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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.715±0.019 OUR AVERAGE					
0.714±0.036		DOLINSKY	89	ND	$e^+e^- \to \pi^+\pi^-\pi^0$
0.72 ±0.03		BARKOV	87	CMD	$e^+e^- \to \pi^+\pi^-\pi^0$
0.66 ±0.05		KURDADZE	84	OLYA	$e^+e^- \to$ hadrons
0.675±0.069		CORDIER	80	WIRE	$e^+e^- \to 3\pi$
0.83 ±0.10		BENAKSAS	72B	OSPK	$e^+e^- \to 3\pi$
0.77 ±0.06		[11] AUGUSTIN	69D	OSPK	$e^+e^- \to 2\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.64 ±0.04	1488	[12] KURDADZE	83B	OLYA	$e^+e^- \to \pi^+\pi^-\pi^0$
0.65 ±0.13	33	[13] ASTVACAT...	68	OSPK	Assume SU(3)+mixing

[11] Rescaled by us to correspond to ω width 8.4 MeV.
[12] Superseded by KURDADZE 84.
[13] Not resolved from ρ decay. Error statistical only.

$\Gamma(\text{neutrals})/\Gamma_{total}$ — $(\Gamma_2+\Gamma_4)/\Gamma$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.090±0.006 OUR FIT					
0.081±0.011 OUR AVERAGE					
0.075±0.025		BIZZARRI	71	HBC	0.0 $p\overline{p}$
0.079±0.019		DEINET	69B	OSPK	1.5 π^-p
0.084±0.015		BOLLINI	68C	CNTR	2.1 π^-p
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.073±0.018	42	BASILE	72B	CNTR	1.67 π^-p

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ — Γ_3/Γ

See also $\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0221±0.0030 OUR FIT				
0.021 ±0.004 OUR AVERAGE				
0.023 ±0.005	BARKOV	85	OLYA	e^+e^-
$0.016^{+0.009}_{-0.007}$	QUENZER	78	CNTR	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.010 ±0.001	[14] WICKLUND	78	ASPK	3,4,6 $\pi^\pm N$
0.0122±0.0030	ALVENSLEBEN	71C	CNTR	Photoproduction
$0.013^{+0.012}_{-0.009}$	MOFFEIT	71	HBC	2.8,4.7 γp
$0.0080^{+0.0028}_{-0.002}$	[15] BIGGS	70B	CNTR	$4.2\gamma C \to \pi^+\pi^- C$

[14] From a model-dependent analysis assuming complete coherence.
[15] Re-evaluated under $\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ by BEHREND 71 using more accurate $\omega \to \rho$ photoproduction cross-section ratio.

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\text{neutrals})$ — $\Gamma_{12}/(\Gamma_2+\Gamma_4)$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.22±0.07		[16] DAKIN	72	OSPK	1.4 $\pi^-p \to n$MM
<0.19	90	DEINET	69B	OSPK	

[16] See $\Gamma(\pi^0\gamma)/\Gamma(\text{neutrals})$.

$\Gamma(\pi^0\gamma)/\Gamma(\text{neutrals})$ — $\Gamma_2/(\Gamma_2+\Gamma_4)$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.78±0.07		[17] DAKIN	72	OSPK	1.4 $\pi^-p \to n$MM
>0.81	90	DEINET	69B	OSPK	

[17] Error statistical only. Authors obtain good fit also assuming $\pi^0\gamma$ as the only neutral decay.

$\Gamma(\eta\gamma)/\Gamma_{total}$ — Γ_5/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
8.3±2.1	ALDE	94	GAM2	$38\pi^-p \to \omega n$
7.3±2.9	[18] DOLINSKY	89	ND	$e^+e^- \to \eta\gamma$
35 ±5	[19] DOLINSKY	89	ND	$e^+e^- \to \eta\gamma$
$3.0^{+2.5}_{-1.8}$	[18] ANDREWS	77	CNTR	6.7–10 γCu
29.0±7.0	[19] ANDREWS	77	CNTR	6.7–10 γCu

[18] Solution corresponding to constructive ω-ρ interference. The quark model predicts a relative decay phase of zero.
[19] Solution corresponding to destructive ω-ρ interference.

$\Gamma(\pi^0\mu^+\mu^-)/\Gamma(\mu^+\mu^-)$ — Γ_7/Γ_{13}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.2±0.6	30	[20] DZHELYADIN	79	CNTR	25–33 π^-p

[20] Superseded by DZHELYADIN 81B result above.

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.8942±0.0062	DOLINSKY	89	ND	$e^+e^- \to \pi^+\pi^-\pi^0$

$\omega(782)$ REFERENCES

ALDE 94 ZPHY C61 35 +Binon+ (SERP, LAPP, LANL, BELG, BRUX, CERN)
AMSLER 93B PL B311 362 +Armstrong, Augustin+ (Crystal Barrel Collab.)
WEIDENAUER 93 ZPHY C59 387 +Duch+ (ASTERIX Collab.)
WEIDENAUER 90 ZPHY C47 353 +Duch, Heel, Kalinowsky+ (ASTERIX Collab.)
DOLINSKY 89 ZPHY C42 511 +Druzhinin, Dubrovin, Golubev+ (NOVO)
BITYUKOV 88B SJNP 47 800 +Borisov, Viktorov, Golovkin+ (SERP)
Translated from YAF 47 1258.
DOLINSKY 88 SJNP 48 277 +Druzhinin, Dubrovin, Golubev+ (NOVO)
Translated from YAF 48 442.
KURDADZE 88 JETPL 47 512 +Leltchouk, Pakhtusova, Sidorov+ (NOVO)
Translated from ZETFP 47 432.
AULCHENKO 87 PL B186 432 +Dolinsky, Druzhinin, Dubrovin+ (NOVO)
BARKOV 87 JETPL 46 164 +Vasserman, Vorobev, Ivanov (NOVO)
Translated from ZETFP 46 132.
KURDADZE 86 JETPL 43 643 +Lelchuk, Pakhtusova, Sidorov, Skrinskii+ (NOVO)
Translated from ZETFP 43 497.
BARKOV 85 NP B256 365 +Chilingarov, Eidelman, Khazin, Lelchuk+ (NOVO)
KURDADZE 84 IYF 84-7 Preprint +Leltchouk, Pakhtusova, Sidorov+ (NOVO)
KURDADZE 83B JETPL 36 274 +Pakhtusova, Sidorov+ (NOVO)
Translated from ZETFP 36 221.
DZHELYADIN 81B PL 102B 296 +Golovkin, Konstantinov+ (SERP)
CORDIER 80 NP B172 13 +Delcourt, Eschstruth, Fulda+ (LALO)
ROOS 80 LNC 27 321 +Pellinen (HELS)
BENKHEIRI 79 NP B150 268 +Eisenstein+ (EPOL, CERN, CDEF, LALO)
DZHELYADIN 79 PL 84B 143 +Golovkin, Gritsuk+ (SERP)
COOPER 78B NP B146 1 +Ganguli+ (TATA, CERN, CDEF, MADR)
QUENZER 78 PL 76B 512 +Ribes, Rumpf, Bertrand, Bizot, Chase+ (LALO)
VANAPEL... 78 NP B133 245 VanApeldoorn, Grundeman, Harting+ (ZEEM)
WICKLUND 78 PR D17 1197 +Ayres, Diebold, Greene, Kramer, Pawlicki (ANL)
ANDREWS 77 PRL 38 198 +Fukushima, Harvey, Lobkowicz, May+ (ROCH)
GESSAROLI 77 NP B126 382 + (BGNA, FIRZ, GENO, MILA, OXF, PAVI)
KEYNE 76 PR D14 28 +Binnie, Carr, Debenham, Garbutt+ (LOIC, SHMP)
Also 73B PR D8 2789 Binnie, Carr, Debenham, Duane+ (LOIC, SHMP)
KALBFLEISCH 75 PR D11 987 +Strand, Chapman (BNL, MICH)
AGUILAR-... 72B PR D6 29 Aguilar-Benitez, Chung, Eisner, Samios (BNL)
APEL 72B PL 41B 234 +Auslander, Muller, Bertolucci+ (KARLK, KARLE, PISA)
BASILE 72B Phil. Conf. 153 +Bollini, Broglin, Dalpiaz, Frabetti+ (CERN)
BENAKSAS 72B PL 42B 507 +Cosme, Jean-Marie, Jullian (ORSAY)
BENAKSAS 72C PL 42B 511 +Cosme, Jean-Marie, Jullian, Laplanche+ (ORSAY)
BORENSTEIN 72 PR D5 1559 +Danburg, Kalbfleisch+ (BNL, MICH)
BROWN 72 PL 42B 117 +Downing, Holloway, Huld, Bernstein+ (ILL, ILLC)
DAKIN 72 PR D6 2321 +Hauser, Kreisler, Mischke (PRIN)
RATCLIFF 72 PL 38B 345 +Bulos, Carnegie, Kluge, Leith, Lynch+ (SLAC)
ALVENSLEBEN 71C PRL 27 888 +Becker, Busza, Chen, Cohen+ (DESY)
BALDIN 71 SJNP 13 758 +Yergakov, Trebukhovsky, Shishov (ITEP)
Translated from YAF 13 1318.
BEHREND 71 PRL 27 61 +Lee, Nordberg, Wehmann+ (ROCH, CORN, FNAL)
BIZZARRI 71 NP B27 140 +Montanet, Nilsson, D'Andlau+ (CERN, CDEF)
COYNE 71 NP B32 333 +Butler, Fang-Landau, MacNaughton (LRL)
MOFFEIT 71 NP B29 349 +Bingham, Fretter+ (LRL, UCB, SLAC, TUFTS)
ABRAMOVI... 70 NP B20 209 Abramovich, Blumenfeld, Bruyant+ (CERN)
BIGGS 70B PRL 24 1201 +Clifft, Gabathuler, Kitching, Rand (DARE)
BIZZARRI 70 PRL 25 1385 +Ciapetti, Dore, Gaspero, Guidoni+ (ROMA, SYRA)
ROOS 70 DNPL/R7 173 (CERN)
Proc. Daresbury Study Weekend No. 1.
AUGUSTIN 69D PL 28B 513 +Benaksas, Buon, Gracco, Haissinski+ (ORSAY)
BIZZARRI 69 NP B14 169 +Foster, Gavillet, Montanet+ (CERN, CDEF)
DEINET 69B PL 30B 426 +Menzione, Muller, Buniatov+ (KARL, CERN)
JACQUET 69B NC 63A 743 +Nguyen-Khac, Haatuft, Halsteinslid (EPOL, BERG)
WILSON 69 Private Comm. (HARV)
Also 69 PR 178 2095 Wehmann+ (HARV, CASE, SLAC, CORN, MCGI)
ASTVACAT... 68 PL 27B 45 Astvacaturov, Azimov, Baldin+ (JINR, MOSU)
BOLLINI 68C NC 56A 531 +Buhler, Dalpiaz, Massam+ (CERN, BGNA, STRB)
BARASH 67B PR 156 1399 +Kirsch, Miller, Tan (COLU)
FELDMAN 67C PR 159 1219 +Frati, Gleeson, Halpern, Nussbaum+ (PENN)
DIGIUGNO 66B NC 44A 1272 +Peruzzi, Troise+ (NAPL, FRAS, TRST)
FLATTE 66 PR 145 1050 +Huwe, Murray, Button-Shafer, Solmitz+ (LRL)
JAMES 66 PR 142 896 +Kraybill (YALE, BNL)
BARBARO-... 65 PRL 14 279 Barbaro-Galtieri, Tripp (LRL)
BARMIN 64 JETP 18 1289 +Dolgolenko, Krestnikov+ (ITEP)
Translated from ZETF 45 1879.
KRAEMER 64 PR 136B 496 +Madansky, Fields+ (JHU, NWES, WOOD)
BUSCHBECK 63 Siena Conf. 1 166 +Czapp+ (VIEN, CERN, ANIK)

OTHER RELATED PAPERS

DOLINSKY 86 PL B174 453 +Druzhinin, Dubrovin, Eidelman+ (NOVO)
KURDADZE 83 JETPL 37 733 +Lelchuk, Pakhtusova+ (NOVO)
Translated from ZETFP 37 613.
ALFF-... 62B PRL 9 325 Alff-Steinberger, Berley, Colley+ (COLU, RUTG)
ARMENTEROS 62 CERN Conf. 90 +Budde+ (CERN, CDEF, EPOL)
STEVENSON 62 PR 125 687 +Alvarez, Maglich, Rosenfeld (LRL)
MAGLICH 61 PRL 7 178 +Alvarez, Rosenfeld, Stevenson (LRL)
PEVSNER 61 PRL 7 421 +Kraemer, Nussbaum, Richardson+ (JHU)
XUONG 61 PRL 7 327 +Lynch (LRL)

$\boxed{\eta'(958)}$

$I^G(J^{PC}) = 0^+(0^{-+})$

Our latest mini-review on this particle can be found in the 1984 edition. See also the mini-review under non-$q\overline{q}$ candidates. (See the index for the page number.)

$\eta'(958)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
957.77±0.14 OUR AVERAGE					
959 ±1	630±50	BELADIDZE	92C	VES	$36\ \pi^-\text{Be} \to \pi^-\eta'\eta\text{Be}$
958 ±1	340	ARMSTRONG	91B	OMEG	$300\ pp \to pp\eta\pi^+\pi^-$
958.2 ±0.4	622	AUGUSTIN	90	DM2	$J/\psi \to \gamma\eta\pi^+\pi^-$
957.8 ±0.2	2420	AUGUSTIN	90	DM2	$J/\psi \to \gamma\gamma\pi^+\pi^-$
956.3 ±1.0	143±12	GIDAL	87	MRK2	$e^+e^- \to e^+e^-\eta\pi^+\pi^-$
957.46±0.33		DUANE	74	MMS	$\pi^-p \to n$MM
958.2 ±0.5	1414	DANBURG	73	HBC	$2.2\ K^-p \to \Lambda X^0$
958 ±1	400	JACOBS	73	HBC	$2.9\ K^-p \to \Lambda X^0$
956.1 ±1.1	3415	BASILE	71	CNTR	$1.6\ \pi^-p \to nX^0$
957.4 ±1.4	535	BASILE	71	CNTR	$1.6\ \pi^-p \to nX^0$
957 ±1		RITTENBERG	69	HBC	1.7–2.7 K^-p