

$f_0(1500)$

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

See also the mini-reviews on scalar mesons under $f_0(1370)$ and on non- $q\bar{q}$ candidates. (See the index for the page number.)

$f_0(1500)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1507 ± 5 OUR AVERAGE		Error includes scale factor of 1.2.		
1515 ± 12		1 BARBERIS 00A		450 $pp \rightarrow p_f \eta \eta p_s$
1511 ± 9		1,2 BARBERIS 00C		450 $pp \rightarrow p_f 4\pi p_s$
1510 ± 8		1 BARBERIS 00E		450 $pp \rightarrow p_f \eta \eta p_s$
1522 ± 25		BERTIN 98 OBLX		0.05–0.405 $\bar{n}p \rightarrow \pi^+ \pi^+ \pi^-$
1449 ± 20		1 BERTIN 97C OBLX		0.0 $\bar{p}p \rightarrow \pi^+ \pi^- \pi^0$
1515 ± 20		ABELE 96B CBAR		0.0 $\bar{p}p \rightarrow \pi^0 K_L^0 K_L^0$
1500 ± 15		3 AMSLER 95B CBAR		0.0 $\bar{p}p \rightarrow 3\pi^0$
1505 ± 15		4 AMSLER 95C CBAR		0.0 $\bar{p}p \rightarrow \eta \eta \pi^0$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1497 ± 10		5 BARBERIS 99 OMEG		450 $pp \rightarrow p_s p_f K^+ K^-$
1502 ± 10		5 BARBERIS 99B OMEG		450 $pp \rightarrow p_s p_f \pi^+ \pi^-$
1502 ± 12 ± 10		6 BARBERIS 99D OMEG		450 $pp \rightarrow K^+ K^-$, $\pi^+ \pi^-$
1530 ± 45		5 BELLAZZINI 99 GAM4		450 $pp \rightarrow pp \pi^0 \pi^0$
1505 ± 18		5 FRENCH 99		300 $pp \rightarrow p_f (K^+ K^-) p_s$
1580 ± 80		5 ALDE 98 GAM4		100 $\pi^- p \rightarrow \pi^0 \pi^0 n$
1499 ± 8		1 ANISOVICH 98B RVUE		Compilation
~ 1520		REYES 98 SPEC		800 $pp \rightarrow p_s p_f K_S^0 K_S^0$
1510 ± 20		1 BARBERIS 97B OMEG		450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
~ 1475		FRABETTI 97D E687		$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$
~ 1505		ABELE 96 CBAR		0.0 $\bar{p}p \rightarrow 5\pi^0$
1500 ± 8		1 ABELE 96C RVUE		Compilation
1460 ± 20	120	5 AMELIN 96B VES		37 $\pi^- A \rightarrow \eta \eta \pi^- A$
1500 ± 8		BUGG 96 RVUE		
1500 ± 10		7 AMSLER 95D CBAR		0.0 $\bar{p}p \rightarrow \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta, \pi^0 \pi^0 \eta$
1445 ± 5		8 ANTINORI 95 OMEG		300,450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
1497 ± 30		5 ANTINORI 95 OMEG		300,450 $pp \rightarrow pp \pi^+ \pi^-$
~ 1505		BUGG 95 MRK3		$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$

1446 ± 5		⁵ ABATZIS	94 OMEG	450 $p p \rightarrow p p 2(\pi^+ \pi^-)$
1545 ± 25		⁵ AMSLER	94E CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \eta \eta'$
1520 ± 25		^{1,9} ANISOVICH	94 CBAR	0.0 $\bar{p} p \rightarrow 3\pi^0, \pi^0 \eta \eta$
1505 ± 20		^{1,10} BUGG	94 RVUE	$\bar{p} p \rightarrow 3\pi^0, \eta \eta \pi^0, \eta \pi^0 \pi^0$
1560 ± 25		⁵ AMSLER	92 CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \eta \eta$
1550 ± 45 ± 30		⁵ BELADIDZE	92C VES	36 $\pi^- \text{Be} \rightarrow \pi^- \eta' \eta \text{Be}$
1449 ± 4		⁵ ARMSTRONG	89E OMEG	300 $p p \rightarrow p p 2(\pi^+ \pi^-)$
1610 ± 20		⁵ ALDE	88 GAM4	300 $\pi^- N \rightarrow \pi^- N 2\eta$
~ 1525		ASTON	88D LASS	11 $K^- p \rightarrow K_S^0 K_S^0 \Lambda$
1570 ± 20	600	⁵ ALDE	87 GAM4	100 $\pi^- p \rightarrow 4\pi^0 n$
1575 ± 45		¹¹ ALDE	86D GAM4	100 $\pi^- p \rightarrow 2\eta n$
1568 ± 33		⁵ BINON	84C GAM2	38 $\pi^- p \rightarrow \eta \eta' n$
1592 ± 25		⁵ BINON	83 GAM2	38 $\pi^- p \rightarrow 2\eta n$
1525 ± 5		⁵ GRAY	83 DBC	0.0 $\bar{p} N \rightarrow 3\pi$

¹ T-matrix pole.

² Average between $\pi^+ \pi^- 2\pi^0$ and $2(\pi^+ \pi^-)$.

³ T-matrix pole, supersedes ANISOVICH 94.

⁴ T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.

⁵ Breit-Wigner mass.

⁶ Supersedes BARBERIS 99 and BARBERIS 99B.

⁷ T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.

⁸ Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.

⁹ From a simultaneous analysis of the annihilations $\bar{p} p \rightarrow 3\pi^0, \pi^0 \eta \eta$.

¹⁰ Reanalysis of ANISOVICH 94 data.

¹¹ From central value and spread of two solutions. Breit-Wigner mass.

$f_0(1500)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
109 ± 7	OUR AVERAGE			
110 ± 24		¹² BARBERIS	00A	450 $p p \rightarrow p_f \eta \eta p_S$
102 ± 18		^{12,13} BARBERIS	00C	450 $p p \rightarrow p_f 4\pi p_S$
110 ± 16		¹² BARBERIS	00E	450 $p p \rightarrow p_f \eta \eta p_S$
108 ± 33		BERTIN	98 OBLX	0.05–0.405 $\bar{p} p \rightarrow \pi^+ \pi^+ \pi^-$
114 ± 30		¹² BERTIN	97C OBLX	0.0 $\bar{p} p \rightarrow \pi^+ \pi^- \pi^0$
105 ± 15		ABELE	96B CBAR	0.0 $\bar{p} p \rightarrow \pi^0 K_L^0 K_L^0$
120 ± 25		¹⁴ AMSLER	95B CBAR	0.0 $\bar{p} p \rightarrow 3\pi^0$
120 ± 30		¹⁵ AMSLER	95C CBAR	0.0 $\bar{p} p \rightarrow \eta \eta \pi^0$

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

104 ± 25		16 BARBERIS	99 OMEG	450 $pp \rightarrow p_s p_f K^+ K^-$
131 ± 15		16 BARBERIS	99B OMEG	450 $pp \rightarrow p_s p_f \pi^+ \pi^-$
98 ± 18 ± 16		17 BARBERIS	99D OMEG	450 $pp \rightarrow K^+ K^-$,
				$\pi^+ \pi^-$
160 ± 50		16 BELLAZZINI	99 GAM4	450 $pp \rightarrow pp \pi^0 \pi^0$
100 ± 33		16 FRENCH	99	300 $pp \rightarrow p_f (K^+ K^-) p_s$
280 ± 100		18 ALDE	98 GAM4	100 $\pi^- p \rightarrow \pi^0 \pi^0 n$
130 ± 20		12 ANISOVICH	98B RVUE	Compilation
120 ± 35		12 BARBERIS	97B OMEG	450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
~ 100		FRABETTI	97D E687	$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$
~ 169		ABELE	96 CBAR	0.0 $\bar{p}p \rightarrow 5\pi^0$
100 ± 30	120	16 AMELIN	96B VES	37 $\pi^- A \rightarrow \eta \eta \pi^- A$
132 ± 15		BUGG	96 RVUE	
154 ± 30		19 AMSLER	95D CBAR	0.0 $\bar{p}p \rightarrow \pi^0 \pi^0 \pi^0$,
				$\pi^0 \eta \eta, \pi^0 \pi^0 \eta$
65 ± 10		20 ANTINORI	95 OMEG	300,450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
199 ± 30		16 ANTINORI	95 OMEG	300,450 $pp \rightarrow pp \pi^+ \pi^-$
56 ± 12		16 ABATZIS	94 OMEG	450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
100 ± 40		16 AMSLER	94E CBAR	0.0 $\bar{p}p \rightarrow \pi^0 \eta \eta'$
148 $\begin{smallmatrix} + \\ - \end{smallmatrix}$ $\begin{smallmatrix} 20 \\ 25 \end{smallmatrix}$		12,21 ANISOVICH	94 CBAR	0.0 $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta \eta$
150 ± 20		12,22 BUGG	94 RVUE	$\bar{p}p \rightarrow 3\pi^0, \eta \eta \pi^0$,
				$\eta \pi^0 \pi^0$
245 ± 50		16 AMSLER	92 CBAR	0.0 $\bar{p}p \rightarrow \pi^0 \eta \eta$
153 ± 67 ± 50		16 BELADIDZE	92C VES	36 $\pi^- Be \rightarrow \pi^- \eta' \eta Be$
78 ± 18		16 ARMSTRONG	89E OMEG	300 $pp \rightarrow pp 2(\pi^+ \pi^-)$
170 ± 40		16 ALDE	88 GAM4	300 $\pi^- N \rightarrow \pi^- N 2\eta$
150 ± 20	600	16 ALDE	87 GAM4	100 $\pi^- p \rightarrow 4\pi^0 n$
265 ± 65		23 ALDE	86D GAM4	100 $\pi^- p \rightarrow 2\eta n$
260 ± 60		16 BINON	84C GAM2	38 $\pi^- p \rightarrow \eta \eta' n$
210 ± 40		16 BINON	83 GAM2	38 $\pi^- p \rightarrow 2\eta n$
101 ± 13		16 GRAY	83 DBC	0.0 $\bar{p}N \rightarrow 3\pi$

12 T-matrix pole.

13 Average between $\pi^+ \pi^- 2\pi^0$ and $2(\pi^+ \pi^-)$.

14 T-matrix pole, supersedes ANISOVICH 94.

15 T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.

16 Breit-Wigner mass.

17 Supersedes BARBERIS 99 and BARBERIS 99B.

18 Breit-Wigner width.

19 T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.

20 Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.

²¹ From a simultaneous analysis of the annihilations $\bar{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$.

²² Reanalysis of ANISOVICH 94 data.

²³ From central value and spread of two solutions. Breit-Wigner mass.

$f_0(1500)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $\eta\eta'(958)$	seen
Γ_2 $\eta\eta$	seen
Γ_3 4π	seen
Γ_4 $4\pi^0$	seen
Γ_5 $2\pi^+2\pi^-$	seen
Γ_6 $2(\pi\pi)_{S\text{-wave}}$	
Γ_7 $\rho\rho$	
Γ_8 $\pi(1300)\pi$	
Γ_9 $\pi\pi$	seen
Γ_{10} $\pi^+\pi^-$	seen
Γ_{11} $2\pi^0$	seen
Γ_{12} $K\bar{K}$	seen
Γ_{13} $\gamma\gamma$	not seen

$f_0(1500)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_9\Gamma_{13}/\Gamma$			
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.46	95	BARATE	00E ALEP	$\gamma\gamma \rightarrow \pi^+\pi^-$

$f_0(1500)$ BRANCHING RATIOS

$\Gamma(\eta\eta'(958))/\Gamma(\eta\eta)$	Γ_1/Γ_2		
VALUE	DOCUMENT ID	TECN	COMMENT
0.29±0.10	²⁴ AMSLER	95C CBAR	0.0 $\bar{p}p \rightarrow \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.84±0.23	ABELE	96C RVUE	Compilation
2.7 ±0.8	BINON	84C GAM2	38 $\pi^-p \rightarrow \eta\eta'n$

$\Gamma(\eta\eta'(958))/\Gamma(\pi\pi)$	Γ_1/Γ_9	
VALUE	DOCUMENT ID	COMMENT
0.095±0.026	BARBERIS	00A 450 $p\rho \rightarrow p_f\eta\eta p_S$

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$	Γ_2/Γ		
VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
large	ALDE	88 GAM4	300 $\pi^-N \rightarrow \eta\eta\pi^-N$
large	BINON	83 GAM2	38 $\pi^-p \rightarrow 2\eta n$

$\Gamma(4\pi^0)/\Gamma(\eta\eta)$

Γ_4/Γ_2

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.8±0.3	ALDE	87	GAM4 100 $\pi^- p \rightarrow 4\pi^0 n$
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$\Gamma(\rho\rho)/\Gamma(2(\pi\pi)_{\text{s-wave}})$

Γ_7/Γ_6

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>COMMENT</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

3.3±0.5	BARBERIS	00C 450 $p p \rightarrow p_f \pi^+ \pi^- 2\pi^0 p_S$
2.6±0.4	BARBERIS	00C 450 $p p \rightarrow p_f 2(\pi^+ \pi^-) p_S$

$\Gamma(2\pi^0)/\Gamma(\eta\eta)$

Γ_{11}/Γ_2

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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1.45±0.61	25 AMSLER	95C CBAR	0.0 $\bar{p} p \rightarrow \eta\eta\pi^0$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

4.29±0.72	26 ABELE	96C RVUE	Compilation
2.12±0.81	27 AMSLER	95D CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta\eta, \pi^0 \pi^0 \eta$
<0.3	BINON	83 GAM2	38 $\pi^- p \rightarrow 2\eta n$

$\Gamma(K\bar{K})/\Gamma(\eta\eta)$

Γ_{12}/Γ_2

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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1.85±0.41		BARBERIS	00E	450 $p p \rightarrow p_f \eta\eta p_S$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.4	90	28 PROKOSHKIN	91	GAM4 300 $\pi^- p \rightarrow \pi^- p \eta\eta$
<0.6		29 BINON	83	GAM2 38 $\pi^- p \rightarrow 2\eta n$

$\Gamma(K\bar{K})/\Gamma_{\text{total}}$

Γ_{12}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.044±0.021	BUGG	96 RVUE
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$\Gamma(K\bar{K})/\Gamma(\pi\pi)$

Γ_{12}/Γ_9

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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0.19±0.07	30 ABELE	98 CBAR	0.0 $\bar{p} p \rightarrow K_L^0 K^\pm \pi^\mp$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.33±0.03±0.07	BARBERIS	99D OMEG	450 $p p \rightarrow K^+ K^-, \pi^+ \pi^-$
0.20±0.08	31 ABELE	96B CBAR	0.0 $\bar{p} p \rightarrow \pi^0 K_L^0 K_L^0$

$\Gamma(\pi\pi)/\Gamma_{\text{total}}$

Γ_9/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.454±0.104	BUGG	96 RVUE
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$\Gamma(4\pi)/\Gamma(\pi\pi)$

Γ_3/Γ_9

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1.37 ± 0.16	BARBERIS	00D	450 $p\rho \rightarrow \rho_f 4\pi p_s$
2.1 ± 0.6	³² AMSLER	98 RVUE	
3.4 ± 0.8	³² ABELE	96 CBAR	0.0 $\bar{p}p \rightarrow 5\pi^0$

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

Γ_{10}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
seen	BERTIN	98 OBLX	0.05–0.405 $\bar{n}p \rightarrow$
possibly seen	FRABETTI	97D E687	$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$

$\Gamma(\eta\eta)/\Gamma(\pi\pi)$

Γ_2/Γ_9

VALUE	DOCUMENT ID	COMMENT
0.18 ± 0.03	BARBERIS	00E 450 $p\rho \rightarrow \rho_f \eta\eta p_s$
²⁴ Using AMSLER 94E ($\eta\eta' \pi^0$).		
²⁵ Using AMSLER 95B ($3\pi^0$).		
²⁶ 2π width determined to be 60 ± 12 MeV.		
²⁷ Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.		
²⁸ Combining results of GAM4 with those of WA76 on $K\bar{K}$ central production.		
²⁹ Using ETKIN 82B and COHEN 80.		
³⁰ Using $\pi^0\pi^0$ from AMSLER 95B.		
³¹ Using AMSLER 95B ($3\pi^0$), AMSLER 94C ($2\pi^0\eta$) and SU(3).		
³² Excluding $\rho\rho$ contribution to 4π .		

$f_0(1500)$ REFERENCES

BARATE	00E PL B472 189	R. Barate <i>et al.</i>	(ALEPH Collab.)
BARBERIS	00A PL B471 429	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	00C PL B471 440	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	00D PL B474 423	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	00E PL B479 59	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	99 PL B453 305	D. Barberis <i>et al.</i>	(Omega expt.)
BARBERIS	99B PL B453 316	D. Barberis <i>et al.</i>	(Omega expt.)
BARBERIS	99D PL B462 462	D. Barberis <i>et al.</i>	(Omega expt.)
BELLAZZINI	99 PL B467 296	R. Bellazzini <i>et al.</i>	
FRENCH	99 PL B214 213	B. French <i>et al.</i>	(WA76 Collab.)
ABELE	98 PR D57 3860	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ALDE	98 EPJ A3 361	D. Alde <i>et al.</i>	(GAM4 Collab.)
	Also 99 PAN 62 405	D. Alde <i>et al.</i>	(GAMS Collab.)
AMSLER	98 RMP 70 1293	C. Amsler	
ANISOVICH	98B UFN 41 419	V.V. Anisovich <i>et al.</i>	
BERTIN	98 PR D57 55	A. Bertin <i>et al.</i>	(OBELIX Collab.)
REYES	98 PRL 81 4079	M.A. Reyes <i>et al.</i>	
BARBERIS	97B PL B413 217	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BERTIN	97C PL B408 476	A. Bertin <i>et al.</i>	(OBELIX Collab.)
FRABETTI	97D PL B407 79	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ABELE	96 PL B380 453	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	96B PL B385 425	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	96C NP A609 562	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
AMELIN	96B PAN 59 976	D.V. Amelin <i>et al.</i>	(SERP, TBIL)
	Translated from YAF 59 1021.		

BUGG	96	NP B471 59	D.V. Bugg, A.V. Sarantsev, B.S. Zou	(LOQM, PNPI)
AMSLER	95B	PL B342 433	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	95C	PL B353 571	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	95D	PL B355 425	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
ANTINORI	95	PL B353 589	F. Antinori <i>et al.</i>	(ATHU, BARI, BIRM+)
BUGG	95	PL B353 378	D.V. Bugg <i>et al.</i>	(LOQM, PNPI, WASH)
ABATZIS	94	PL B324 509	S. Abatzis <i>et al.</i>	(ATHU, BARI, BIRM+)
AMSLER	94C	PL B327 425	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	94D	PL B333 277	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	94E	PL B340 259	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
ANISOVICH	94	PL B323 233	V.V. Anisovich <i>et al.</i>	
BUGG	94	PR D50 4412	D.V. Bugg <i>et al.</i>	(LOQM)
AMSLER	92	PL B291 347	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
BELADIDZE	92C	SJNP 55 1535	G.M. Beladidze, S.I. Bitjukov, G.V. Borisov	(SERP+)
		Translated from YAF 55	2748.	
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2, GAM4 Collab.)
		Translated from DANS 316	900.	
ARMSTRONG	89E	PL B228 536	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)
ALDE	88	PL B201 160	D.M. Alde <i>et al.</i>	(SERP, BELG, LANL, LAPP+)
ASTON	88D	NP B301 525	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
ALDE	87	PL B198 286	D.M. Alde <i>et al.</i>	(LANL, BRUX, SERP, LAPP)
ALDE	86D	NP B269 485	D.M. Alde <i>et al.</i>	(BELG, LAPP, SERP, CERN+)
BINON	84C	NC 80A 363	F.G. Binon <i>et al.</i>	(BELG, LAPP, SERP+)
BINON	83	NC 78A 313	F.G. Binon <i>et al.</i>	(BELG, LAPP, SERP+)
Also	83B	SJNP 38 561	F.G. Binon <i>et al.</i>	(BELG, LAPP, SERP+)
		Translated from YAF 38	934.	
GRAY	83	PR D27 307	L. Gray <i>et al.</i>	(SYRA)
ETKIN	82B	PR D25 1786	A. Etkin <i>et al.</i>	(BNL, CUNY, TUFTS, VAND)
COHEN	80	PR D22 2595	D. Cohen <i>et al.</i>	(ANL)

OTHER RELATED PAPERS

ANISOVICH	99H	PL B467 289	A.V. Anisovich, V.V. Anisovich	
AMSLER	98	RMP 70 1293	C. Amsler	
STROHMEIER	98	PL B438 21	M. Strohmeier <i>et al.</i>	
ANISOVICH	97	PL B395 123	A.V. Anisovich, A.V. Sarantsev	(PNPI)
ANISOVICH	97B	ZPHY A357 123	A.V. Anisovich <i>et al.</i>	(PNPI)
ANISOVICH	97C	PL B413 137	A.V. Anisovich, A.V. Sarantsev	
ANISOVICH	97E	PAN 60 1892	A.V. Anisovich <i>et al.</i>	(PNPI)
		Translated from YAF 60	2065.	
PROKOSHKIN	97	SPD 42 117	Y.D. Prokoshkin <i>et al.</i>	(SERP)
		Translated from DANS 353	323.	
AMSLER	96	PR D53 295	C. Amsler, F.E. Close	(ZURI, RAL)
AMSLER	95E	PL B353 385	C. Amsler, F.E. Close	(ZURI, RAL)
GASPERO	95	NP A588 861	M. Gaspero	(ROMA)
SLAUGHTER	88	MPL A3 1361	M.D. Slaughter	(LANL)