GeV
1.7 ±0.7	11	DORFAN	81	MRK2	$E^{ee}_{\rm cm}$= 4.2–6.7 GeV

[1] EPIFANOV 07 quote B($\tau^- \to K^*(892)^- \nu_\tau$) B($K^*(892)^- \to K^0_S \pi^-$) = (3.77 ± 0.02(stat) ±0.12(syst) ±0.12(mod)) × 10^{-3}. We add the systematic and model uncertainties in quadrature and divide by B($K^*(892)^- \to K^0_S \pi^-$) = 0.3333. NODE=S035R9;LINKAGE=EP

[2] Not independent of COAN 96 B($\pi^- \overline{K}^0 \nu_\tau$) and BATTLE 94 B($K^- \pi^0 \nu_\tau$) measurements. $K\pi$ final states are consistent with and assumed to originate from $K^*(892)^-$ production. NODE=S035R9;LINKAGE=E

[3] This result is obtained from their B($\pi^- \overline{K}^0 \nu_\tau$) assuming all those decays originate in $K^*(892)^-$ decays. NODE=S035R9;LINKAGE=C

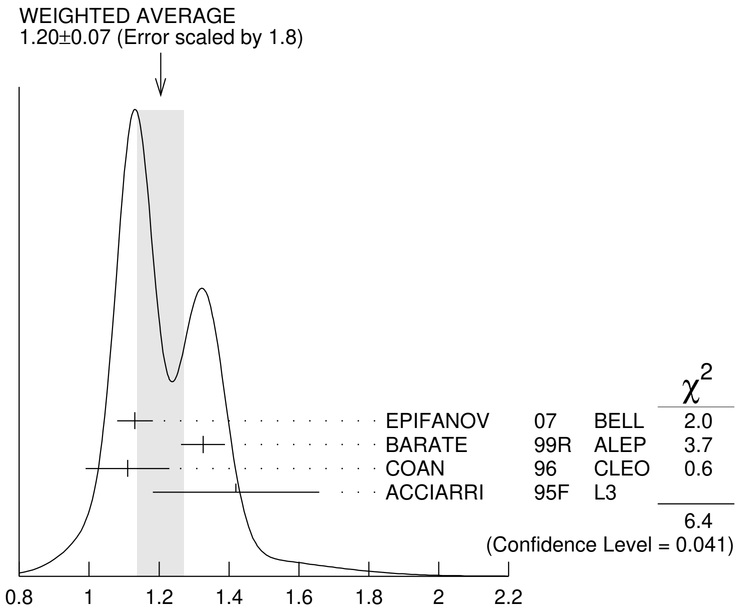
[4] Not independent of BUSKULIC 96 B($\pi^- \overline{K}^0 \nu_\tau$) and B($K^- \pi^0 \nu_\tau$) measurements. NODE=S035R9;LINKAGE=D

[5] BUSKULIC 94F obtain this result from BUSKULIC 94F B($\overline{K}^0 \pi^- \nu_\tau$) and BUSKULIC 94E B($K^- \pi^0 \nu_\tau$) assuming all of those decays originate in $K^*(892)^-$ decays. NODE=S035R9;LINKAGE=B

[6] The authors divide by Γ_2/Γ = 0.865 to obtain this result. NODE=S035R9;LINKAGE=AL

[7] Not independent of TSCHIRHART 88 $\Gamma(\tau^- \to h^- \overline{K}^0 \geq 0$ neutrals $\geq 0 K^0_L \nu_\tau)$ / Γ. NODE=S035R9;LINKAGE=A

[8] Decay π^- identified in this experiment, is assumed in the others. NODE=S035R9;LINKAGE=AI



$\Gamma\big(K^*(892)^- \nu_\tau\big)/\Gamma_{\text{total}}$ (%)

$\Gamma\big(K^*(892)^- \nu_\tau\big)/\Gamma\big(\pi^- \pi^0 \nu_\tau\big)$ — Γ_{136}/Γ_{14}

NODE=S035B49
NODE=S035B49

VALUE	DOCUMENT ID		TECN	COMMENT
0.075±0.027	[1] ABREU	94K	DLPH	LEP 1992 Z data

[1] ABREU 94K quote B($\tau^- \rightarrow K^*(892)^- \nu_\tau$)B($K^*(892)^- \rightarrow K^- \pi^0$)/B($\tau^- \rightarrow \rho^- \nu_\tau$) $= 0.025 \pm 0.009$. We divide by B($K^*(892)^- \rightarrow K^- \pi^0$) $= 0.333$ to obtain this result. NODE=S035B49;LINKAGE=A

$\Gamma\big(K^*(892)^- \nu_\tau \rightarrow \pi^- \overline{K}^0 \nu_\tau\big)/\Gamma\big(\pi^- \overline{K}^0 \nu_\tau\big)$ — Γ_{137}/Γ_{36}

NODE=S035C68
NODE=S035C68

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.933±0.027	49k	EPIFANOV	07	BELL	351 fb^{-1} $E^{ee}_{\text{cm}} = 10.6$ GeV

$\Gamma\big(K^*(892)^0 K^- \geq 0 \text{ neutrals } \nu_\tau\big)/\Gamma_{\text{total}}$ — Γ_{138}/Γ

NODE=S035B6
NODE=S035B6

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.32±0.08±0.12	119	GOLDBERG	90	CLEO	$E^{ee}_{\text{cm}} = 9.4$–10.9 GeV

$\Gamma\big(K^*(892)^0 K^- \nu_\tau\big)/\Gamma_{\text{total}}$ — Γ_{139}/Γ

NODE=S035B60
NODE=S035B60

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.21 ±0.04 OUR AVERAGE					
0.213±0.048		[1] BARATE	98	ALEP	1991–1995 LEP runs
0.20 ±0.05 ±0.04	47	ALBRECHT	95H	ARG	$E^{ee}_{\text{cm}} = 9.4$–10.6 GeV

[1] BARATE 98 measure the K^- ($\rho^0 \rightarrow \pi^+ \pi^-$) fraction in $\tau^- \rightarrow K^- \pi^+ \pi^- \nu_\tau$ decays to be (35 ± 11)% and derive this result from their measurement of $\Gamma(\tau^- \rightarrow K^- \pi^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$ assuming the intermediate states are all $K^- \rho$ and $K^- K^*(892)^0$. NODE=S035B60;LINKAGE=B8

$\Gamma\big(\overline{K}^*(892)^0 \pi^- \geq 0 \text{ neutrals } \nu_\tau\big)/\Gamma_{\text{total}}$ — Γ_{140}/Γ

NODE=S035B7
NODE=S035B7

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.38±0.11±0.13	105	GOLDBERG	90	CLEO	$E^{ee}_{\text{cm}} = 9.4$–10.9 GeV

$\Gamma\big(\overline{K}^*(892)^0 \pi^- \nu_\tau\big)/\Gamma_{\text{total}}$ — Γ_{141}/Γ

NODE=S035B70
NODE=S035B70

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.22 ±0.05 OUR AVERAGE					
0.209±0.058		[1] BARATE	98	ALEP	1991–1995 LEP runs
0.25 ±0.10 ±0.05	27	ALBRECHT	95H	ARG	$E^{ee}_{\text{cm}} = 9.4$–10.6 GeV

[1] BARATE 98 measure the $K^- K^*(892)^0$ fraction in $\tau^- \rightarrow K^- K^+ \pi^- \nu_\tau$ decays to be (87 ± 13)% and derive this result from their measurement of $\Gamma(\tau^- \rightarrow K^- K^+ \pi^- \nu_\tau)/\Gamma_{\text{total}}$. NODE=S035B70;LINKAGE=B8

$\Gamma((\overline{K}^*(892)\pi)^- \nu_\tau \to \pi^- \overline{K}^0 \pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{142}/Γ

NODE=S035C11

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.10 ±0.04 OUR AVERAGE				
0.097±0.044±0.036	[1] BARATE	99K	ALEP	1991–1995 LEP runs
0.106±0.037±0.032	[2] BARATE	98E	ALEP	1991–1995 LEP runs

[1] BARATE 99K measure K^0's by detecting K^0_L's in their hadron calorimeter. They determine the $\overline{K}^0 \rho^-$ fraction in $\tau^- \to \pi^- \overline{K}^0 \pi^0 \nu_\tau$ decays to be (0.72 ± 0.12 ± 0.10) and multiply their B($\pi^- \overline{K}^0 \pi^0 \nu_\tau$) measurement by one minus this fraction to obtain the quoted result. NODE=S035C11;LINKAGE=9K

[2] BARATE 98E reconstruct K^0's using $K^0_S \to \pi^+ \pi^-$ decays. They determine the $\overline{K}^0 \rho^-$ fraction in $\tau^- \to \pi^- \overline{K}^0 \pi^0 \nu_\tau$ decays to be (0.64 ± 0.09 ± 0.10) and multiply their B($\pi^- \overline{K}^0 \pi^0 \nu_\tau$) measurement by one minus this fraction to obtain the quoted result. NODE=S035C11;LINKAGE=B9

$\Gamma(K_1(1270)^- \nu_\tau)/\Gamma_{total}$ — Γ_{143}/Γ

NODE=S035B40

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.47±0.11 OUR AVERAGE					
0.48±0.11		BARATE	99R	ALEP	1991–1995 LEP runs
$0.41^{+0.41}_{-0.35}$±0.10	5	[1] BAUER	94	TPC	E^{ee}_{cm}= 29 GeV

[1] We multiply 0.41% by 0.25, the relative systematic error quoted by BAUER 94, to obtain the systematic error. NODE=S035B40;LINKAGE=A

$\Gamma(K_1(1400)^- \nu_\tau)/\Gamma_{total}$ — Γ_{144}/Γ

NODE=S035B41

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.17±0.26 OUR AVERAGE Error includes scale factor of 1.7.					
0.05±0.17		BARATE	99R	ALEP	1991–1995 LEP runs
$0.76^{+0.40}_{-0.33}$±0.20	11	[1] BAUER	94	TPC	E^{ee}_{cm}= 29 GeV

[1] We multiply 0.76% by 0.25, the relative systematic error quoted by BAUER 94, to obtain the systematic error. NODE=S035B41;LINKAGE=A

$[\Gamma(K_1(1270)^- \nu_\tau) + \Gamma(K_1(1400)^- \nu_\tau)]/\Gamma_{total}$ — $(\Gamma_{143}+\Gamma_{144})/\Gamma$

NODE=S035B42

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$1.17^{+0.41}_{-0.37}$±0.29	16	[1] BAUER	94	TPC	E^{ee}_{cm}= 29 GeV

[1] We multiply 1.17% by 0.25, the relative systematic error quoted by BAUER 94, to obtain the systematic error. Not independent of BAUER 94 B($K_1(1270)^- \nu_\tau$) and BAUER 94 B($K_1(1400)^- \nu_\tau$) measurements. NODE=S035B42;LINKAGE=A

$\Gamma(K_1(1270)^- \nu_\tau)/[\Gamma(K_1(1270)^- \nu_\tau) + \Gamma(K_1(1400)^- \nu_\tau)]$ — $\Gamma_{143}/(\Gamma_{143}+\Gamma_{144})$

NODE=S035C41

VALUE	DOCUMENT ID		TECN	COMMENT
0.69±0.15 OUR AVERAGE				
0.71±0.16±0.11	[1] ABBIENDI	00D	OPAL	1990–1995 LEP runs
0.66±0.19±0.13	[2] ASNER	00B	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] ABBIENDI 00D assume the resonance structure of $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ decays is dominated by the $K_1(1270)^-$ and $K_1(1400)^-$ resonances. NODE=S035C41;LINKAGE=A

[2] ASNER 00B assume the resonance structure of $\tau^- \to K^- \pi^+ \pi^- \nu_\tau$ (ex. K^0) decays is dominated by $K_1(1270)^-$ and $K_1(1400)^-$ resonances. NODE=S035C41;LINKAGE=BA

$\Gamma(K^*(1410)^- \nu_\tau)/\Gamma_{total}$ — Γ_{145}/Γ

NODE=S035C45

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$1.5^{+1.4}_{-1.0}$	BARATE	99R	ALEP	1991–1995 LEP runs

$\Gamma(K^*_0(1430)^- \nu_\tau)/\Gamma_{total}$ — Γ_{146}/Γ

NODE=S035C46

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.5	95	BARATE	99R	ALEP	1991–1995 LEP runs

$\Gamma(K^*_2(1430)^- \nu_\tau)/\Gamma_{total}$ — Γ_{147}/Γ

NODE=S035R10

VALUE (%)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.3	95		TSCHIRHART	88	HRS	E^{ee}_{cm}= 29 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.33	95		[1] ACCIARRI	95F	L3	1991–1993 LEP runs
<0.9	95	0	DORFAN	81	MRK2	E^{ee}_{cm}= 4.2–6.7 GeV

[1] ACCIARRI 95F quote B($\tau^- \to K^*(1430)^- \to \pi^- \overline{K}^0 \nu_\tau$) < 0.11%. We divide by B($K^*(1430)^- \to \pi^- \overline{K}^0$) = 0.33 to obtain the limit shown. NODE=S035R10;LINKAGE=A

$\Gamma(a_0(980)^- \geq 0 \text{ neutrals } \nu_\tau)/\Gamma_{total} \times B(a_0(980) \to K^0 K^-)$ $\Gamma_{148}/\Gamma \times B$

NODE=S035B8
NODE=S035B8

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.8	90	GOLDBERG	90	CLEO	E^{ee}_{cm}= 9.4–10.9 GeV

$\Gamma(\eta\pi^-\nu_\tau)/\Gamma_{total}$ Γ_{149}/Γ

NODE=S035R13
NODE=S035R13

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
< 0.99	95		[1] DEL-AMO-SA...	11E	BABR	470 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 6.2	95		BUSKULIC	97C	ALEP	1991–1994 LEP runs
< 1.4	95	0	BARTELT	96	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
< 3.4	95		ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
< 90	95		ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV
<140	90		BEHREND	88	CELL	E^{ee}_{cm}= 14–46.8 GeV
<180	95		BARINGER	87	CLEO	E^{ee}_{cm}= 10.5 GeV
<250	90	0	COFFMAN	87	MRK3	E^{ee}_{cm}= 3.77 GeV
510 ±100±120		65	DERRICK	87	HRS	E^{ee}_{cm}= 29 GeV
<100	95		GAN	87B	MRK2	E^{ee}_{cm}= 29 GeV

[1] DEL-AMO-SANCHEZ 11E also quote $B(\tau^- \to \eta\pi^-\nu_\tau) = (3.4 \pm 3.4 \pm 2.1) \times 10^{-5}$.

NODE=S035R13;LINKAGE=DE

$\Gamma(\eta\pi^-\pi^0\nu_\tau)/\Gamma_{total}$ Γ_{150}/Γ

NODE=S035R32
NODE=S035R32

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
1.39± 0.07 OUR FIT (Produced by HFLAV)						
1.38± 0.09 OUR AVERAGE Error includes scale factor of 1.2.						
1.35± 0.03± 0.07		6.0k	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
1.8 ± 0.4 ± 0.2			BUSKULIC	97C	ALEP	1991–1994 LEP runs
1.7 ± 0.2 ± 0.2		125	ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 11.0	95		ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV
< 21.0	95		BARINGER	87	CLEO	E^{ee}_{cm}= 10.5 GeV
42.0 $^{+7.0}_{-12.0}$ ±16.0			[1] GAN	87	MRK2	E^{ee}_{cm}= 29 GeV

[1] Highly correlated with GAN 87 $\Gamma(\pi^- 3\pi^0 \nu_\tau)/\Gamma$(total) value.

NODE=S035R32;LINKAGE=A

$\Gamma(\eta\pi^-\pi^0\pi^0\nu_\tau)/\Gamma_{total}$ Γ_{151}/Γ

NODE=S035R78
NODE=S035R78

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
1.9 ±0.4 OUR FIT (Produced by HFLAV)						
1.81±0.31 OUR AVERAGE						
2.01±0.34±0.22		381	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We use the following data for averages but not for fits. • • •						
1.5 ±0.5		30	[1] ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.4 ±0.6 ±0.3		15	[2] BERGFELD	97	CLEO	Repl. by ANASTASSOV 01
< 4.3	95		ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
<120	95		ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV

NOTFITTED

[1] Weighted average of BERGFELD 97 and ANASTASSOV 01 value of $(1.5 \pm 0.6 \pm 0.3) \times 10^{-4}$ obtained using η's reconstructed from $\eta \to \pi^+\pi^-\pi^0$ decays.

NODE=S035R78;LINKAGE=AN

[2] BERGFELD 97 reconstruct η's using $\eta \to \gamma\gamma$ decays.

NODE=S035R78;LINKAGE=BF

$\Gamma(\eta K^-\nu_\tau)/\Gamma_{total}$ Γ_{152}/Γ

NODE=S035B20
NODE=S035B20

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
1.55±0.08 OUR FIT (Produced by HFLAV)						
1.54±0.08 OUR AVERAGE						
1.42±0.11±0.07		690	DEL-AMO-SA...	11E	BABR	470 fb^{-1} E^{ee}_{cm}= 10.6 GeV
1.58±0.05±0.09		1.6k	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
2.9 $^{+1.3}_{-1.2}$ ±0.7			BUSKULIC	97C	ALEP	1991–1994 LEP runs
2.6 ±0.5 ±0.5		85	BARTELT	96	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 4.7	95		ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV

$\Gamma(\eta K^*(892)^- \nu_\tau)/\Gamma_{total}$ Γ_{153}/Γ

NODE=S035C26
NODE=S035C26

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.38±0.15 OUR AVERAGE					
1.34±0.12±0.09	245	[1] INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
2.90±0.80±0.42	25	BISHAI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] Not independent of INAMI 09 B($\tau^- \rightarrow \eta K^- \pi^0 \nu_\tau$) and B($\tau^- \rightarrow \eta \overline{K}^0 \pi^- \nu_\tau$) values. NODE=S035C26;LINKAGE=IN

$\Gamma(\eta K^- \pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{154}/Γ

NODE=S035C27
NODE=S035C27

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.48±0.12 OUR FIT (Produced by HFLAV)					
0.48±0.12 OUR AVERAGE					
0.46±0.11±0.04	270	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
1.77±0.56±0.71	36	BISHAI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta K^- \pi^0 (\text{non-}K^*(892)) \nu_\tau)/\Gamma_{total}$ Γ_{155}/Γ

NODE=S035C72
NODE=S035C72

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.5 × 10^{-5}	90	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta \overline{K}^0 \pi^- \nu_\tau)/\Gamma_{total}$ Γ_{156}/Γ

NODE=S035C28
NODE=S035C28

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.94±0.15 OUR FIT (Produced by HFLAV)					
0.93±0.15 OUR AVERAGE					
0.88±0.14±0.06	161	[1] INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
2.20±0.70±0.22	15	[2] BISHAI	99	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] We multiply the INAMI 09 measurement B($\tau^- \rightarrow \eta K^0_S \pi^- \nu_\tau$) = (0.44 ± 0.07 ± 0.03) × 10^{-4} by 2 to obtain the listed value. NODE=S035C28;LINKAGE=IN

[2] We multiply the BISHAI 99 measurement B($\tau^- \rightarrow \eta K^0_S \pi^- \nu_\tau$) = (1.10 ± 0.35 ± 0.11) × 10^{-4} by 2 to obtain the listed value. NODE=S035C28;LINKAGE=B

$\Gamma(\eta \overline{K}^0 \pi^- \pi^0 \nu_\tau)/\Gamma_{total}$ Γ_{157}/Γ

NODE=S035C73
NODE=S035C73

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.0 × 10^{-5}	90	[1] INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] We multiply the INAMI 09 measurement B($\tau^- \rightarrow \eta K^0_S \pi^- \pi^0 \nu_\tau$) < 2.5 × 10^{-5} by 2 to obtain the listed value. NODE=S035C73;LINKAGE=IN

$\Gamma(\eta K^- K^0 \nu_\tau)/\Gamma_{total}$ Γ_{158}/Γ

NODE=S035C74
NODE=S035C74

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<9.0 × 10^{-6}	90	[1] INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV

[1] We multiply the INAMI 09 measurement B($\tau^- \rightarrow \eta K^- K^0_S \nu_\tau$) < 4.5 × 10^{-6} by 2 to obtain the listed value. NODE=S035C74;LINKAGE=IN

$\Gamma(\eta \pi^+ \pi^- \pi^- \geq 0 \text{ neutrals } \nu_\tau)/\Gamma_{total}$ Γ_{159}/Γ

NODE=S035R50
NODE=S035R50

VALUE (%)	CL%	DOCUMENT ID		TECN	COMMENT
<0.3	90	ABACHI	87B	HRS	E^{ee}_{cm}= 29 GeV

$\Gamma(\eta \pi^- \pi^+ \pi^- \nu_\tau (\text{ex.} K^0))/\Gamma_{total}$ Γ_{160}/Γ

NODE=S035B89
NODE=S035B89

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT	
2.20±0.13 OUR FIT (Produced by HFLAV)						
2.23±0.12 OUR AVERAGE						
2.10±0.09±0.13	2.9k	[1] LEES	12X	BABR	$\eta \rightarrow \gamma\gamma$	OCCUR=2
2.37±0.12±0.18	1.4k	[1] LEES	12X	BABR	$\eta \rightarrow \pi^+ \pi^- \pi^0$	OCCUR=3
2.54±0.27±0.25	315	[1] LEES	12X	BABR	$\eta \rightarrow 3\pi^0$	OCCUR=4
• • • We use the following data for averages but not for fits. • • •						
2.3 ±0.5	170	[2] ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1.60±0.05±0.11	1.8 k	AUBERT	08AE	BABR	Repl. by LEES 12X	
3.4 $^{+0.6}_{-0.5}$ ±0.6	89	[3] BERGFELD	97	CLEO	Repl. by ANASTASSOV 01	

[1] LEES 12X uses 468 fb^{-1} of data taken at E^{ee}_{cm} = 10.6 GeV. It gives the average of the three measurements listed here as (2.25 ± 0.07 ± 0.12) × 10^{-4}. NODE=S035B89;LINKAGE=LE

[2] Weighted average of BERGFELD 97 and ANASTASSOV 01 measurements using η's reconstructed from $\eta \rightarrow \pi^+ \pi^- \pi^0$ and $\eta \rightarrow 3\pi^0$ decays. NODE=S035B89;LINKAGE=AN

[3] BERGFELD 97 reconstruct η's using $\eta \rightarrow \gamma\gamma$ and $\eta \rightarrow 3\pi^0$ decays. NODE=S035B89;LINKAGE=BF

$\Gamma(\eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0,f_1(1285)))/\Gamma_{total}$ — Γ_{161}/Γ

NODE=S035C81

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
0.99±0.09±0.13	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] LEES 12X obtain this result by subtracting their B($\tau^- \to f_1(1285)\pi^-\nu_\tau \to \eta\pi^-\pi^+\pi^-\nu_\tau$) measurement from their B($\tau^- \to \eta\pi^-\pi^+\pi^-\nu_\tau$(ex.$K^0$)) measurement.

NODE=S035C81;LINKAGE=LE

$\Gamma(\eta a_1(1260)^-\nu_\tau \to \eta\pi^-\rho^0\nu_\tau)/\Gamma_{total}$ — Γ_{162}/Γ

NODE=S035B90

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^{-4}	90	BERGFELD	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta\eta\pi^-\nu_\tau)/\Gamma_{total}$ — Γ_{163}/Γ

NODE=S035R79

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.4 × 10^{-6}	90	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.1 \times 10^{-4}$	95	ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
$<8.3 \times 10^{-3}$	95	ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV

$\Gamma(\eta\eta\pi^-\pi^0\nu_\tau)/\Gamma_{total}$ — Γ_{164}/Γ

NODE=S035R80

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 2.0	95	ARTUSO	92	CLEO	E^{ee}_{cm} ≈ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<90	95	ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV

$\Gamma(\eta\eta K^-\nu_\tau)/\Gamma_{total}$ — Γ_{165}/Γ

NODE=S035C75

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-6}	90	INAMI	09	BELL	490 fb^{-1} E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta'(958)\pi^-\nu_\tau)/\Gamma_{total}$ — Γ_{166}/Γ

NODE=S035B91

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.0 × 10^{-6}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<7.2 \times 10^{-6}$	90	AUBERT	08AE	BABR	384 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
$<7.4 \times 10^{-5}$	90	BERGFELD	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta'(958)\pi^-\pi^0\nu_\tau)/\Gamma_{total}$ — Γ_{167}/Γ

NODE=S035B92

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-5}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<8.0 \times 10^{-5}$	90	BERGFELD	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\eta'(958)K^-\nu_\tau)/\Gamma_{total}$ — Γ_{168}/Γ

NODE=S035C93

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.4 × 10^{-6}	90	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(\phi\pi^-\nu_\tau)/\Gamma_{total}$ — Γ_{169}/Γ

NODE=S035B61

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
3.42±0.55±0.25		344	AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 20	90		[1] AVERY	97	CLEO	E^{ee}_{cm}= 10.6 GeV
< 35	90		ALBRECHT	95H	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

[1] AVERY 97 limit varies from (1.2–2.0) × 10^{-4} depending on decay model assumptions.

NODE=S035B61;LINKAGE=A

$\Gamma(\phi K^-\nu_\tau)/\Gamma_{total}$ — Γ_{170}/Γ

NODE=S035B82

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT	
4.4 ±1.6 OUR FIT (Produced by HFLAV)							
3.70±0.33 OUR AVERAGE Error includes scale factor of 1.3.							
• • • We use the following data for averages but not for fits. • • •							
3.39±0.20±0.28		274	AUBERT	08	BABR	342 fb^{-1} E^{ee}_{cm} = 10.6 GeV	NOTFITTED
4.05±0.25±0.26		551	INAMI	06	BELL	401 fb^{-1} E^{ee}_{cm}=10.6 GeV	NOTFITTED
• • • We do not use the following data for averages, fits, limits, etc. • • •							
<6.7	90		[1] AVERY	97	CLEO	E^{ee}_{cm}= 10.6 GeV	

[1] AVERY 97 limit varies from (5.4–6.7) × 10^{-5} depending on decay model assumptions.

NODE=S035B82;LINKAGE=A

$\Gamma(f_1(1285)\pi^-\nu_\tau)/\Gamma_{total}$ — Γ_{171}/Γ

NODE=S035B93

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.9 ±0.5 OUR AVERAGE	Error includes scale factor of 1.9.				
4.73±0.28±0.45	3.7k	[1] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
3.60±0.18±0.23	2.5k	[2] LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.19±0.18±1.00	1.3 k	[3] AUBERT	08AE	BABR	Repl. by LEES 12X
3.9 ±0.7 ±0.5	1.4 k	[4] AUBERT,B	05W	BABR	Repl. by LEES 12X
5.8 $^{+1.4}_{-1.3}$ ±1.8	54	[5] BERGFELD	97	CLEO	E^{ee}_{cm}= 10.6 GeV

OCCUR=2

[1] LEES 12X obtain this value by dividing their B($\tau^- \rightarrow f_1(1285)\pi^-\nu_\tau \rightarrow 3\pi^-2\pi^+\nu_\tau$) measurement by the PDG 12 value of B($f_1(1285) \rightarrow 2\pi^+2\pi^-$) = $0.111^{+0.007}_{-0.006}$. NODE=S035B93;LINKAGE=LE

[2] LEES 12X obtain this value by dividing their B($\tau^- \rightarrow f_1(1285)\pi^-\nu_\tau \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau$) measurement by 2/3 of the PDG 12 value of B($f_1(1285) \rightarrow \eta\pi\pi$) = $0.524^{+0.019}_{-0.021}$. NODE=S035B93;LINKAGE=LS

[3] AUBERT 08AE obtain this value by dividing their B($\tau^- \rightarrow f_1(1285)\pi^-\nu_\tau \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau$) measurement by the PDG 06 value of B($f_1(1285) \rightarrow \eta\pi^-\pi^+$) = 0.35 ± 0.11. The quote $(3.19 \pm 0.18 \pm 0.16 \pm 0.99) \times 10^{-4}$ where the final error is due to the uncertainty on B($f_1(1285) \rightarrow \eta\pi^-\pi^+$). We combine the two systematic errors in quadrature. NODE=S035B93;LINKAGE=AB

[4] AUBERT,B 05W use the $f_1(1285) \rightarrow 2\pi^+2\pi^-$ decay mode and the PDG 04 value of B($f_1(1285) \rightarrow 2\pi^+2\pi^-$) = $0.110^{+0.007}_{-0.006}$. NODE=S035B93;LINKAGE=AU

[5] BERGFELD 97 use the $f_1(1285) \rightarrow \eta\pi^+\pi^-$ decay mode. NODE=S035B93;LINKAGE=BE

$\Gamma(f_1(1285)\pi^-\nu_\tau \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau)/\Gamma_{total}$ — Γ_{172}/Γ

NODE=S035C69

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.18±0.07 OUR AVERAGE	Error includes scale factor of 1.3.				
1.26±0.06±0.06	2.5k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV
1.11±0.06±0.05	1.3 k	AUBERT	08AE	BABR	384 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(f_1(1285)\pi^-\nu_\tau \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau)/\Gamma(\eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0))$ — $\Gamma_{172}/\Gamma_{160}$

NODE=S035B94

VALUE	DOCUMENT ID		TECN	COMMENT
0.69±0.01±0.05	[1] AUBERT	08AE	BABR	384 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.55±0.14	BERGFELD	97	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] Not independent of AUBERT 08AE B($\tau^- \rightarrow f_1(1285)\pi^-\nu_\tau \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau$) and B($\tau^- \rightarrow \eta\pi^-\pi^+\pi^-\nu_\tau(\text{ex.}K^0)$) values. NODE=S035B94;LINKAGE=AU

$\Gamma(f_1(1285)\pi^-\nu_\tau \rightarrow 3\pi^-2\pi^+\nu_\tau)/\Gamma_{total}$ — Γ_{173}/Γ

NODE=S035C82

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.52 ±0.04 OUR FIT	(Produced by HFLAV)				
0.520±0.031±0.037	3.7k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm}=10.6 GeV

$\Gamma(\pi(1300)^-\nu_\tau \rightarrow (\rho\pi)^-\nu_\tau \rightarrow (3\pi)^-\nu_\tau)/\Gamma_{total}$ — Γ_{174}/Γ

NODE=S035C42

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-4}	90	ASNER	00	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\pi(1300)^-\nu_\tau \rightarrow ((\pi\pi)_{S-wave}\pi)^-\nu_\tau \rightarrow (3\pi)^-\nu_\tau)/\Gamma_{total}$ — Γ_{175}/Γ

NODE=S035C43

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.9 × 10^{-4}	90	ASNER	00	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(h^-\omega \geq 0\text{ neutrals }\nu_\tau)/\Gamma_{total}$ — Γ_{176}/Γ

NODE=S035R15

$\Gamma_{176}/\Gamma = (\Gamma_{178}+\Gamma_{179}+\Gamma_{180})/\Gamma$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
2.40±0.08 OUR FIT	(Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •					
1.65±0.3 ±0.2	1513	ALBRECHT	88M	ARG	E^{ee}_{cm} ≈ 10 GeV

NOTFITTED

$\Gamma(h^-\omega\nu_\tau)/\Gamma_{total}$ — $\Gamma_{177}/\Gamma = (\Gamma_{178}+\Gamma_{179})/\Gamma$

NODE=S035R23
NODE=S035R23

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.99±0.06 OUR FIT	(Produced by HFLAV)				
1.92±0.07 OUR AVERAGE					
1.91±0.07±0.06	5803	BUSKULIC	97C	ALEP	1991–1994 LEP runs
1.60±0.27±0.41	139	BARINGER	87	CLEO	E^{ee}_{cm} = 10.5 GeV
• • • We use the following data for averages but not for fits. • • •					
1.95±0.07±0.11	2223	[1] BALEST	95C	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV

NOTFITTED

[1] Not independent of BALEST 95C $B(\tau^- \to h^-\omega\nu_\tau)/B(\tau^- \to h^-h^-h^+\pi^0\nu_\tau)$ value.

NODE=S035R23;LINKAGE=A

$[\Gamma(\pi^-\omega\nu_\tau)+\Gamma(K^-\omega\nu_\tau)]/\Gamma(h^-h^-h^+\pi^0\nu_\tau(\text{ex.}K^0))$ — $(\Gamma_{178}+\Gamma_{179})/\Gamma_{74}$

NODE=S035R14

$(\Gamma_{178}+\Gamma_{179})/\Gamma_{74} = (\Gamma_{178}+\Gamma_{179})/(\Gamma_{78}+\Gamma_{103}+\Gamma_{107}+0.2302\Gamma_{152}+0.892\Gamma_{178}+0.892\Gamma_{179}+0.0153\Gamma_{180})$

NODE=S035R14

NODE=S035R14

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
43.5±1.4 OUR FIT	(Produced by HFLAV)				
45.3±1.9 OUR AVERAGE					
43.1±3.3	2350	[1] BUSKULIC	96	ALEP	LEP 1991–1993 data
46.4±1.6±1.7	2223	[2] BALEST	95C	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
37 ±5 ±2	458	[3] ALBRECHT	91D	ARG	E^{ee}_{cm} = 9.4–10.6 GeV

[1] BUSKULIC 96 quote the fraction of $\tau \to h^-h^-h^+\pi^0\nu_\tau$ (ex. K^0) decays which originate in a $h^-\omega$ final state = 0.383 ± 0.029. We divide this by the $\omega(782) \to \pi^+\pi^-\pi^0$ branching fraction (0.888).

NODE=S035R14;LINKAGE=D

[2] BALEST 95C quote the fraction of $\tau^- \to h^-h^-h^+\pi^0\nu_\tau$ (ex. K^0) decays which originate in a $h^-\omega$ final state equals 0.412 ± 0.014 ± 0.015. We divide this by the $\omega(782) \to \pi^+\pi^-\pi^0$ branching fraction (0.888).

NODE=S035R14;LINKAGE=B

[3] ALBRECHT 91D quote the fraction of $\tau^- \to h^-h^-h^+\pi^0\nu_\tau$ decays which originate in a $\pi^-\omega$ final state equals 0.33 ± 0.04 ± 0.02. We divide this by the $\omega(782) \to \pi^+\pi^-\pi^0$ branching fraction (0.888).

NODE=S035R14;LINKAGE=C

$\Gamma(\pi^-\omega\nu_\tau)/\Gamma_{total}$ — Γ_{178}/Γ

NODE=S035R00
NODE=S035R00

VALUE (%)	DOCUMENT ID
1.95±0.06 OUR FIT	(Produced by HFLAV)

$\Gamma(K^-\omega\nu_\tau)/\Gamma_{total}$ — Γ_{179}/Γ

NODE=S035C61
NODE=S035C61

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.1±0.9 OUR FIT	(Produced by HFLAV)				
4.1±0.6±0.7	500	ARMS	05	CLE3	7.6 fb^{-1}, E^{ee}_{cm} = 10.6 GeV

$\Gamma(h^-\omega\pi^0\nu_\tau)/\Gamma_{total}$ — Γ_{180}/Γ

NODE=S035B58
NODE=S035B58

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.41±0.04 OUR FIT	(Produced by HFLAV)				
0.43±0.06±0.05	7283	BUSKULIC	97C	ALEP	1991–1994 LEP runs

$\Gamma(h^-\omega\pi^0\nu_\tau)/\Gamma(h^-h^-h^+ \geq 0\text{ neutrals} \geq 0K^0_L\nu_\tau)$ — Γ_{180}/Γ_{62}

NODE=S035B26

$\Gamma_{180}/\Gamma_{62} = \Gamma_{180}/(0.34598\Gamma_{36}+0.34598\Gamma_{38}+0.34598\Gamma_{41}+0.34598\Gamma_{43}+0.4247\Gamma_{48}+0.6920\Gamma_{49}+0.8494\Gamma_{52}+0.6920\Gamma_{56}+0.6534\Gamma_{61}+\Gamma_{70}+\Gamma_{78}+\Gamma_{85}+\Gamma_{89}+\Gamma_{97}+\Gamma_{103}+\Gamma_{106}+\Gamma_{107}+0.2805\Gamma_{150}+0.2302\Gamma_{151}+0.2805\Gamma_{152}+0.2805\Gamma_{154}+0.3759\Gamma_{156}+0.3256\Gamma_{160}+0.7259\Gamma_{170}+0.9078\Gamma_{178}+0.9078\Gamma_{179}+0.9078\Gamma_{180}+0.892\Gamma_{182})$

NODE=S035B26

NODE=S035B26

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
(2.69 ±0.28) × 10^{-2} OUR FIT	(Produced by HFLAV)				
• • • We use the following data for averages but not for fits. • • •					
0.028±0.003±0.003	430	[1] BORTOLETTO	93	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV

NOTFITTED

[1] Not independent of BORTOLETTO 93 $\Gamma(\tau^- \to h^-\omega\pi^0\nu_\tau)/\Gamma(\tau^- \to h^-h^-h^+2\pi^0\nu_\tau(\text{ex.}K^0))$ value.

NODE=S035B26;LINKAGE=A

$\Gamma(h^-\omega\pi^0\nu_\tau)/\Gamma(h^-h^-h^+2\pi^0\nu_\tau(\text{ex.}K^0))$ — Γ_{180}/Γ_{84}

NODE=S035B27

$\Gamma_{180}/\Gamma_{84} = \Gamma_{180}/(\Gamma_{85}+0.2302\Gamma_{150}+0.2302\Gamma_{154}+0.892\Gamma_{180})$

NODE=S035B27

NODE=S035B27

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
82±8 OUR FIT	(Produced by HFLAV)		
81±6±6	BORTOLETTO93	CLEO	$E^{ee}_{cm} \approx$ 10.6 GeV

$\Gamma(h^- \omega 2\pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{181}/Γ

NODE=S035B96

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.4 ±0.4 ±0.3	53	ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.89^{+0.74}_{-0.67}\pm0.40$	19	ANDERSON	97	CLEO	Repl. by ANASTASSOV 01

$\Gamma(\pi^- \omega 2\pi^0 \nu_\tau)/\Gamma_{total}$ — Γ_{182}/Γ

NODE=S035C84

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.72±0.16 OUR FIT (Produced by HFLAV)					
0.73±0.12±0.12	1.1k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(h^- 2\omega \nu_\tau)/\Gamma_{total}$ — Γ_{183}/Γ

NODE=S035C66

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.4 × 10^{-7}	90	AUBERT,B	06	BABR	232 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(2h^- h^+ \omega \nu_\tau)/\Gamma_{total}$ — Γ_{184}/Γ

NODE=S035C53

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.2±0.2±0.1	110	ANASTASSOV	01	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(2\pi^- \pi^+ \omega \nu_\tau (\text{ex.}K^0))/\Gamma_{total}$ — Γ_{185}/Γ

NODE=S035C83

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.84±0.06 OUR FIT (Produced by HFLAV)					
0.84±0.04±0.06	2.4k	LEES	12X	BABR	468 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(e^- \gamma)/\Gamma_{total}$ — Γ_{186}/Γ

NODE=S035R54

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.3 × 10^{-8}	90	AUBERT	10B	BABR	516 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.6 \times 10^{-8}$	90	UNO	21	BELL	988 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<1.2 \times 10^{-7}$	90	HAYASAKA	08	BELL	535 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<1.1 \times 10^{-7}$	90	AUBERT	06C	BABR	232 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<3.9 \times 10^{-7}$	90	HAYASAKA	05	BELL	86.7 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<2.7 \times 10^{-6}$	90	EDWARDS	97	CLEO	
$<1.1 \times 10^{-4}$	90	ABREU	95U	DLPH	1990–1993 LEP runs
$<1.2 \times 10^{-4}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<2.0 \times 10^{-4}$	90	KEH	88	CBAL	E^{ee}_{cm}= 10 GeV
$<6.4 \times 10^{-4}$	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(e^- \gamma\gamma)/\Gamma_{total}$ — Γ_{187}/Γ

NODE=S035P06

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.5 × 10^{-4}	90	[1] BRYMAN	21	RVUE	516 fb^{-1}, E^{ee}_{cm} = 10.6 GeV

[1] BRYMAN 21 reinterprets the upper limit result on B($\tau^- \rightarrow e^- \gamma$) and B($\tau^- \rightarrow \mu^- \gamma$) by AUBERT 10B, estimating with a simulation the efficiency for this decay mode to be detected as the corresponding AUBERT 10B decay mode.

NODE=S035P06;LINKAGE=A

$\Gamma(\mu^- \gamma)/\Gamma_{total}$ — Γ_{188}/Γ

NODE=S035R53

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 4.2 × 10^{-8}	90	UNO	21	BELL	988 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 4.4 \times 10^{-8}$	90	AUBERT	10B	BABR	516 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$< 4.5 \times 10^{-8}$	90	HAYASAKA	08	BELL	535 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$< 6.8 \times 10^{-8}$	90	AUBERT,B	05A	BABR	232 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$< 3.1 \times 10^{-7}$	90	ABE	04B	BELL	86.3 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$< 1.1 \times 10^{-6}$	90	AHMED	00	CLEO	E^{ee}_{cm}= 10.6 GeV
$< 3.0 \times 10^{-6}$	90	EDWARDS	97	CLEO	
$< 6.2 \times 10^{-5}$	90	ABREU	95U	DLPH	1990–1993 LEP runs
$< 0.42 \times 10^{-5}$	90	BEAN	93	CLEO	E^{ee}_{cm}= 10.6 GeV
$< 3.4 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<55 \times 10^{-5}$	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(\mu^-\gamma\gamma)/\Gamma_{total}$ Γ_{189}/Γ

NODE=S035P07

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.8 × 10^{-4}	90	[1] BRYMAN	21	RVUE	516 fb^{-1}, E^{ee}_{cm} = 10.6 GeV

[1] BRYMAN 21 reinterprets the upper limit result on B($\tau^- \to e^-\gamma$) and B($\tau^- \to \mu^-\gamma$) by AUBERT 10B, estimating with a simulation the efficiency for this decay mode to be detected as the corresponding AUBERT 10B decay mode.

NODE=S035P07;LINKAGE=A

$\Gamma(e^-\pi^0)/\Gamma_{total}$ Γ_{190}/Γ

NODE=S035R60

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 8.0 × 10^{-8}	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.3 × 10^{-7}	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
< 1.9 × 10^{-7}	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
< 3.7 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV
< 17 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
< 14 × 10^{-5}	90	KEH	88	CBAL	E^{ee}_{cm}= 10 GeV
<210 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(\mu^-\pi^0)/\Gamma_{total}$ Γ_{191}/Γ

NODE=S035R59

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 1.1 × 10^{-7}	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.2 × 10^{-7}	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
< 4.1 × 10^{-7}	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
< 4.0 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV
< 4.4 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<82 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(e^-K^0_S)/\Gamma_{total}$ Γ_{192}/Γ

NODE=S035R62

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.6 × 10^{-8}	90	MIYAZAKI	10A	BELL	671 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.3 × 10^{-8}	90	AUBERT	09D	BABR	469 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<5.6 × 10^{-8}	90	MIYAZAKI	06A	BELL	281 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<9.1 × 10^{-7}	90	CHEN	02C	CLEO	E^{ee}_{cm}= 10.6 GeV
<1.3 × 10^{-3}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(\mu^-K^0_S)/\Gamma_{total}$ Γ_{193}/Γ

NODE=S035R61

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.3 × 10^{-8}	90	MIYAZAKI	10A	BELL	671 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.0 × 10^{-8}	90	AUBERT	09D	BABR	469 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<4.9 × 10^{-8}	90	MIYAZAKI	06A	BELL	281 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<9.5 × 10^{-7}	90	CHEN	02C	CLEO	E^{ee}_{cm}= 10.6 GeV
<1.0 × 10^{-3}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

$\Gamma(e^-\eta)/\Gamma_{total}$ Γ_{194}/Γ

NODE=S035R77

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 9.2 × 10^{-8}	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.6 × 10^{-7}	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
< 2.4 × 10^{-7}	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
< 8.2 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV
< 6.3 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<24 × 10^{-5}	90	KEH	88	CBAL	E^{ee}_{cm}= 10 GeV

$\Gamma(\mu^- \eta)/\Gamma_{total}$ Γ_{195}/Γ

NODE=S035B14

Test of lepton family number conservation.

NODE=S035B14
NODE=S035B14

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.5 × 10^{-8}	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.5 × 10^{-7}	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
<1.5 × 10^{-7}	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<3.4 × 10^{-7}	90	ENARI	04	BELL	84.3 fb^{-1}, E^{ee}_{cm}=10.6 GeV
<9.6 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV
<7.3 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

$\Gamma(e^- \rho^0)/\Gamma_{total}$ Γ_{196}/Γ

NODE=S035R64

Test of lepton family number conservation.

NODE=S035R64
NODE=S035R64

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 2.2 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.8 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 4.6 × 10^{-8}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 6.3 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 6.5 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 2.0 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
< 4.2 × 10^{-6}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98
< 1.9 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<37 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035R64;LINKAGE=A

[2] BARTELT 94 assume phase space decays.

NODE=S035R64;LINKAGE=B9

$\Gamma(\mu^- \rho^0)/\Gamma_{total}$ Γ_{197}/Γ

NODE=S035R63

Test of lepton family number conservation.

NODE=S035R63
NODE=S035R63

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 1.7 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.2 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 2.6 × 10^{-8}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 6.8 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 2.0 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 6.3 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
< 5.7 × 10^{-6}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98
< 2.9 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<44 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035R63;LINKAGE=A

[2] BARTELT 94 assume phase space decays.

NODE=S035R63;LINKAGE=B9

$\Gamma(e^- \omega)/\Gamma_{total}$ Γ_{198}/Γ

NODE=S035C04
NODE=S035C04

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.4 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.8 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.1 × 10^{-7}	90	AUBERT	08K	BABR	384 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.8 × 10^{-7}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035C04;LINKAGE=A

$\Gamma(\mu^- \omega)/\Gamma_{total}$ Γ_{199}/Γ

NODE=S035C05
NODE=S035C05

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.7 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.0 × 10^{-7}	90	AUBERT	08K	BABR	384 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<8.9 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035C05;LINKAGE=A

NODE=S035R73

$\Gamma(e^- K^*(892)^0)/\Gamma_{total}$ Γ_{200}/Γ

NODE=S035R73

Test of lepton family number conservation.

NODE=S035R73

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.9 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.2 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<5.9 × 10^{-8}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.8 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<3.0 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<5.1 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<6.3 × 10^{-6}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98
<3.8 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

[1] Supersedes MIYAZAKI 11. NODE=S035R73;LINKAGE=A

[2] BARTELT 94 assume phase space decays. NODE=S035R73;LINKAGE=B9

NODE=S035R74

$\Gamma(\mu^- K^*(892)^0)/\Gamma_{total}$ Γ_{201}/Γ

NODE=S035R74

Test of lepton family number conservation.

NODE=S035R74

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.9 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<7.2 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.7 × 10^{-7}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<5.9 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<3.9 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.5 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<9.4 × 10^{-6}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98
<4.5 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

[1] Supersedes MIYAZAKI 11. NODE=S035R74;LINKAGE=A

[2] BARTELT 94 assume phase space decays. NODE=S035R74;LINKAGE=B9

NODE=S035B47

$\Gamma(e^- \overline{K}^*(892)^0)/\Gamma_{total}$ Γ_{202}/Γ

NODE=S035B47

Test of lepton family number conservation.

NODE=S035B47

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.7 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.4 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<4.6 × 10^{-8}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.7 × 10^{-8}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<4.0 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.4 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<1.1 × 10^{-5}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98

[1] Supersedes MIYAZAKI 11. NODE=S035B47;LINKAGE=A

[2] BARTELT 94 assume phase space decays. NODE=S035B47;LINKAGE=B9

NODE=S035B48

$\Gamma(\mu^- \overline{K}^*(892)^0)/\Gamma_{total}$ Γ_{203}/Γ

NODE=S035B48

Test of lepton family number conservation.

NODE=S035B48

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.3 × 10^{-8}	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<7.0 × 10^{-8}	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.3 × 10^{-8}	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.0 × 10^{-7}	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<4.0 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7.5 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<8.7 × 10^{-6}	90	[2] BARTELT	94	CLEO	Repl. by BLISS 98

[1] Supersedes MIYAZAKI 11. NODE=S035B48;LINKAGE=A

[2] BARTELT 94 assume phase space decays. NODE=S035B48;LINKAGE=B9

$\Gamma(e^-\eta'(958))/\Gamma_{total}$ — Γ_{204}/Γ

NODE=S035C58
NODE=S035C58

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.6\times10^{-7}$	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.4\times10^{-7}$	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
$<10.\times10^{-7}$	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^-\eta'(958))/\Gamma_{total}$ — Γ_{205}/Γ

NODE=S035C59
NODE=S035C59

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.3\times10^{-7}$	90	MIYAZAKI	07	BELL	401 fb^{-1}, E^{ee}_{cm}=10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.4\times10^{-7}$	90	AUBERT	07I	BABR	339 fb^{-1}, E^{ee}_{cm}=10.6 GeV
$<4.7\times10^{-7}$	90	ENARI	05	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^-f_0(980)\to e^-\pi^+\pi^-)/\Gamma_{total}$ — Γ_{206}/Γ

NODE=S035C70
NODE=S035C70

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.2\times10^{-8}$	90	MIYAZAKI	09	BELL	671 fb^{-1} E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^-f_0(980)\to\mu^-\pi^+\pi^-)/\Gamma_{total}$ — Γ_{207}/Γ

NODE=S035C71
NODE=S035C71

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.4\times10^{-8}$	90	MIYAZAKI	09	BELL	671 fb^{-1} E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^-\phi)/\Gamma_{total}$ — Γ_{208}/Γ

NODE=S035C16

Test of lepton family number conservation.

NODE=S035C16
NODE=S035C16

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.0\times10^{-8}$	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<3.1\times10^{-8}$	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<3.1\times10^{-8}$	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<7.3\times10^{-8}$	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<7.3\times10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<6.9\times10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035C16;LINKAGE=A

$\Gamma(\mu^-\phi)/\Gamma_{total}$ — Γ_{209}/Γ

NODE=S035C17

Test of lepton family number conservation.

NODE=S035C17
NODE=S035C17

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.3\times10^{-8}$	90	[1] TSUZUKI	23	BELL	980 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<8.4\times10^{-8}$	90	MIYAZAKI	11	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.9\times10^{-7}$	90	AUBERT	09W	BABR	451 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.3\times10^{-7}$	90	NISHIO	08	BELL	543 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<7.7\times10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<7.0\times10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV

[1] Supersedes MIYAZAKI 11.

NODE=S035C17;LINKAGE=A

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

NODE=S035R58

Test of lepton family number conservation.

NODE=S035R58
NODE=S035R58

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.7\times10^{-8}$	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.9\times10^{-8}$	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$<3.6\times10^{-8}$	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$<4.3\times10^{-8}$	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$<2.0\times10^{-7}$	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$<3.5\times10^{-7}$	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$<2.9\times10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
$<0.33\times10^{-5}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<1.3\times10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<2.7\times10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9
$<40\times10^{-5}$	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] BARTELT 94 assume phase space decays.

NODE=S035R58;LINKAGE=B9

$\Gamma(e^- \mu^+ \mu^-)/\Gamma_{total}$ Γ_{211}/Γ

NODE=S035R56

Test of lepton family number conservation.

NODE=S035R56
NODE=S035R56

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 2.7 × 10^{-8}	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 3.2 × 10^{-8}	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 4.1 × 10^{-8}	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 3.7 × 10^{-8}	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 3.3 × 10^{-7}	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 2.0 × 10^{-7}	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 1.8 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
< 0.36 × 10^{-5}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
< 1.9 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
< 2.7 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9
<33 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] BARTELT 94 assume phase space decays.

NODE=S035R56;LINKAGE=B9

$\Gamma(e^+ \mu^- \mu^-)/\Gamma_{total}$ Γ_{212}/Γ

NODE=S035R75

Test of lepton family number conservation.

NODE=S035R75
NODE=S035R75

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.7 × 10^{-8}	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.6 × 10^{-8}	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<2.3 × 10^{-8}	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<5.6 × 10^{-8}	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<1.3 × 10^{-7}	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<2.0 × 10^{-7}	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<1.5 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<0.35 × 10^{-5}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<1.8 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<1.6 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R75;LINKAGE=B9

$\Gamma(\mu^- e^+ e^-)/\Gamma_{total}$ Γ_{213}/Γ

NODE=S035R57

Test of lepton family number conservation.

NODE=S035R57
NODE=S035R57

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 1.8 × 10^{-8}	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 2.2 × 10^{-8}	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 2.7 × 10^{-8}	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 8.0 × 10^{-8}	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 2.7 × 10^{-7}	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 1.9 × 10^{-7}	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV
< 1.7 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
< 0.34 × 10^{-5}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
< 1.4 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
< 2.7 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9
<44 × 10^{-5}	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] BARTELT 94 assume phase space decays.

NODE=S035R57;LINKAGE=B9

$\Gamma(\mu^+ e^- e^-)/\Gamma_{total}$ Γ_{214}/Γ

NODE=S035R76

Test of lepton family number conservation.

NODE=S035R76
NODE=S035R76

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.5 × 10^{-8}	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.8 × 10^{-8}	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<2.0 × 10^{-8}	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<5.8 × 10^{-8}	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<1.1 × 10^{-7}	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
<2.0 × 10^{-7}	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV

$<1.5 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
$<0.34 \times 10^{-5}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<1.4 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<1.6 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R76;LINKAGE=B9

$\Gamma(\mu^- \mu^+ \mu^-)/\Gamma_{total}$ Γ_{215}/Γ

NODE=S035R55

Test of lepton family number conservation.

NODE=S035R55
NODE=S035R55

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$< 1.9 \times 10^{-8}$	90	ADACHI	24R	BELL	424 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 2.9 \times 10^{-8}$	90	[1] HAYRAPETY...	24J	CMS	131 fb^{-1}, pp at 13 TeV
$< 8.0 \times 10^{-8}$	90	[2] SIRUNYAN	21D	CMS	33.2 fb^{-1}, pp at 13 TeV
$< 3.8 \times 10^{-7}$	90	AAD	16BA	ATLS	20.3 fb^{-1}, pp at 8 TeV
$< 4.6 \times 10^{-8}$	90	AAIJ	15AI	LHCB	3.0 fb^{-1}, pp at 7, 8 TeV
$< 8.0 \times 10^{-8}$	90	[3] AAIJ	13AH	LHCB	1.0 fb^{-1}, pp at 7 TeV
$< 2.1 \times 10^{-8}$	90	HAYASAKA	10	BELL	782 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 3.3 \times 10^{-8}$	90	LEES	10A	BABR	468 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 3.2 \times 10^{-8}$	90	MIYAZAKI	08	BELL	535 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 5.3 \times 10^{-8}$	90	AUBERT	07BK	BABR	376 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 1.9 \times 10^{-7}$	90	AUBERT	04J	BABR	91.5 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 2.0 \times 10^{-7}$	90	YUSA	04	BELL	87.1 fb^{-1} E^{ee}_{cm}= 10.6 GeV
$< 1.9 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
$< 0.43 \times 10^{-5}$	90	[4] BARTELT	94	CLEO	Repl. by BLISS 98
$< 1.9 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$< 1.7 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9
$<49 \times 10^{-5}$	90	HAYES	82	MRK2	E^{ee}_{cm}= 3.8–6.8 GeV

[1] HAYRAPETYAN 24J use 33.2 fb^{-1} of data taken in 2016 and used for the same search in SIRUNYAN 21D and 97.7 fb^{-1} of data taken in 2017-2018.

NODE=S035R55;LINKAGE=B

[2] Superseded by HAYRAPETYAN 24J.

NODE=S035R55;LINKAGE=C

[3] Repl. by AAIJ 15AI.

NODE=S035R55;LINKAGE=A

[4] BARTELT 94 assume phase space decays.

NODE=S035R55;LINKAGE=B9

$\Gamma(e^- \pi^+ \pi^-)/\Gamma_{total}$ Γ_{216}/Γ

NODE=S035R65

Test of lepton family number conservation.

NODE=S035R65
NODE=S035R65

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.3 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.4 \times 10^{-8}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<7.3 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.2 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
$<2.2 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
$<4.4 \times 10^{-6}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<2.7 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<6.0 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R65;LINKAGE=B9

$\Gamma(e^+ \pi^- \pi^-)/\Gamma_{total}$ Γ_{217}/Γ

NODE=S035R66

Test of lepton number conservation.

NODE=S035R66
NODE=S035R66

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.0 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<8.8 \times 10^{-8}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<2.0 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<2.7 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
$<1.9 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
$<4.4 \times 10^{-6}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<1.8 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
$<1.7 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R66;LINKAGE=B9

$\Gamma(\mu^- \pi^+ \pi^-)/\Gamma_{total}$ — Γ_{218}/Γ

NODE=S035R67

Test of lepton family number conservation.

NODE=S035R67
NODE=S035R67

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.1 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.3 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<4.8 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<2.9 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<8.2 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<7.4 × 10^{-6}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<3.6 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<3.9 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R67;LINKAGE=B9

$\Gamma(\mu^+ \pi^- \pi^-)/\Gamma_{total}$ — Γ_{219}/Γ

NODE=S035R68

Test of lepton number conservation.

NODE=S035R68
NODE=S035R68

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.9 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.7 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<3.4 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<7 × 10^{-8}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<3.4 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<6.9 × 10^{-6}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<6.3 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<3.9 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R68;LINKAGE=B9

$\Gamma(e^- \pi^+ K^-)/\Gamma_{total}$ — Γ_{220}/Γ

NODE=S035R69

Test of lepton family number conservation.

NODE=S035R69
NODE=S035R69

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.7 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<5.8 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<7.2 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<3.2 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<6.4 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<7.7 × 10^{-6}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<2.9 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<5.8 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R69;LINKAGE=B9

$\Gamma(e^- \pi^- K^+)/\Gamma_{total}$ — Γ_{221}/Γ

NODE=S035R86

Test of lepton family number conservation.

NODE=S035R86
NODE=S035R86

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.1 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<5.2 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<1.6 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<1.7 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<3.8 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<4.6 × 10^{-6}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<5.8 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R86;LINKAGE=B9

$\Gamma(e^+ \pi^- K^-)/\Gamma_{total}$ — Γ_{222}/Γ

NODE=S035R70

Test of lepton number conservation.

NODE=S035R70
NODE=S035R70

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.2 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV

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

$<6.7 \times 10^{-8}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<1.9 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.8 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<2.1 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm} = 10.6 GeV
$<4.5 \times 10^{-6}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<2.0 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm} = 10 GeV
$<4.9 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm} = 10.4–10.9

[1] BARTELT 94 assume phase space decays. NODE=S035R70;LINKAGE=B9

$\Gamma(e^- K^0_S K^0_S)/\Gamma_{total}$ Γ_{223}/Γ

NODE=S035C55
NODE=S035C55
NODE=S035C55

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<7.1 \times 10^{-8}$	90	MIYAZAKI	10A	BELL	671 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.2 \times 10^{-6}$	90	CHEN	02C	CLEO	E^{ee}_{cm} = 10.6 GeV

$\Gamma(e^- K^+ K^-)/\Gamma_{total}$ Γ_{224}/Γ

NODE=S035C12
NODE=S035C12
NODE=S035C12

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.4 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.4 \times 10^{-8}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<3.0 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.4 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<6.0 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm} = 10.6 GeV

$\Gamma(e^+ K^- K^-)/\Gamma_{total}$ Γ_{225}/Γ

NODE=S035C13
NODE=S035C13
NODE=S035C13

Test of lepton number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.3 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<6.0 \times 10^{-8}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<3.1 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<1.5 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<3.8 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm} = 10.6 GeV

$\Gamma(\mu^- \pi^+ K^-)/\Gamma_{total}$ Γ_{226}/Γ

NODE=S035R71
NODE=S035R71
NODE=S035R71

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$< 8.6 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 1.6 \times 10^{-7}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$< 2.7 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$< 2.6 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$< 7.5 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm} = 10.6 GeV
$< 8.7 \times 10^{-6}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<11 \times 10^{-5}$	90	ALBRECHT	92K	ARG	E^{ee}_{cm} = 10 GeV
$< 7.7 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm} = 10.4–10.9

[1] BARTELT 94 assume phase space decays. NODE=S035R71;LINKAGE=B9

$\Gamma(\mu^- \pi^- K^+)/\Gamma_{total}$ Γ_{227}/Γ

NODE=S035R87
NODE=S035R87
NODE=S035R87

Test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<4.5 \times 10^{-8}$	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.0 \times 10^{-7}$	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
$<7.3 \times 10^{-7}$	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
$<3.2 \times 10^{-7}$	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm} = 10.6 GeV
$<7.4 \times 10^{-6}$	90	BLISS	98	CLEO	E^{ee}_{cm} = 10.6 GeV
$<1.5 \times 10^{-5}$	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
$<7.7 \times 10^{-5}$	90	BOWCOCK	90	CLEO	E^{ee}_{cm} = 10.4–10.9

[1] BARTELT 94 assume phase space decays. NODE=S035R87;LINKAGE=B9

$\Gamma(\mu^+ \pi^- K^-)/\Gamma_{total}$ Γ_{228}/Γ

NODE=S035R72

Test of lepton number conservation.

NODE=S035R72
NODE=S035R72

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.8 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<9.4 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<2.9 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<2.2 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<7.0 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV
<2.0 × 10^{-5}	90	[1] BARTELT	94	CLEO	Repl. by BLISS 98
<5.8 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV
<4.0 × 10^{-5}	90	BOWCOCK	90	CLEO	E^{ee}_{cm}= 10.4–10.9

[1] BARTELT 94 assume phase space decays.

NODE=S035R72;LINKAGE=B9

$\Gamma(\mu^- K^0_S K^0_S)/\Gamma_{total}$ Γ_{229}/Γ

NODE=S035C56
NODE=S035C56

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.0 × 10^{-8}	90	MIYAZAKI	10A	BELL	671 fb^{-1} E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.4 × 10^{-6}	90	CHEN	02C	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^- K^+ K^-)/\Gamma_{total}$ Γ_{230}/Γ

NODE=S035C14

Test of lepton family number conservation.

NODE=S035C14
NODE=S035C14

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 4.4 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 6.8 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
< 8.0 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
< 2.5 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<15 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^+ K^- K^-)/\Gamma_{total}$ Γ_{231}/Γ

NODE=S035C15

Test of lepton number conservation.

NODE=S035C15
NODE=S035C15

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.7 × 10^{-8}	90	MIYAZAKI	13	BELL	854 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<9.6 × 10^{-8}	90	MIYAZAKI	10	BELL	Repl. by MIYAZAKI 13
<4.4 × 10^{-7}	90	YUSA	06	BELL	158 fb^{-1} E^{ee}_{cm} = 10.6 GeV
<4.8 × 10^{-7}	90	AUBERT,BE	05D	BABR	221 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
<6.0 × 10^{-6}	90	BLISS	98	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^- \pi^0 \pi^0)/\Gamma_{total}$ Γ_{232}/Γ

NODE=S035B83

Test of lepton family number conservation.

NODE=S035B83
NODE=S035B83

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.5 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^- \pi^0 \pi^0)/\Gamma_{total}$ Γ_{233}/Γ

NODE=S035B84

Test of lepton family number conservation.

NODE=S035B84
NODE=S035B84

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<14 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^- \eta\eta)/\Gamma_{total}$ Γ_{234}/Γ

NODE=S035B85

Test of lepton family number conservation.

NODE=S035B85
NODE=S035B85

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<35 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^- \eta\eta)/\Gamma_{total}$ Γ_{235}/Γ

NODE=S035B86

Test of lepton family number conservation.

NODE=S035B86
NODE=S035B86

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<60 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^- \pi^0 \eta)/\Gamma_{total}$ Γ_{236}/Γ

NODE=S035B87

Test of lepton family number conservation.

NODE=S035B87
NODE=S035B87

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<24 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\mu^- \pi^0 \eta)/\Gamma_{total}$ Γ_{237}/Γ

NODE=S035B88

Test of lepton family number conservation.

NODE=S035B88
NODE=S035B88

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<22 × 10^{-6}	90	BONVICINI	97	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(p e^- e^-)/\Gamma_{total}$ Γ_{238}/Γ

NODE=S035P02
NODE=S035P02

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(\overline{p} e^+ e^-)/\Gamma_{total}$ Γ_{239}/Γ

NODE=S035P03
NODE=S035P03

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.0 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(\overline{p} e^+ \mu^-)/\Gamma_{total}$ Γ_{240}/Γ

NODE=S035P04
NODE=S035P04

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.0 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(\overline{p} e^- \mu^+)/\Gamma_{total}$ Γ_{241}/Γ

NODE=S035P05
NODE=S035P05

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV

$\Gamma(p \mu^- \mu^-)/\Gamma_{total}$ Γ_{242}/Γ

NODE=S035D02
NODE=S035D02

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.0 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4.4 × 10^{-7}	90	AAIJ	13AH	LHCB	1.0 fb^{-1}, pp at 7 TeV

$\Gamma(\overline{p} \mu^+ \mu^-)/\Gamma_{total}$ Γ_{243}/Γ

NODE=S035D03
NODE=S035D03

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.8 × 10^{-8}	90	SAHOO	20	BELL	921 fb^{-1} E^{ee}_{cm} = 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.3 × 10^{-7}	90	AAIJ	13AH	LHCB	1.0 fb^{-1}, pp at 7 TeV

$\Gamma(\overline{p} \gamma)/\Gamma_{total}$ Γ_{244}/Γ

NODE=S035B15

Test of lepton number and baryon number conservation.

NODE=S035B15
NODE=S035B15

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 3.5 × 10^{-6}	90	GODANG	99	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<29 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

$\Gamma(\overline{p} \pi^0)/\Gamma_{total}$ Γ_{245}/Γ

NODE=S035B16

Test of lepton number and baryon number conservation.

NODE=S035B16
NODE=S035B16

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<15 × 10^{-6}	90	GODANG	99	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<66 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

$\Gamma(\overline{p} 2\pi^0)/\Gamma_{total}$ Γ_{246}/Γ

NODE=S035C29

Test of lepton number and baryon number conservation.

NODE=S035C29
NODE=S035C29

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<33 × 10^{-6}	90	GODANG	99	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\overline{p} \eta)/\Gamma_{total}$ Γ_{247}/Γ

NODE=S035B17

Test of lepton number and baryon number conservation.

NODE=S035B17
NODE=S035B17

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 8.9 × 10^{-6}	90	GODANG	99	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<130 × 10^{-5}	90	ALBRECHT	92K	ARG	E^{ee}_{cm}= 10 GeV

$\Gamma(\overline{p}\pi^0\eta)/\Gamma_{total}$ Γ_{248}/Γ

NODE=S035C30

Test of lepton number and baryon number conservation.

NODE=S035C30
NODE=S035C30

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<27 × 10^{-6}	90	GODANG	99	CLEO	E^{ee}_{cm}= 10.6 GeV

$\Gamma(\Lambda\pi^-)/\Gamma_{total}$ Γ_{249}/Γ

NODE=S035C64

Test of lepton number and baryon number conservation.

NODE=S035C64
NODE=S035C64

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.7 × 10^{-8}	90	ADACHI	24Q	BELL	364 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<7.2 × 10^{-8}	90	MIYAZAKI	06	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(\overline{\Lambda}\pi^-)/\Gamma_{total}$ Γ_{250}/Γ

NODE=S035C65

Test of lepton number and baryon number conservation.

NODE=S035C65
NODE=S035C65

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 4.3 × 10^{-8}	90	ADACHI	24Q	BELL	364 fb^{-1}, E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<14 × 10^{-8}	90	MIYAZAKI	06	BELL	154 fb^{-1}, E^{ee}_{cm}= 10.6 GeV

$\Gamma(e^-$ light boson$)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ Γ_{251}/Γ_5

NODE=S035B11

Test of lepton family number conservation.

NODE=S035B11
NODE=S035B11

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.3 × 10^{-3}	95	[1] ADACHI	23A	BELL	E^{ee}_{cm}= 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.008	95	[2] BRYMAN	21	RVUE	
<0.015	95	[3] ALBRECHT	95G	ARG	E^{ee}_{cm} = 9.4–10.6 GeV
<0.018	95	[4] ALBRECHT	90E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
<0.040	95	[5] BALTRUSAIT...	85	MRK3	E^{ee}_{cm}= 3.77 GeV

[1] ADACHI 23A limit holds for bosons with mass = 0.0 GeV. The limit rises to 9.7 × 10^{-3} for a mass of 1.0 GeV, then falls to 1.1 × 10^{-3} at the upper mass limit of 1.6 GeV.

NODE=S035B11;LINKAGE=G

[2] BRYMAN 21 reports indirect limits obtained from the consistency of the world averages of B($\tau^- \to e^-\overline{\nu}_e\nu_\tau$) and B($\tau^- \to \mu^-\overline{\nu}_\mu\nu_\tau$) with their Standard Model predictions, without a simulation of the efficiency as a function of the X mass for the searched decay modes to be detected as the corresponding Standard Model decay modes.

NODE=S035B11;LINKAGE=E

[3] ALBRECHT 95G limit holds for bosons with mass < 0.4 GeV. The limit rises to 0.036 for a mass of 1.0 GeV, then falls to 0.006 at the upper mass limit of 1.6 GeV.

NODE=S035B11;LINKAGE=C

[4] ALBRECHT 90E limit applies for spinless boson with mass < 100 MeV, and rises to 0.050 for mass = 500 MeV.

NODE=S035B11;LINKAGE=B

[5] BALTRUSAITIS 85 limit applies for spinless boson with mass < 100 MeV.

NODE=S035B11;LINKAGE=A

$\Gamma(\mu^-$ light boson$)/\Gamma(e^-\overline{\nu}_e\nu_\tau)$ Γ_{252}/Γ_5

NODE=S035B12

Test of lepton family number conservation.

NODE=S035B12
NODE=S035B12

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.4 × 10^{-3}	95	[1] ADACHI	23A	BELL	E^{ee}_{cm}= 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.011	95	[2] BRYMAN	21	RVUE	
<0.026	95	[3] ALBRECHT	95G	ARG	E^{ee}_{cm} = 9.4–10.6 GeV
<0.033	95	[4] ALBRECHT	90E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
<0.125	95	[5] BALTRUSAIT...	85	MRK3	E^{ee}_{cm}= 3.77 GeV

[1] ADACHI 23A limit holds for bosons with mass = 0.0 GeV. The limit rises to 12.2 × 10^{-3} for a mass of 1.0 GeV, then falls to 0.7 × 10^{-3} at the upper mass limit of 1.6 GeV.

NODE=S035B12;LINKAGE=F

[2] BRYMAN 21 reports indirect limits obtained from the consistency of the world averages of B($\tau^- \to e^-\overline{\nu}_e\nu_\tau$) and B($\tau^- \to \mu^-\overline{\nu}_\mu\nu_\tau$) with their Standard Model predictions, without a simulation of the efficiency as a function of the X mass for the searched decay modes to be detected as the corresponding Standard Model decay modes.

NODE=S035B12;LINKAGE=E

[3] ALBRECHT 95G limit holds for bosons with mass < 1.3 GeV. The limit rises to 0.034 for a mass of 1.4 GeV, then falls to 0.003 at the upper mass limit of 1.6 GeV.

NODE=S035B12;LINKAGE=C

[4] ALBRECHT 90E limit applies for spinless boson with mass < 100 MeV, and rises to 0.071 for mass = 500 MeV.

NODE=S035B12;LINKAGE=B

[5] BALTRUSAITIS 85 limit applies for spinless boson with mass < 100 MeV.

NODE=S035B12;LINKAGE=A

τ-DECAY PARAMETERS

NODE=S035225

See the related review(s):

τ-Lepton Decay Parameters

ρ(e or μ) PARAMETER

NODE=S035RHO

($V-A$) theory predicts $\rho = 0.75$.

NODE=S035RHO
NODE=S035RHO

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.745±0.008 OUR FIT					
0.749±0.008 OUR AVERAGE					
0.742±0.014±0.006	81k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.775±0.023±0.020	36k	ABREU	00L	DLPH	1992–1995 runs
0.781±0.028±0.018	46k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.762±0.035	54k	ACCIARRI	98R	L3	1991–1995 LEP runs
0.731±0.031		[1] ALBRECHT	98	ARG	$E^{ee}_{\rm cm}$= 9.5–10.6 GeV
0.72 ±0.09 ±0.03		[2] ABE	97O	SLD	1993–1995 SLC runs
0.747±0.010±0.006	55k	ALEXANDER	97F	CLEO	$E^{ee}_{\rm cm}$= 10.6 GeV
0.79 ±0.10 ±0.10	3732	FORD	87B	MAC	$E^{ee}_{\rm cm}$= 29 GeV
0.71 ±0.09 ±0.03	1426	BEHRENDS	85	CLEO	e^+e^- near $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.735±0.013±0.008	31k	AMMAR	97B	CLEO	Repl. by ALEXANDER 97F
0.794±0.039±0.031	18k	ACCIARRI	96H	L3	Repl. by ACCIARRI 98R
0.732±0.034±0.020	8.2k	[3] ALBRECHT	95	ARG	$E^{ee}_{\rm cm}$= 9.5–10.6 GeV
0.738±0.038		[4] ALBRECHT	95C	ARG	Repl. by ALBRECHT 98
0.751±0.039±0.022		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E
0.742±0.035±0.020	8000	ALBRECHT	90E	ARG	$E^{ee}_{\rm cm}$= 9.4–10.6 GeV

OCCUR=2

[1] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 98, ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. ALBRECHT 98 use tau pair events of the type $\tau^-\tau^+ \to (\ell^-\overline{\nu}_\ell\nu_\tau)(\pi^+\pi^0\overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035RHO;LINKAGE=RC

[2] ABE 97O assume $\eta = 0$ in their fit. Letting η vary in the fit gives a ρ value of 0.69 ± 0.13 ± 0.05.

NODE=S035RHO;LINKAGE=D

[3] Value is from a simultaneous fit for the ρ and η decay parameters to the lepton energy spectrum. Not independent of ALBRECHT 90E ρ(e or μ) value which assumes $\eta = 0$. Result is strongly correlated with ALBRECHT 95C.

NODE=S035RHO;LINKAGE=A

[4] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E.

NODE=S035RHO;LINKAGE=C

ρ(e) PARAMETER

NODE=S035RHE

($V-A$) theory predicts $\rho = 0.75$.

NODE=S035RHE
NODE=S035RHE

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.747±0.010 OUR FIT					
0.744±0.010 OUR AVERAGE					
0.747±0.019±0.014	44k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.744±0.036±0.037	17k	ABREU	00L	DLPH	1992–1995 runs
0.779±0.047±0.029	25k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.68 ±0.04 ±0.07		[1] ALBRECHT	98	ARG	$E^{ee}_{\rm cm}$= 9.5–10.6 GeV
0.71 ±0.14 ±0.05		ABE	97O	SLD	1993–1995 SLC runs
0.747±0.012±0.004	34k	ALEXANDER	97F	CLEO	$E^{ee}_{\rm cm}$= 10.6 GeV
0.735±0.036±0.020	4.7k	[2] ALBRECHT	95	ARG	$E^{ee}_{\rm cm}$= 9.5–10.6 GeV
0.79 ±0.08 ±0.06	3230	[3] ALBRECHT	93G	ARG	$E^{ee}_{\rm cm}$= 9.4–10.6 GeV
0.64 ±0.06 ±0.07	2753	JANSSEN	89	CBAL	$E^{ee}_{\rm cm}$= 9.4–10.6 GeV
0.62 ±0.17 ±0.14	1823	FORD	87B	MAC	$E^{ee}_{\rm cm}$= 29 GeV
0.60 ±0.13	699	BEHRENDS	85	CLEO	e^+e^- near $\Upsilon(4S)$
0.72 ±0.10 ±0.11	594	BACINO	79B	DLCO	$E^{ee}_{\rm cm}$= 3.5–7.4 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.732±0.014±0.009	19k	AMMAR	97B	CLEO	Repl. by ALEXANDER 97F
0.793±0.050±0.025		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E
0.747±0.045±0.028	5106	ALBRECHT	90E	ARG	Repl. by ALBRECHT 95

[1] ALBRECHT 98 use tau pair events of the type $\tau^-\tau^+ \to (\ell^-\overline{\nu}_\ell\nu_\tau)(\pi^+\pi^0\overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035RHE;LINKAGE=RC

[2] ALBRECHT 95 use tau pair events of the type $\tau^-\tau^+ \to (\ell^-\overline{\nu}_\ell\nu_\tau)(h^+h^-h^+(\pi^0)\overline{\nu}_\tau)$ and their charged conjugates.

NODE=S035RHE;LINKAGE=A

[3] ALBRECHT 93G use tau pair events of the type $\tau^-\tau^+ \to (\mu^-\overline{\nu}_\mu\nu_\tau)(e^+\nu_e\overline{\nu}_\tau)$ and their charged conjugates.

NODE=S035RHE;LINKAGE=B

$\rho(\mu)$ PARAMETER

NODE=S035RHM

$(V-A)$ theory predicts $\rho = 0.75$.

NODE=S035RHM
NODE=S035RHM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.763±0.020 OUR FIT					
0.770±0.022 OUR AVERAGE					
0.776±0.045±0.019	46k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.999±0.098±0.045	22k	ABREU	00L	DLPH	1992–1995 runs
0.777±0.044±0.016	27k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.69 ±0.06 ±0.06		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
0.54 ±0.28 ±0.14		ABE	97O	SLD	1993–1995 SLC runs
0.750±0.017±0.045	22k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
0.76 ±0.07 ±0.08	3230	ALBRECHT	93G	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
0.734±0.055±0.027	3041	ALBRECHT	90E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
0.89 ±0.14 ±0.08	1909	FORD	87B	MAC	E^{ee}_{cm}= 29 GeV
0.81 ±0.13	727	BEHRENDS	85	CLEO	e^+e^- near $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.747±0.048±0.044	13k	AMMAR	97B	CLEO	Repl. by ALEXANDER 97F
0.693±0.057±0.028		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] ALBRECHT 98 use tau pair events of the type $\tau^-\tau^+ \rightarrow (\ell^-\overline{\nu}_\ell\nu_\tau)(\pi^+\pi^0\overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035RHM;LINKAGE=RC

$\xi(e$ or $\mu)$ PARAMETER

NODE=S035XI

$(V-A)$ theory predicts $\xi = 1$.

NODE=S035XI
NODE=S035XI

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.985±0.030 OUR FIT					
0.981±0.031 OUR AVERAGE					
0.986±0.068±0.031	81k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.929±0.070±0.030	36k	ABREU	00L	DLPH	1992–1995 runs
0.98 ±0.22 ±0.10	46k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.70 ±0.16	54k	ACCIARRI	98R	L3	1991–1995 LEP runs
1.03 ±0.11		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
1.05 ±0.35 ±0.04		[2] ABE	97O	SLD	1993–1995 SLC runs
1.007±0.040±0.015	55k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.94 ±0.21 ±0.07	18k	ACCIARRI	96H	L3	Repl. by ACCIARRI 98R
0.97 ±0.14		[3] ALBRECHT	95C	ARG	Repl. by ALBRECHT 98
1.18 ±0.15 ±0.16		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E
0.90 ±0.15 ±0.10	3230	[4] ALBRECHT	93G	ARG	E^{ee}_{cm}= 9.4–10.6 GeV

OCCUR=2

[1] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 98, ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. ALBRECHT 98 use tau pair events of the type $\tau^-\tau^+ \rightarrow (\ell^-\overline{\nu}_\ell\nu_\tau)(\pi^+\pi^0\overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035XI;LINKAGE=RC

[2] ABE 97O assume $\eta = 0$ in their fit. Letting η vary in the fit gives a ξ value of 1.02 ± 0.36 ± 0.05.

NODE=S035XI;LINKAGE=B

[3] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. ALBRECHT 95C uses events of the type $\tau^-\tau^+ \rightarrow (\ell^-\overline{\nu}_\ell\nu_\tau)\ (h^+h^-h^+\overline{\nu}_\tau)$ and their charged conjugates.

NODE=S035XI;LINKAGE=FF

[4] ALBRECHT 93G measurement determines $|\xi|$ for the case $\xi(e) = \xi(\mu)$, but the authors point out that other LEP experiments determine the sign to be positive.

NODE=S035XI;LINKAGE=A

$\xi(e)$ PARAMETER

NODE=S035XE

$(V-A)$ theory predicts $\xi = 1$.

NODE=S035XE
NODE=S035XE

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.994±0.040 OUR FIT					
1.00 ±0.04 OUR AVERAGE					
1.011±0.094±0.038	44k	HEISTER	01E	ALEP	1991–1995 LEP runs
1.01 ±0.12 ±0.05	17k	ABREU	00L	DLPH	1992–1995 runs
1.13 ±0.39 ±0.14	25k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
1.11 ±0.20 ±0.08		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
1.16 ±0.52 ±0.06		ABE	97O	SLD	1993–1995 SLC runs
0.979±0.048±0.016	34k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.03 ±0.23 ±0.09		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] ALBRECHT 98 use tau pair events of the type $\tau^-\tau^+ \rightarrow (\ell^-\overline{\nu}_\ell\nu_\tau)(\pi^+\pi^0\overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035XE;LINKAGE=RC

$\xi(\mu)$ PARAMETER

NODE=S035XM

$(V-A)$ theory predicts $\xi = 1$.

NODE=S035XM
NODE=S035XM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.030±0.059 OUR FIT					
1.06 ±0.06 OUR AVERAGE					
1.030±0.120±0.050	46k	HEISTER	01E	ALEP	1991–1995 LEP runs
1.16 ±0.19 ±0.06	22k	ABREU	00L	DLPH	1992–1995 runs
0.79 ±0.41 ±0.09	27k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
1.26 ±0.27 ±0.14		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
0.75 ±0.50 ±0.14		ABE	97O	SLD	1993–1995 SLC runs
1.054±0.069±0.047	22k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.23 ±0.22 ±0.10		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] ALBRECHT 98 use tau pair events of the type $\tau^- \tau^+ \rightarrow (\ell^- \overline{\nu}_\ell \nu_\tau)(\pi^+ \pi^0 \overline{\nu}_\tau)$, and their charged conjugates.

NODE=S035XM;LINKAGE=RC

$\eta(e \text{ or } \mu)$ PARAMETER

NODE=S035ETA

$(V-A)$ theory predicts $\eta = 0$.

NODE=S035ETA
NODE=S035ETA

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.013±0.020 OUR FIT					
0.015±0.021 OUR AVERAGE					
0.012±0.026±0.004	81k	HEISTER	01E	ALEP	1991–1995 LEP runs
−0.005±0.036±0.037		ABREU	00L	DLPH	1992–1995 runs
0.027±0.055±0.005	46k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.27 ±0.14	54k	ACCIARRI	98R	L3	1991–1995 LEP runs
−0.13 ±0.47 ±0.15		ABE	97O	SLD	1993–1995 SLC runs
−0.015±0.061±0.062	31k	AMMAR	97B	CLEO	E^{ee}_{cm}= 10.6 GeV
0.03 ±0.18 ±0.12	8.2k	ALBRECHT	95	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.25 ±0.17 ±0.11	18k	ACCIARRI	96H	L3	Repl. by ACCIARRI 98R
−0.04 ±0.15 ±0.11		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

$\eta(\mu)$ PARAMETER

NODE=S035ETM

$(V-A)$ theory predicts $\eta = 0$.

NODE=S035ETM
NODE=S035ETM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.094±0.073 OUR FIT					
0.17 ±0.15 OUR AVERAGE Error includes scale factor of 1.2.					
0.160±0.150±0.060	46k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.72 ±0.32 ±0.15		ABREU	00L	DLPH	1992–1995 runs
−0.59 ±0.82 ±0.45		[1] ABE	97O	SLD	1993–1995 SLC runs
0.010±0.149±0.171	13k	[2] AMMAR	97B	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.010±0.065±0.001	27k	[3] ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
−0.24 ±0.23 ±0.18		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] Highly correlated (corr. = 0.92) with ABE 97O $\rho(\mu)$ measurement.

NODE=S035ETM;LINKAGE=B

[2] Highly correlated (corr. = 0.949) with AMMAR 97B $\rho(\mu)$ value.

NODE=S035ETM;LINKAGE=A

[3] ACKERSTAFF 99D result is dominated by a constraint on η from the OPAL measurements of the τ lifetime and B($\tau^- \rightarrow \mu^- \overline{\nu}_\mu \nu_\tau$) assuming lepton universality for the total coupling strength.

NODE=S035ETM;LINKAGE=K9

$(\delta\xi)(e \text{ or } \mu)$ PARAMETER

NODE=S035DXI

$(V-A)$ theory predicts $(\delta\xi) = 0.75$.

NODE=S035DXI
NODE=S035DXI

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.746±0.021 OUR FIT					
0.744±0.022 OUR AVERAGE					
0.776±0.045±0.024	81k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.779±0.070±0.028	36k	ABREU	00L	DLPH	1992–1995 runs
0.65 ±0.14 ±0.07	46k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.70 ±0.11	54k	ACCIARRI	98R	L3	1991–1995 LEP runs
0.63 ±0.09		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
0.88 ±0.27 ±0.04		[2] ABE	97O	SLD	1993–1995 SLC runs
0.745±0.026±0.009	55k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.81 ±0.14 ±0.06	18k	ACCIARRI	96H	L3	Repl. by ACCIARRI 98R
0.65 ±0.12		[3] ALBRECHT	95C	ARG	Repl. by ALBRECHT 98
0.88 ±0.11 ±0.07		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

OCCUR=2

[1] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 98, ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. ALBRECHT 98 use tau pair events of the type $\tau^- \tau^+ \to (\ell^- \overline{\nu}_\ell \nu_\tau)(\pi^+ \pi^0 \overline{\nu}_\tau)$, and their charged conjugates. NODE=S035DXI;LINKAGE=RC

[2] ABE 97O assume $\eta = 0$ in their fit. Letting η vary in the fit gives a $(\delta\xi)$ value of $0.87 \pm 0.27 \pm 0.04$. NODE=S035DXI;LINKAGE=B

[3] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. ALBRECHT 95C uses events of the type $\tau^- \tau^+ \to (\ell^- \overline{\nu}_\ell \nu_\tau)(h^+ h^- h^+ \overline{\nu}_\tau)$ and their charged conjugates. NODE=S035DXI;LINKAGE=FF

$(\delta\xi)(e)$ PARAMETER

NODE=S035DXE

$(V-A)$ theory predicts $(\delta\xi) = 0.75$. NODE=S035DXE

NODE=S035DXE

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.734±0.028 OUR FIT					
0.731±0.029 OUR AVERAGE					
0.778±0.066±0.024	44k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.85 ±0.12 ±0.04	17k	ABREU	00L	DLPH	1992–1995 runs
0.72 ±0.31 ±0.14	25k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.56 ±0.14 ±0.06		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
0.85 ±0.43 ±0.08		ABE	97O	SLD	1993–1995 SLC runs
0.720±0.032±0.010	34k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.11 ±0.17 ±0.07		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] ALBRECHT 98 use tau pair events of the type $\tau^- \tau^+ \to (\ell^- \overline{\nu}_\ell \nu_\tau)(\pi^+ \pi^0 \overline{\nu}_\tau)$, and their charged conjugates. NODE=S035DXE;LINKAGE=RC

$(\delta\xi)(\mu)$ PARAMETER

NODE=S035DXM

$(V-A)$ theory predicts $(\delta\xi) = 0.75$. NODE=S035DXM

NODE=S035DXM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.778±0.037 OUR FIT					
0.79 ±0.04 OUR AVERAGE					
0.786±0.066±0.028	46k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.86 ±0.13 ±0.04	22k	ABREU	00L	DLPH	1992–1995 runs
0.63 ±0.23 ±0.05	27k	ACKERSTAFF	99D	OPAL	1990–1995 LEP runs
0.73 ±0.18 ±0.10		[1] ALBRECHT	98	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
0.82 ±0.32 ±0.07		ABE	97O	SLD	1993–1995 SLC runs
0.786±0.041±0.032	22k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.71 ±0.14 ±0.06		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E

[1] ALBRECHT 98 use tau pair events of the type $\tau^- \tau^+ \to (\ell^- \overline{\nu}_\ell \nu_\tau)(\pi^+ \pi^0 \overline{\nu}_\tau)$, and their charged conjugates. NODE=S035DXM;LINKAGE=RC

$\xi(\pi)$ PARAMETER

NODE=S035XPI

$(V-A)$ theory predicts $\xi(\pi) = 1$. NODE=S035XPI

NODE=S035XPI

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.993±0.022 OUR FIT					
0.994±0.023 OUR AVERAGE					
0.994±0.020±0.014	27k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.81 ±0.17 ±0.02		ABE	97O	SLD	1993–1995 SLC runs
1.03 ±0.06 ±0.04	2.0k	COAN	97	CLEO	E^{ee}_{cm}= 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.987±0.057±0.027		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E
0.95 ±0.11 ±0.05		[1] BUSKULIC	94D	ALEP	1990+1991 LEP run

[1] Superseded by BUSKULIC 95D. NODE=S035XPI;LINKAGE=XH

$\xi(\rho)$ PARAMETER

NODE=S035XRH

$(V-A)$ theory predicts $\xi(\rho) = 1$. NODE=S035XRH

NODE=S035XRH

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.994±0.008 OUR FIT					
0.994±0.009 OUR AVERAGE					
0.987±0.012±0.011	59k	HEISTER	01E	ALEP	1991–1995 LEP runs
0.99 ±0.12 ±0.04		ABE	97O	SLD	1993–1995 SLC runs
0.995±0.010±0.003	66k	ALEXANDER	97F	CLEO	E^{ee}_{cm}= 10.6 GeV
1.022±0.028±0.030	1.7k	[1] ALBRECHT	94E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.045±0.058±0.032		BUSKULIC	95D	ALEP	Repl. by HEISTER 01E
1.03 ±0.11 ±0.05		[2] BUSKULIC	94D	ALEP	1990+1991 LEP run

[1] ALBRECHT 94E measure the square of this quantity and use the sign determined by ALBRECHT 90I to obtain the quoted result. NODE=S035XRH;LINKAGE=AK

[2] Superseded by BUSKULIC 95D. NODE=S035XRH;LINKAGE=XH

$\xi(a_1)$ PARAMETER

NODE=S035XA1

$(V-A)$ theory predicts $\xi(a_1) = 1$.

NODE=S035XA1
NODE=S035XA1

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.001±0.027 OUR FIT				
1.002±0.028 OUR AVERAGE				
1.000±0.016±0.024	35k	[1] HEISTER 01E	ALEP	1991–1995 LEP runs
1.02 ±0.13 ±0.03	17.2k	ASNER 00	CLEO	E^{ee}_{cm}= 10.6 GeV
1.29 ±0.26 ±0.11	7.4k	[2] ACKERSTAFF 97R	OPAL	1992–1994 LEP runs
0.85 $^{+0.15}_{-0.17}$ ±0.05		ALBRECHT 95C	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
1.25 ±0.23 $^{+0.15}_{-0.08}$	7.5k	ALBRECHT 93C	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.08 $^{+0.46}_{-0.41}$ $^{+0.14}_{-0.25}$	2.6k	[3] AKERS 95P	OPAL	Repl. by ACKERSTAFF 97R
0.937±0.116±0.064		BUSKULIC 95D	ALEP	Repl. by HEISTER 01E

OCCUR=2

[1] HEISTER 01E quote 1.000 ± 0.016 ± 0.013 ± 0.020 where the errors are statistical, systematic, and an uncertainty due to the final state model. We combine the systematic error and model uncertainty. NODE=S035XA1;LINKAGE=AA

[2] ACKERSTAFF 97R obtain this result with a model independent fit to the hadronic structure functions. Fitting with the model of Kuhn and Santamaria (ZPHY **C48**, 445 (1990)) gives 0.87 ± 0.16 ± 0.04, and with the model of of Isgur *et al.* (PR **D39**,1357 (1989)) they obtain 1.20 ± 0.21 ± 0.14. NODE=S035XA1;LINKAGE=C

[3] AKERS 95P obtain this result with a model independent fit to the hadronic structure functions. Fitting with the model of Kuhn and Santamaria (ZPHY **C48**, 445 (1990)) gives 0.87 ± 0.27$^{+0.05}_{-0.06}$, and with the model of of Isgur *et al.* (PR **D39**,1357 (1989)) they obtain 1.10 ± 0.31$^{+0.13}_{-0.14}$. NODE=S035XA1;LINKAGE=D

ξ(all hadronic modes) PARAMETER

NODE=S035XAL

$(V-A)$ theory predicts $\xi = 1$.

NODE=S035XAL
NODE=S035XAL

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.995±0.007 OUR FIT				
0.997±0.007 OUR AVERAGE				
0.992±0.007±0.008	102k	[1] HEISTER 01E	ALEP	1991–1995 LEP runs
0.997±0.027±0.011	39k	[2] ABREU 00L	DLPH	1992–1995 runs
1.02 ±0.13 ±0.03	17.2k	[3] ASNER 00	CLEO	E^{ee}_{cm}= 10.6 GeV
1.032±0.031	37k	[4] ACCIARRI 98R	L3	1991–1995 LEP runs
0.93 ±0.10 ±0.04		ABE 97O	SLD	1993–1995 SLC runs
1.29 ±0.26 ±0.11	7.4k	[5] ACKERSTAFF 97R	OPAL	1992–1994 LEP runs
0.995±0.010±0.003	66k	[6] ALEXANDER 97F	CLEO	E^{ee}_{cm}= 10.6 GeV
1.03 ±0.06 ±0.04	2.0k	[7] COAN 97	CLEO	E^{ee}_{cm}= 10.6 GeV
1.017±0.039		[8] ALBRECHT 95C	ARG	E^{ee}_{cm}= 9.5–10.6 GeV
1.25 ±0.23 $^{+0.15}_{-0.08}$	7.5k	[9] ALBRECHT 93C	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.970±0.053±0.011	14k	[10] ACCIARRI 96H	L3	Repl. by ACCIARRI 98R
1.08 $^{+0.46}_{-0.41}$ $^{+0.14}_{-0.25}$	2.6k	[11] AKERS 95P	OPAL	Repl. by ACKERSTAFF 97R
1.006±0.032±0.019		[12] BUSKULIC 95D	ALEP	Repl. by HEISTER 01E
1.022±0.028±0.030	1.7k	[13] ALBRECHT 94E	ARG	E^{ee}_{cm}= 9.4–10.6 GeV
0.99 ±0.07 ±0.04		[14] BUSKULIC 94D	ALEP	1990+1991 LEP run
1.14 ±0.34 $^{+0.34}_{-0.17}$	3.9k	[9] ALBRECHT 90I	ARG	Repl. by ALBRECHT 93C

[1] HEISTER 01E quote 0.992 ± 0.007 ± 0.006 ± 0.005 where the errors are statistical, systematic, and an uncertainty due to the final state model. We combine the systematic error and model uncertainty. They use $\tau \to \pi\nu_\tau$, $\tau \to K\nu_\tau$, $\tau \to \rho\nu_\tau$, and $\tau \to a_1\nu_\tau$ decays. NODE=S035XAL;LINKAGE=AA

[2] ABREU 00L use $\tau^- \to h^- \geq 0\pi^0\nu_\tau$ decays. NODE=S035XAL;LINKAGE=LO

[3] ASNER 00 use $\tau^- \to \pi^- 2\pi^0\nu_\tau$ decays. NODE=S035XAL;LINKAGE=SA

[4] ACCIARRI 98R use $\tau \to \pi\nu_\tau$, $\tau \to K\nu_\tau$, and $\tau \to \rho\nu_\tau$ decays. NODE=S035XAL;LINKAGE=BX

[5] ACKERSTAFF 97R use $\tau \to a_1\nu_\tau$ decays. NODE=S035XAL;LINKAGE=H

[6] ALEXANDER 97F use $\tau \to \rho\nu_\tau$ decays. NODE=S035XAL;LINKAGE=I

[7] COAN 97 use h^+h^- energy correlations. NODE=S035XAL;LINKAGE=J

[8] Combined fit to ARGUS tau decay parameter measurements in ALBRECHT 95C, ALBRECHT 93G, and ALBRECHT 94E. NODE=S035XAL;LINKAGE=F

[9] Uses $\tau \to a_1\nu_\tau$ decays. Replaced by ALBRECHT 95C. NODE=S035XAL;LINKAGE=B

[10] ACCIARRI 96H use $\tau \to \pi\nu_\tau$, $\tau \to K\nu_\tau$, and $\tau \to \rho\nu_\tau$ decays. NODE=S035XAL;LINKAGE=G

[11] AKERS 95P use $\tau \to a_1\nu_\tau$ decays. NODE=S035XAL;LINKAGE=D

[12] BUSKULIC 95D use $\tau \to \pi \nu_\tau$, $\tau \to \rho \nu_\tau$, and $\tau \to a_1 \nu_\tau$ decays. NODE=S035XAL;LINKAGE=E

[13] ALBRECHT 94E measure the square of this quantity and use the sign determined by ALBRECHT 90I to obtain the quoted result. Uses $\tau \to a_1 \nu_\tau$ decays. Replaced by ALBRECHT 95C. NODE=S035XAL;LINKAGE=A

[14] BUSKULIC 94D use $\tau \to \pi \nu_\tau$ and $\tau \to \rho \nu_\tau$ decays. Superseded by BUSKULIC 95D. NODE=S035XAL;LINKAGE=C

$\xi'(\mu)$ PARAMETER

NODE=S035A00

$(V-A)$ theory predicts $\xi' = 1$. NODE=S035A00

NODE=S035A00

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.22±0.94±0.42	165	BODROV	23	BELL	$E^{ee}_{cm} = 10.6$ GeV

$\overline{\eta}(\mu)$ PARAMETER

NODE=S035BEM

$(V-A)$ theory predicts $\overline{\eta}(\mu) = 0$. NODE=S035BEM

NODE=S035BEM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−1.3±1.5±0.8	71k	[1] SHIMIZU	18A	BELL	$\tau^- \to \nu_\tau \mu^- \overline{\nu}_\mu \gamma$

[1] SHIMIZU 18A measurement procedure fits a distribution affected by $\overline{\eta}(\mu)$, $\xi\kappa(\mu)$ and $\eta''(\mu)$, floating $\overline{\eta}(\mu)$ and $\xi\kappa(\mu)$ and fixing $\eta''(\mu) = 0$. The contribution of $\eta''(\mu)$ is suppressed by m_μ/m_τ. NODE=S035BEM;LINKAGE=A

$(\xi\kappa)(e$ or $\mu)$ PARAMETER

NODE=S035XIK

$(V-A)$ theory predicts $(\xi\kappa)(e$ or $\mu) = 0$. NODE=S035XIK

NODE=S035XIK

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.5±0.4±0.2	149k	[1,2] SHIMIZU	18A	BELL	$\tau^- \to \nu_\tau e^- \overline{\nu}_e \gamma$ and $\tau^- \to \nu_\tau \mu^- \overline{\nu}_\mu \gamma$

[1] SHIMIZU 18A measurement procedure fits a distribution of radiative tau decays into both electrons and muons affected by $\overline{\eta}(e$ or $\mu)$, $\xi\kappa(e$ or $\mu)$ and $\eta''(e$ or $\mu)$, floating $\overline{\eta}(e$ or $\mu)$ and $\xi\kappa(e$ or $\mu)$ and fixing $\eta''(e$ or $\mu) = 0$. The contribution of $\eta''(e$ or $\mu)$ is suppressed by m_e/m_τ for tau decaying to electrons and by m_μ/m_τ for tau decaying to muons. NODE=S035XIK;LINKAGE=B

[2] Error correlated with SHIMIZU 18A $(\xi\kappa)(e)$ and $(\xi\kappa)(\mu)$ values. NODE=S035XIK;LINKAGE=C

$(\xi\kappa)(e)$ PARAMETER

NODE=S035XKE

$(V-A)$ theory predicts $(\xi\kappa)(e) = 0$. NODE=S035XKE

NODE=S035XKE

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.4±0.8±0.9	78k	[1,2] SHIMIZU	18A	BELL	$\tau^- \to \nu_\tau e^- \overline{\nu}_e \gamma$

[1] SHIMIZU 18A measurement procedure fits a distribution affected by $\overline{\eta}(e)$, $(\xi\kappa)(e)$ and $\eta''(e)$, floating $(\xi\kappa)(e)$ and fixing $\overline{\eta}(e) = 0$ and $\eta''(e) = 0$. The contribution of $\eta''(e)$ is suppressed by m_e/m_τ. NODE=S035XKE;LINKAGE=A

[2] Error correlated with SHIMIZU 18A $(\xi\kappa)(e$ or $\mu)$ value. NODE=S035XKE;LINKAGE=B

$(\xi\kappa)(\mu)$ PARAMETER

NODE=S035XKM

$(V-A)$ theory predicts $(\xi\kappa)(\mu) = 0$. NODE=S035XKM

NODE=S035XKM

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.8±0.5±0.3	71k	[1,2] SHIMIZU	18A	BELL	$\tau^- \to \nu_\tau \mu^- \overline{\nu}_\mu \gamma$

[1] SHIMIZU 18A measurement procedure fits a distribution affected by $\overline{\eta}(\mu)$, $\xi\kappa(\mu)$ and $\eta''(\mu)$, floating $\overline{\eta}(\mu)$ and $\xi\kappa(\mu)$ and fixing $\eta''(\mu) = 0$. The contribution of $\eta''(\mu)$ is suppressed by m_μ/m_τ. NODE=S035XKM;LINKAGE=A

[2] Error correlated with SHIMIZU 18A $(\xi\kappa)(e$ or $\mu)$ value. NODE=S035XKM;LINKAGE=B

τ REFERENCES

NODE=S035

ADACHI	24K	JHEP 2408 205	I. Adachi *et al.*	(BELLE II Collab.)	REFID=62946
ADACHI	24Q	PR D110 112003	I. Adachi *et al.*	(BELLE II Collab.)	REFID=63105
ADACHI	24R	JHEP 2409 062	I. Adachi *et al.*	(BELLE II Collab.)	REFID=63122
HAYRAPETY...	24J	PL B853 138633	A. Hayrapetyan *et al.*	(CMS Collab.)	REFID=62752
AAD	23BM	PRL 131 151802	G. Aad *et al.*	(ATLAS Collab.)	REFID=62452
ADACHI	23A	PRL 130 181803	I. Adachi *et al.*	(BELLE II Collab.)	REFID=62218
ADACHI	23C	PR D108 032006	I. Adachi *et al.*	(BELLE II Collab.)	REFID=62345
ANASHIN	23A	PPN 54 185	V.V. Anashin *et al.*	(VEPP-4M KEDR Collab.)	REFID=62070
BODROV	23	PRL 131 021801	D. Bodrov *et al.*	(BELLE Collab.)	REFID=62233
Also		PR D108 012003	D. Bodrov *et al.*	(BELLE Collab.)	REFID=62289
TSUZUKI	23	JHEP 2306 118	N. Tsuzuki *et al.*	(BELLE Collab.)	REFID=62126
TUMASYAN	23AS	PRL 131 151803	A. Tumasyan *et al.*	(CMS Collab.)	REFID=62453
INAMI	22	JHEP 2204 110	K. Inami *et al.*	(BELLE Collab.)	REFID=61790
BRYMAN	21	PR D104 075032	D.A. Bryman, S. Ito, R. Shrock	(BRCO, TRIU+)	REFID=61425
SIRUNYAN	21D	JHEP 2101 163	A.M. Sirunyan *et al.*	(CMS Collab.)	REFID=61042
UNO	21	JHEP 2110 019	K. Uno *et al.*	(BELLE Collab.)	REFID=61555
SAHOO	20	PR D102 111101	D. Sahoo *et al.*	(BELLE Collab.)	REFID=60737
JIN	19	PR D100 071101	Y. Jin *et al.*	(BELLE Collab.)	REFID=60009
LEES	18B	PR D98 032010	J.P. Lees *et al.*	(BABAR Collab.)	REFID=58978
SHIMIZU	18A	PTEP 2018 023C01	N. Shimizu *et al.*	(BELLE Collab.)	REFID=58781
AAD	16BA	EPJ C76 232	G.Aad *et al.*	(ATLAS Collab.)	REFID=57369
AAIJ	15AI	JHEP 1502 121	R. Aaij *et al.*	(LHCb Collab.)	REFID=56696
LEES	15G	PR D91 051103	J.P. Lees *et al.*	(BABAR Collab.)	REFID=56557
ABLIKIM	14D	PR D90 012001	M. Ablikim *et al.*	(BESIII Collab.)	REFID=55791
BELOUS	14	PRL 112 031801	K. Belous *et al.*	(BELLE Collab.)	REFID=55624

LEVICHEV	14	SPU 57 66	E.B. Levichev *et al.*		REFID=62416
RYU	14	PR D89 072009	S. Ryu *et al.*	(BELLE Collab.)	REFID=55810
AAIJ	13AH	PL B724 36	R. Aaij *et al.*	(LHCb Collab.)	REFID=55087
MIYAZAKI	13	PL B719 346	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=54895
LEES	12M	PR D85 031102	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54380
Also		PR D85 099904 (errat.)	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54381
LEES	12X	PR D86 092010	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54714
LEES	12Y	PR D86 092013	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54715
PDG	12	PR D86 010001	J. Beringer *et al.*	(PDG Collab.)	REFID=54066
DEL-AMO-SA...	11E	PR D83 032002	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=53670
MIYAZAKI	11	PL B699 251	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=16671
AUBERT	10B	PRL 104 021802	B. Aubert *et al.*	(BABAR Collab.)	REFID=53203
AUBERT	10F	PRL 105 051602	B. Aubert *et al.*	(BABAR Collab.)	REFID=53320
HAYASAKA	10	PL B687 139	K. Hayasaka *et al.*	(BELLE Collab.)	REFID=53299
LEE	10	PR D81 113007	M.J. Lee *et al.*	(BELLE Collab.)	REFID=53332
LEES	10A	PR D81 111101	J.P. Lees *et al.*	(BABAR Collab.)	REFID=53333
MIYAZAKI	10	PL B682 355	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=53162
MIYAZAKI	10A	PL B692 4	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=53335
AUBERT	09AK	PR D80 092005	B. Aubert *et al.*	(BABAR Collab.)	REFID=53078
AUBERT	09D	PR D79 012004	B. Aubert *et al.*	(BABAR Collab.)	REFID=52644
AUBERT	09W	PRL 103 021801	B. Aubert *et al.*	(BABAR Collab.)	REFID=52927
GROZIN	09A	PAN 72 1203	A.G. Grozin, I.B. Khriplovich, A.S. Rudenko	(NOVO)	REFID=53013
INAMI	09	PL B672 209	K. Inami *et al.*	(BELLE Collab.)	REFID=52653
MIYAZAKI	09	PL B672 317	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=52630
AUBERT	08	PRL 100 011801	B. Aubert *et al.*	(BABAR Collab.)	REFID=52104
AUBERT	08AE	PR D77 112002	B. Aubert *et al.*	(BABAR Collab.)	REFID=52354
AUBERT	08K	PRL 100 071802	B. Aubert *et al.*	(BABAR Collab.)	REFID=52209
FUJIKAWA	08	PR D78 072006	M. Fujikawa *et al.*	(BELLE Collab.)	REFID=52536
HAYASAKA	08	PL B666 16	K. Hayasaka *et al.*	(BELLE Collab.)	REFID=52463
MIYAZAKI	08	PL B660 154	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=52177
NISHIO	08	PL B664 35	Y. Nishio *et al.*	(BELLE Collab.)	REFID=52237
ANASHIN	07	JETPL 85 347	V.V. Anashin *et al.*	(KEDR Collab.)	REFID=51655
		Translated from ZETFP 85 429.			
AUBERT	07AP	PR D76 051104	B. Aubert *et al.*	(BABAR Collab.)	REFID=51933
AUBERT	07BK	PRL 99 251803	B. Aubert *et al.*	(BABAR Collab.)	REFID=52094
AUBERT	07I	PRL 98 061803	B. Aubert *et al.*	(BABAR Collab.)	REFID=51668
BELOUS	07	PRL 99 011801	K. Belous *et al.*	(BELLE Collab.)	REFID=51866
EIDELMAN	07	MPL A22 159	S. Eidelman, M. Passera	(NOVO, PADO)	REFID=51670
EPIFANOV	07	PL B654 65	D. Epifanov *et al.*	(BELLE Collab.)	REFID=51929
MIYAZAKI	07	PL B648 341	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=51669
ABDALLAH	06A	EPJ C46 1	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=51078
AUBERT	06C	PRL 96 041801	B. Aubert *et al.*	(BABAR Collab.)	REFID=51046
AUBERT,B	06	PR D73 112003	B. Aubert *et al.*	(BABAR Collab.)	REFID=51282
INAMI	06	PL B643 5	K. Inami *et al.*	(BELLE Collab.)	REFID=51493
MIYAZAKI	06	PL B632 51	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=51012
MIYAZAKI	06A	PL B639 159	Y. Miyazaki *et al.*	(BELLE Collab.)	REFID=51263
PDG	06	JP G33 1	W.-M. Yao *et al.*	(PDG Collab.)	REFID=51004
YUSA	06	PL B640 138	Y. Yusa *et al.*	(BELLE Collab.)	REFID=51378
ARMS	05	PRL 94 241802	K. Arms *et al.*	(CLEO Collab.)	REFID=50661
AUBERT,B	05A	PRL 95 041802	B. Aubert *et al.*	(BABAR Collab.)	REFID=50686
AUBERT,B	05F	PR D72 012003	B. Aubert *et al.*	(BABAR Collab.)	REFID=50705
AUBERT,B	05W	PR D72 072001	B. Aubert *et al.*	(BABAR Collab.)	REFID=50899
AUBERT,BE	05D	PRL 95 191801	B. Aubert *et al.*	(BABAR Collab.)	REFID=50949
ENARI	05	PL B622 218	Y. Enari *et al.*	(BELLE Collab.)	REFID=50565
HAYASAKA	05	PL B613 20	K. Hayasaka *et al.*	(BELLE Collab.)	REFID=50547
SCHAEL	05C	PRPL 421 191	S. Schael *et al.*	(ALEPH Collab.)	REFID=50845
ABBIENDI	04J	EPJ C35 437	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=49968
ABDALLAH	04K	EPJ C35 159	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=49970
ABDALLAH	04T	EPJ C36 283	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=50145
ABE	04B	PRL 92 171802	K. Abe *et al.*	(BELLE Collab.)	REFID=49938
ACHARD	04G	PL B585 53	P. Achard *et al.*	(L3 Collab.)	REFID=50105
AUBERT	04J	PRL 92 121801	B. Aubert *et al.*	(BABAR Collab.)	REFID=49925
ENARI	04	PRL 93 081803	Y. Enari *et al.*	(BELLE Collab.)	REFID=50073
PDG	04	PL B592 1	S. Eidelman *et al.*	(PDG Collab.)	REFID=49653
YUSA	04	PL B589 103	Y. Yusa *et al.*	(BELLE Collab.)	REFID=49905
ABBIENDI	03	PL B551 35	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=49150
BRIERE	03	PRL 90 181802	R. A. Briere *et al.*	(CLEO Collab.)	REFID=49360
HEISTER	03F	EPJ C30 291	A. Heister *et al.*	(ALEPH Collab.)	REFID=49552
INAMI	03	PL B551 16	K. Inami *et al.*	(BELLE Collab.)	REFID=49149
CHEN	02C	PR D66 071101	S. Chen *et al.*	(CLEO Collab.)	REFID=49058
REGAN	02	PRL 88 071805	B.C. Regan *et al.*		REFID=48608
ABBIENDI	01J	EPJ C19 653	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=48146
ABREU	01M	EPJ C20 617	P. Abreu *et al.*	(DELPHI Collab.)	REFID=48198
ACCIARRI	01F	PL B507 47	M. Acciarri *et al.*	(L3 Collab.)	REFID=48143
ACHARD	01D	PL B519 189	P. Achard *et al.*	(L3 Collab.)	REFID=48384
ANASTASSOV	01	PRL 86 4467	A. Anastassov *et al.*	(CLEO Collab.)	REFID=48124
HEISTER	01E	EPJ C22 217	A. Heister *et al.*	(ALEPH Collab.)	REFID=48509
ABBIENDI	00A	PL B492 23	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=47796
ABBIENDI	00C	EPJ C13 213	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=47440
ABBIENDI	00D	EPJ C13 197	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=47464
ABREU	00L	EPJ C16 229	P. Abreu *et al.*	(DELPHI Collab.)	REFID=47514
ACCIARRI	00B	PL B479 67	M. Acciarri *et al.*	(L3 Collab.)	REFID=47461
AHMED	00	PR D61 071101	S. Ahmed *et al.*	(CLEO Collab.)	REFID=47462
ALBRECHT	00	PL B485 37	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=47715
ASNER	00	PR D61 012002	D.M. Asner *et al.*	(CLEO Collab.)	REFID=47339
ASNER	00B	PR D62 072006	D.M. Asner *et al.*	(CLEO Collab.)	REFID=47766
BERGFELD	00	PRL 84 830	T. Bergfeld *et al.*	(CLEO Collab.)	REFID=47463
BROWDER	00	PR D61 052004	T.E. Browder *et al.*	(CLEO Collab.)	REFID=47466
EDWARDS	00A	PR D61 072003	K.W. Edwards *et al.*	(CLEO Collab.)	REFID=47465
GONZALEZ-S...	00	NP B582 3	G.A. Gonzalez-Sprinberg *et al.*		REFID=47805
ABBIENDI	99H	PL B447 134	G. Abbiendi *et al.*	(OPAL Collab.)	REFID=46716
ABREU	99X	EPJ C10 201	P. Abreu *et al.*	(DELPHI Collab.)	REFID=47302
ACKERSTAFF	99D	EPJ C8 3	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=47012
ACKERSTAFF	99E	EPJ C8 183	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=47013
BARATE	99K	EPJ C10 1	R. Barate *et al.*	(ALEPH Collab.)	REFID=47181
BARATE	99R	EPJ C11 599	R. Barate *et al.*	(ALEPH Collab.)	REFID=47366
BISHAI	99	PRL 82 281	M. Bishai *et al.*	(CLEO Collab.)	REFID=46549
GODANG	99	PR D59 091303	R. Godang *et al.*	(CLEO Collab.)	REFID=46998
RICHICHI	99	PR D60 112002	S.J. Richichi *et al.*	(CLEO Collab.)	REFID=47268

ACCIARRI	98C	PL B426 207	M. Acciarri *et al.*	(L3 Collab.)	REFID=45945
ACCIARRI	98E	PL B434 169	M. Acciarri *et al.*	(L3 Collab.)	REFID=45948
ACCIARRI	98R	PL B438 405	M. Acciarri *et al.*	(L3 Collab.)	REFID=46502
ACKERSTAFF	98M	EPJ C4 193	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45944
ACKERSTAFF	98N	PL B431 188	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45951
ALBRECHT	98	PL B431 179	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=46067
BARATE	98	EPJ C1 65	R. Barate *et al.*	(ALEPH Collab.)	REFID=45809
BARATE	98E	EPJ C4 29	R. Barate *et al.*	(ALEPH Collab.)	REFID=45917
BLISS	98	PR D57 5903	D.W. Bliss *et al.*	(CLEO Collab.)	REFID=45943
ABE	97O	PRL 78 4691	K. Abe *et al.*	(SLD Collab.)	REFID=45461
ACKERSTAFF	97J	PL B404 213	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45455
ACKERSTAFF	97L	ZPHY C74 403	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45486
ACKERSTAFF	97R	ZPHY C75 593	K. Ackerstaff *et al.*	(OPAL Collab.)	REFID=45616
ALEXANDER	97F	PR D56 5320	J.P. Alexander *et al.*	(CLEO Collab.)	REFID=45677
AMMAR	97B	PRL 78 4686	R. Ammar *et al.*	(CLEO Collab.)	REFID=45460
ANASTASSOV	97	PR D55 2559	A. Anastassov *et al.*	(CLEO Collab.)	REFID=45273
Also		PR D58 119903 (errat.)	A. Anastassov *et al.*	(CLEO Collab.)	REFID=46530
ANDERSON	97	PRL 79 3814	S. Anderson *et al.*	(CLEO Collab.)	REFID=45718
AVERY	97	PR D55 1119	P. Avery *et al.*	(CLEO Collab.)	REFID=45216
BARATE	97I	ZPHY C74 387	R. Barate *et al.*	(ALEPH Collab.)	REFID=45484
BARATE	97R	PL B414 362	R. Barate *et al.*	(ALEPH Collab.)	REFID=45795
BERGFELD	97	PRL 79 2406	T. Bergfeld *et al.*	(CLEO Collab.)	REFID=45695
BONVICINI	97	PRL 79 1221	G. Bonvicini *et al.*	(CLEO Collab.)	REFID=45591
BUSKULIC	97C	ZPHY C74 263	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=45444
COAN	97	PR D55 7291	T.E. Coan *et al.*	(CLEO Collab.)	REFID=45496
EDWARDS	97	PR D55 3919	K.W. Edwards *et al.*	(CLEO Collab.)	REFID=45217
EDWARDS	97B	PR D56 5297	K.W. Edwards *et al.*	(CLEO Collab.)	REFID=45674
ESCRIBANO	97	PL B395 369	R. Escribano, E. Masso	(BARC, PARIT)	REFID=45261
ABREU	96B	PL B365 448	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44662
ACCIARRI	96H	PL B377 313	M. Acciarri *et al.*	(L3 Collab.)	REFID=44864
ACCIARRI	96K	PL B389 187	M. Acciarri *et al.*	(L3 Collab.)	REFID=44966
ALAM	96	PRL 76 2637	M.S. Alam *et al.*	(CLEO Collab.)	REFID=44664
ALBRECHT	96E	PRPL 276 223	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44953
ALEXANDER	96D	PL B369 163	G. Alexander *et al.*	(OPAL Collab.)	REFID=44663
ALEXANDER	96E	PL B374 341	G. Alexander *et al.*	(OPAL Collab.)	REFID=44666
ALEXANDER	96S	PL B388 437	G. Alexander *et al.*	(OPAL Collab.)	REFID=44962
BAI	96	PR D53 20	J.Z. Bai *et al.*	(BES Collab.)	REFID=44698
BALEST	96	PL B388 402	R. Balest *et al.*	(CLEO Collab.)	REFID=44960
BARTELT	96	PRL 76 4119	J.E. Bartelt *et al.*	(CLEO Collab.)	REFID=44665
BUSKULIC	96	ZPHY C70 579	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44588
BUSKULIC	96C	ZPHY C70 561	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44658
COAN	96	PR D53 6037	T.E. Coan *et al.*	(CLEO Collab.)	REFID=44667
ABE	95Y	PR D52 4828	K. Abe *et al.*	(SLD Collab.)	REFID=44479
ABREU	95T	PL B357 715	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44470
ABREU	95U	PL B359 411	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44477
ACCIARRI	95	PL B345 93	M. Acciarri *et al.*	(L3 Collab.)	REFID=44125
ACCIARRI	95F	PL B352 487	M. Acciarri *et al.*	(L3 Collab.)	REFID=44280
AKERS	95F	ZPHY C66 31	R. Akers *et al.*	(OPAL Collab.)	REFID=44183
AKERS	95I	ZPHY C66 543	R. Akers *et al.*	(OPAL Collab.)	REFID=44288
AKERS	95P	ZPHY C67 45	R. Akers *et al.*	(OPAL Collab.)	REFID=44366
AKERS	95Y	ZPHY C68 555	R. Akers *et al.*	(OPAL Collab.)	REFID=44539
ALBRECHT	95	PL B341 441	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44114
ALBRECHT	95C	PL B349 576	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44267
ALBRECHT	95G	ZPHY C68 25	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44461
ALBRECHT	95H	ZPHY C68 215	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44462
BALEST	95C	PRL 75 3809	R. Balest *et al.*	(CLEO Collab.)	REFID=44557
BERNABEU	95	NP B436 474	J. Bernabeu *et al.*		REFID=48066
BUSKULIC	95C	PL B346 371	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44206
BUSKULIC	95D	PL B346 379	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44207
Also		PL B363 265 (errat.)	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=44559
ABREU	94K	PL B334 435	P. Abreu *et al.*	(DELPHI Collab.)	REFID=43958
AKERS	94E	PL B328 207	R. Akers *et al.*	(OPAL Collab.)	REFID=43802
AKERS	94G	PL B339 278	R. Akers *et al.*	(OPAL Collab.)	REFID=43920
ALBRECHT	94E	PL B337 383	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44017
ARTUSO	94	PRL 72 3762	M. Artuso *et al.*	(CLEO Collab.)	REFID=43795
BARTELT	94	PRL 73 1890	J.E. Bartelt *et al.*	(CLEO Collab.)	REFID=43919
BATTLE	94	PRL 73 1079	M. Battle *et al.*	(CLEO Collab.)	REFID=43918
BAUER	94	PR D50 13	D.A. Bauer *et al.*	(TPC/2gamma Collab.)	REFID=43861
BUSKULIC	94D	PL B321 168	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43885
BUSKULIC	94E	PL B332 209	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43898
BUSKULIC	94F	PL B332 219	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43899
GIBAUT	94B	PRL 73 934	D. Gibaut *et al.*	(CLEO Collab.)	REFID=43917
ADRIANI	93M	PRPL 236 1	O. Adriani *et al.*	(L3 Collab.)	REFID=43644
ALBRECHT	93C	ZPHY C58 61	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=43310
ALBRECHT	93G	PL B316 608	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=43627
BALEST	93	PR D47 3671	R. Balest *et al.*	(CLEO Collab.)	REFID=43373
BEAN	93	PRL 70 138	A. Bean *et al.*	(CLEO Collab.)	REFID=43203
BORTOLETTO	93	PRL 71 1791	D. Bortoletto *et al.*	(CLEO Collab.)	REFID=43527
ESCRIBANO	93	PL B301 419	R. Escribano, E. Masso	(BARC)	REFID=43289
PROCARIO	93	PRL 70 1207	M. Procario *et al.*	(CLEO Collab.)	REFID=43211
ABREU	92N	ZPHY C55 555	P. Abreu *et al.*	(DELPHI Collab.)	REFID=42204
ACTON	92F	PL B281 405	D.P. Acton *et al.*	(OPAL Collab.)	REFID=42082
ACTON	92H	PL B288 373	P.D. Acton *et al.*	(OPAL Collab.)	REFID=42152
AKERIB	92	PRL 69 3610	D.S. Akerib *et al.*	(CLEO Collab.)	REFID=43125
Also		PRL 71 3395 (errat.)	D.S. Akerib *et al.*	(CLEO Collab.)	REFID=43574
ALBRECHT	92D	ZPHY C53 367	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41955
ALBRECHT	92K	ZPHY C55 179	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=42198
ALBRECHT	92M	PL B292 221	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=42211
ALBRECHT	92Q	ZPHY C56 339	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=43150
AMMAR	92	PR D45 3976	R. Ammar *et al.*	(CLEO Collab.)	REFID=41904
ARTUSO	92	PRL 69 3278	M. Artuso *et al.*	(CLEO Collab.)	REFID=43120
BAI	92	PRL 69 3021	J.Z. Bai *et al.*	(BES Collab.)	REFID=43117
BATTLE	92	PL B291 488	M. Battle *et al.*	(CLEO Collab.)	REFID=42208
BUSKULIC	92J	PL B297 459	D. Buskulic *et al.*	(ALEPH Collab.)	REFID=43222

DECAMP	92C	ZPHY C54 211	D. Decamp *et al.*	(ALEPH Collab.)	REFID=41902
ADEVA	91F	PL B265 451	B. Adeva *et al.*	(L3 Collab.)	REFID=41610
ALBRECHT	91D	PL B260 259	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41529
ALEXANDER	91D	PL B266 201	G. Alexander *et al.*	(OPAL Collab.)	REFID=41613
ANTREASYAN	91	PL B259 216	D. Antreasyan *et al.*	(Crystal Ball Collab.)	REFID=41486
GRIFOLS	91	PL B255 611	J.A. Grifols, A. Mendez	(BARC)	REFID=41442
ABACHI	90	PR D41 1414	S. Abachi *et al.*	(HRS Collab.)	REFID=41243
ALBRECHT	90E	PL B246 278	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41335
ALBRECHT	90I	PL B250 164	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41414
BEHREND	90	ZPHY C46 537	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=40983
BOWCOCK	90	PR D41 805	T.J.V. Bowcock *et al.*	(CLEO Collab.)	REFID=41239
DELAGUILA	90	PL B252 116	F. del Aguila, M. Sher	(BARC, WILL)	REFID=41420
GOLDBERG	90	PL B251 223	M. Goldberg *et al.*	(CLEO Collab.)	REFID=41457
WU	90	PR D41 2339	D.Y. Wu *et al.*	(Mark II Collab.)	REFID=41246
ABACHI	89B	PR D40 902	S. Abachi *et al.*	(HRS Collab.)	REFID=40847
BEHREND	89B	PL B222 163	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=40817
JANSSEN	89	PL B228 273	H. Janssen *et al.*	(Crystal Ball Collab.)	REFID=40827
KLEINWORT	89	ZPHY C42 7	C. Kleinwort *et al.*	(JADE Collab.)	REFID=40854
ADEVA	88	PR D38 2665	B. Adeva *et al.*	(Mark-J Collab.)	REFID=40686
ALBRECHT	88B	PL B202 149	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40506
ALBRECHT	88L	ZPHY C41 1	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40861
ALBRECHT	88M	ZPHY C41 405	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40862
AMIDEI	88	PR D37 1750	D. Amidei *et al.*	(Mark II Collab.)	REFID=40433
BEHREND	88	PL B200 226	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=40441
BRAUNSCH...	88C	ZPHY C39 331	W. Braunschweig *et al.*	(TASSO Collab.)	REFID=40696
KEH	88	PL B212 123	S. Keh *et al.*	(Crystal Ball Collab.)	REFID=40655
TSCHIRHART	88	PL B205 407	R. Tschirhart *et al.*	(HRS Collab.)	REFID=40640
ABACHI	87B	PL B197 291	S. Abachi *et al.*	(HRS Collab.)	REFID=40432
ABACHI	87C	PRL 59 2519	S. Abachi *et al.*	(HRS Collab.)	REFID=40439
ADLER	87B	PRL 59 1527	J. Adler *et al.*	(Mark III Collab.)	REFID=40431
AIHARA	87B	PR D35 1553	H. Aihara *et al.*	(TPC Collab.)	REFID=40423
AIHARA	87C	PRL 59 751	H. Aihara *et al.*	(TPC Collab.)	REFID=40428
ALBRECHT	87L	PL B185 223	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40418
ALBRECHT	87P	PL B199 580	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40440
BAND	87	PL B198 297	H.R. Band *et al.*	(MAC Collab.)	REFID=40263
BAND	87B	PRL 59 415	H.R. Band *et al.*	(MAC Collab.)	REFID=40427
BARINGER	87	PRL 59 1993	P. Baringer *et al.*	(CLEO Collab.)	REFID=40436
BEBEK	87C	PR D36 690	C. Bebek *et al.*	(CLEO Collab.)	REFID=40429
BURCHAT	87	PR D35 27	P.R. Burchat *et al.*	(Mark II Collab.)	REFID=40422
BYLSMA	87	PR D35 2269	B.G. Bylsma *et al.*	(HRS Collab.)	REFID=40424
COFFMAN	87	PR D36 2185	D.M. Coffman *et al.*	(Mark III Collab.)	REFID=40430
DERRICK	87	PL B189 260	M. Derrick *et al.*	(HRS Collab.)	REFID=40421
FORD	87	PR D35 408	W.T. Ford *et al.*	(MAC Collab.)	REFID=40434
FORD	87B	PR D36 1971	W.T. Ford *et al.*	(MAC Collab.)	REFID=40438
GAN	87	PRL 59 411	K.K. Gan *et al.*	(Mark II Collab.)	REFID=40426
GAN	87B	PL B197 561	K.K. Gan *et al.*	(Mark II Collab.)	REFID=40437
AIHARA	86E	PRL 57 1836	H. Aihara *et al.*	(TPC Collab.)	REFID=40420
BARTEL	86D	PL B182 216	W. Bartel *et al.*	(JADE Collab.)	REFID=40417
PDG	86	PL 170B 1	M. Aguilar-Benitez *et al.*	(CERN, CIT+)	REFID=40122
RUCKSTUHL	86	PRL 56 2132	W. Ruckstuhl *et al.*	(DELCO Collab.)	REFID=10349
SCHMIDKE	86	PRL 57 527	W.B. Schmidke *et al.*	(Mark II Collab.)	REFID=10350
YELTON	86	PRL 56 812	J.M. Yelton *et al.*	(Mark II Collab.)	REFID=10351
ALTHOFF	85	ZPHY C26 521	M. Althoff *et al.*	(TASSO Collab.)	REFID=10339
ASH	85B	PRL 55 2118	W.W. Ash *et al.*	(MAC Collab.)	REFID=10340
BALTRUSAIT...	85	PRL 55 1842	R.M. Baltrusaitis *et al.*	(Mark III Collab.)	REFID=10341
BARTEL	85F	PL 161B 188	W. Bartel *et al.*	(JADE Collab.)	REFID=10342
BEHRENDS	85	PR D32 2468	S. Behrends *et al.*	(CLEO Collab.)	REFID=10343
BELTRAMI	85	PRL 54 1775	I. Beltrami *et al.*	(HRS Collab.)	REFID=10344
BERGER	85	ZPHY C28 1	C. Berger *et al.*	(PLUTO Collab.)	REFID=10345
BURCHAT	85	PRL 54 2489	P.R. Burchat *et al.*	(Mark II Collab.)	REFID=10290
FERNANDEZ	85	PRL 54 1624	E. Fernandez *et al.*	(MAC Collab.)	REFID=10347
MILLS	85	PRL 54 624	G.B. Mills *et al.*	(DELCO Collab.)	REFID=10292
AIHARA	84C	PR D30 2436	H. Aihara *et al.*	(TPC Collab.)	REFID=10334
BEHREND	84	ZPHY C23 103	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=10336
MILLS	84	PRL 52 1944	G.B. Mills *et al.*	(DELCO Collab.)	REFID=10337
BEHREND	83C	PL 127B 270	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=10331
SILVERMAN	83	PR D27 1196	D.J. Silverman, G.L. Shaw	(UCI)	REFID=43784
BEHREND	82	PL 114B 282	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=10324
BLOCKER	82B	PRL 48 1586	C.A. Blocker *et al.*	(Mark II Collab.)	REFID=10326
BLOCKER	82D	PL 109B 119	C.A. Blocker *et al.*	(Mark II Collab.) J	REFID=10325
FELDMAN	82	PRL 48 66	G.J. Feldman *et al.*	(Mark II Collab.)	REFID=10328
HAYES	82	PR D25 2869	K.G. Hayes *et al.*	(Mark II Collab.)	REFID=10330
BERGER	81B	PL 99B 489	C. Berger *et al.*	(PLUTO Collab.)	REFID=10322
DORFAN	81	PRL 46 215	J.M. Dorfan *et al.*	(Mark II Collab.)	REFID=10323
BRANDELIK	80	PL 92B 199	R. Brandelik *et al.*	(TASSO Collab.)	REFID=10318
ZHOLENTZ	80	PL 96B 214	A.A. Zholents *et al.*	(NOVO)	REFID=10320
Also		SJNP 34 814	A.A. Zholents *et al.*	(NOVO)	REFID=10321
		Translated from YAF 34 1471.			
BACINO	79B	PRL 42 749	W.J. Bacino *et al.*	(DELCO Collab.)	REFID=10316
KIRKBY	79	SLAC-PUB-2419	J. Kirkby	(SLAC) J	REFID=10283
Batavia Lepton Photon Conference.					
BACINO	78B	PRL 41 13	W.J. Bacino *et al.*	(DELCO Collab.) J	REFID=10304
Also		Tokyo Conf. 249	J. Kirz	(STON)	REFID=10305
Also		PL 96B 214	A.A. Zholents *et al.*	(NOVO)	REFID=10320
BRANDELIK	78	PL 73B 109	R. Brandelik *et al.*	(DASP Collab.) J	REFID=10280
FELDMAN	78	Tokyo Conf. 777	G.J. Feldman	(SLAC) J	REFID=10355
JAROS	78	PRL 40 1120	J. Jaros *et al.*	(LGW Collab.)	REFID=10310
PERL	75	PRL 35 1489	M.L. Perl *et al.*	(LBL, SLAC)	REFID=10294

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PERL	80	ARNPS 30 299	M.L. Perl	(SLAC)	REFID=10359