$a_0(1450)$

$I^G(J^{PC}) = 1^-(0^{++})$

See minireview on scalar mesons under $f_0(600)$.

$a_0(1450)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1474±19 OUR AVERAGE					
1480±30		ABELE	98	CBAR	0.0 $\overline{p}p \to K^0_L K^\pm \pi^\mp$
1470±25		[1] AMSLER	95D	CBAR	0.0 $\overline{p}p \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1432±13±25		[2] BUGG	08A	RVUE	$\overline{p}p$
1477±10	80k	[3] UMAN	06	E835	5.2 $\overline{p}p \to \eta\eta\pi^0$
1441^{+40}_{-15}	35280	[4] BAKER	03	SPEC	$\overline{p}p \to \omega\pi^+\pi^-\pi^0$
1303±16		[5] BARGIOTTI	03	OBLX	$\overline{p}p$
1296±10		[6] AMSLER	02	CBAR	0.9 $\overline{p}p \to \pi^0\pi^0\eta$
1565±30		[6] ANISOVICH	98B	RVUE	Compilation
1290±10		[7] BERTIN	98B	OBLX	0.0 $\overline{p}p \to K^\pm K_S \pi^\mp$
1450±40		AMSLER	94D	CBAR	0.0 $\overline{p}p \to \pi^0\pi^0\eta$
1410±25		ETKIN	82C	MPS	23 $\pi^- p \to n2K^0_S$
~ 1300		MARTIN	78	SPEC	10 $K^\pm p \to K^0_S \pi p$
1255± 5		[8] CASON	76		

[1] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[2] Using data from AMSLER 94D, ABELE 98, and BAKER 03. Supersedes BUGG 94.
[3] Statistical error only.
[4] From the pole position.
[5] Coupled channel analysis of $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, and $K^\pm K^0_S \pi^\mp$.
[6] T-matrix pole.
[7] Not confirmed by BUGG 08A.
[8] Isospin 0 not excluded.

$a_0(1450)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
265±13 OUR AVERAGE					
265±15		ABELE	98	CBAR	0.0 $\overline{p}p \to K^0_L K^\pm \pi^\mp$
265±30		[9] AMSLER	95D	CBAR	0.0 $\overline{p}p \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
196±10±10		[10] BUGG	08A	RVUE	$\overline{p}p$
267±11	80k	[11] UMAN	06	E835	5.2 $\overline{p}p \to \eta\eta\pi^0$
110±14	35280	[12] BAKER	03	SPEC	$\overline{p}p \to \omega\pi^+\pi^-\pi^0$
92±16		[13] BARGIOTTI	03	OBLX	$\overline{p}p$
81±21		[14] AMSLER	02	CBAR	0.9 $\overline{p}p \to \pi^0\pi^0\eta$
292±40		[14] ANISOVICH	98B	RVUE	Compilation

80± 5	[15] BERTIN	98B	OBLX	0.0 $\overline{p}p \rightarrow K^{\pm}K_S\pi^{\mp}$
270±40	AMSLER	94D	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta$
230±30	ETKIN	82C	MPS	23 $\pi^- p \rightarrow n2K^0_S$
~ 250	MARTIN	78	SPEC	10 $K^{\pm}p \rightarrow K^0_S\pi p$
79±10	[16] CASON	76		

[9] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[10] Using data from AMSLER 94D, ABELE 98, and BAKER 03. Supersedes BUGG 94.
[11] Statistical error only.
[12] From the pole position.
[13] Coupled channel analysis of $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, and $K^{\pm}K^0_S\pi^{\mp}$.
[14] T-matrix pole.
[15] Not confirmed by BUGG 08A.
[16] Isospin 0 not excluded.

$a_0(1450)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\pi\eta$	seen
Γ_2	$\pi\eta'(958)$	seen
Γ_3	$K\overline{K}$	seen
Γ_4	$\omega\pi\pi$	seen
Γ_5	$a_0(980)\pi\pi$	seen

$\Gamma(\pi\eta'(958))/\Gamma(\pi\eta)$ Γ_2/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.35±0.16	[17] ABELE	98	CBAR	0.0 $\overline{p}p \rightarrow K^0_L K^{\pm}\pi^{\mp}$

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

0.43±0.19	ABELE	97C	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta'$

[17] Using $\pi^0\eta$ from AMSLER 94D.

$\Gamma(K\overline{K})/\Gamma(\pi\eta)$ Γ_3/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.88±0.23	[18] ABELE	98	CBAR	0.0 $\overline{p}p \rightarrow K^0_L K^{\pm}\pi^{\mp}$

[18] Using $\pi^0\eta$ from AMSLER 94D.

$\Gamma(\omega\pi\pi)/\Gamma(\pi\eta)$ Γ_4/Γ_1

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
10.7±2.3	35280	[19] BAKER	03	SPEC	$\overline{p}p \rightarrow \omega\pi^+\pi^-\pi^0$

[19] Using results on $\overline{p}p \rightarrow a_0(1450)^0\pi^0$, $a_0(1450) \rightarrow \eta\pi^0$ from ABELE 96C and assuming the $\omega\rho$ mechanism for the $\omega\pi\pi$ state.

$\Gamma(a_0(980)\pi\pi)/\Gamma_{total}$ Γ_5/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
seen	BUGG	08A	RVUE	$\overline{p}p$

$\Gamma(a_0(980)\pi\pi)/\Gamma(\pi\eta)$ Γ_5/Γ_1

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
≤ 4.3	ANISOVICH 01	RVUE	0	$\overline{p}p \rightarrow \eta 2\pi^+ 2\pi^-$

$a_0(1450)$ REFERENCES

BUGG	08A	PR D78 074023	D.V. Bugg	(LOQM)
UMAN	06	PR D73 052009	I. Uman *et al.*	(FNAL E835)
BAKER	03	PL B563 140	C.A. Baker *et al.*	
BARGIOTTI	03	EPJ C26 371	M. Bargiotti *et al.*	(OBELIX Collab.)
AMSLER	02	EPJ C23 29	C. Amsler *et al.*	
ANISOVICH	01	NP A690 567	A.V. Anisovich *et al.*	
ABELE	98	PR D57 3860	A. Abele *et al.*	(Crystal Barrel Collab.)
ANISOVICH	98B	SPU 41 419	V.V. Anisovich *et al.*	
		Translated from UFN 168 481.		
BERTIN	98B	PL B434 180	A. Bertin *et al.*	(OBELIX Collab.)
ABELE	97C	PL B404 179	A. Abele *et al.*	(Crystal Barrel Collab.)
ABELE	96C	NP A609 562	A. Abele *et al.*	(Crystal Barrel Collab.)
AMSLER	95B	PL B342 433	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95C	PL B353 571	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95D	PL B355 425	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	94D	PL B333 277	C. Amsler *et al.*	(Crystal Barrel Collab.) IGJPC
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