

**$a_2(1700)$** 

$$I^G(J^{PC}) = 1^-(2^{++})$$

 **$a_2(1700)$  MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1705 ± 40 OUR AVERAGE</b>				
1722 ± 15 ± 67		<sup>1</sup> RODAS	19 JPAC	191 $\pi^- p \rightarrow \eta^{(\prime)} \pi^- p$
1698 ± 44		<sup>2</sup> AMSLER	02 CBAR	0.9 $\bar{p} p \rightarrow \pi^0 \eta \eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1681 $^{+22}_{-35}$	46M	<sup>3,4</sup> AGHASYAN	18B COMP	190 $\pi^- p \rightarrow \pi^- \pi^+ \pi^- p$
1720 ± 10 ± 60		<sup>5</sup> JACKURA	18 JPAC	$\pi^- p \rightarrow \eta \pi^- p$
1726 ± 12 ± 25		<sup>4</sup> ABLIKIM	17K BES3	$\psi(2S) \rightarrow \gamma \eta \pi^+ \pi^-$
1675 ± 25		ANISOVICH	09 RVUE	0.0 $\bar{p} p, \pi N$
1722 ± 9 ± 15	18k	<sup>6</sup> SCHEGELSKY	06 RVUE	$\gamma \gamma \rightarrow \pi^+ \pi^- \pi^0$
1702 ± 7	80k	<sup>7</sup> UMAN	06 E835	5.2 $\bar{p} p \rightarrow \eta \eta \pi^0$
1721 ± 13 ± 44	145k	LU	05 B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
1737 ± 5 ± 7		ABE	04 BELL	10.6 $e^+ e^- \rightarrow e^+ e^- K^+ K^-$
1767 ± 14	221	<sup>8</sup> ACCIARRI	01H L3	$\gamma \gamma \rightarrow K_S^0 K_S^0, E_{\text{cm}}^{\text{ee}} = 91, 183-209 \text{ GeV}$
1660 ± 40		<sup>4</sup> ABELE	99B CBAR	1.94 $\bar{p} p \rightarrow \pi^0 \eta \eta$
~ 1775		<sup>9</sup> GRYGOREV	99 SPEC	40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
1752 ± 21 ± 4		ACCIARRI	97T L3	$\gamma \gamma \rightarrow \pi^+ \pi^- \pi^0$

<sup>1</sup> The coupled-channel analysis of both the  $\eta\pi$  and  $\eta'\pi$  systems using ADOLPH 15data. The mass is extracted from the T-matrix pole.

<sup>2</sup> T-matrix pole.

<sup>3</sup> Statistical error negligible.

<sup>4</sup> Breit-Wigner mass.

<sup>5</sup> Superseded by RODAS 19.

<sup>6</sup> From analysis of L3 data at 183–209 GeV.

<sup>7</sup> Statistical error only.

<sup>8</sup> Spin 2 dominant, isospin not determined, could also be  $I=1$ .

<sup>9</sup> Possibly two  $J^P = 2^+$  resonances with isospins 0 and 1.

 **$a_2(1700)$  WIDTH**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>258 ± 40 OUR AVERAGE</b>				
247 ± 17 ± 63		<sup>1</sup> RODAS	19 JPAC	191 $\pi^- p \rightarrow \eta^{(\prime)} \pi^- p$
265 ± 55		<sup>2</sup> AMSLER	02 CBAR	0.9 $\bar{p} p \rightarrow \pi^0 \eta \eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
436 $^{+20}_{-16}$	46M	<sup>3,4</sup> AGHASYAN	18B COMP	190 $\pi^- p \rightarrow \pi^- \pi^+ \pi^- p$

280 ± 10 ± 70		<sup>5</sup> JACKURA	18	JPAC	$\pi^- p \rightarrow \eta \pi^- p$
190 ± 18 ± 30		<sup>4</sup> ABLIKIM	17K	BES3	$\psi(2S) \rightarrow \gamma \eta \pi^+ \pi^-$
270 <sup>+</sup> <sub>-</sub> 50 20		ANISOVICH	09	RVUE	0.0 $\bar{p} p, \pi N$
336 ± 20 ± 20	18k	<sup>6</sup> SCHEGELSKY	06	RVUE	$\gamma \gamma \rightarrow \pi^+ \pi^- \pi^0$
417 ± 19	80k	<sup>7</sup> UMAN	06	E835	5.2 $\bar{p} p \rightarrow \eta \eta \pi^0$
279 ± 49 ± 66	145k	LU	05	B852	18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
151 ± 22 ± 24		ABE	04	BELL	10.6 $e^+ e^- \rightarrow$ $e^+ e^- K^+ K^-$
187 ± 60	221	<sup>8</sup> ACCIARRI	01H	L3	$\gamma \gamma \rightarrow K_S^0 K_S^0, E_{cm}^{ee} = 91,$ 183–209 GeV
280 ± 70		<sup>4</sup> ABELE	99B	CBAR	1.94 $\bar{p} p \rightarrow \pi^0 \eta \eta$
150 ± 110 ± 34		ACCIARRI	97T	L3	$\gamma \gamma \rightarrow \pi^+ \pi^- \pi^0$

<sup>1</sup> The coupled-channel analysis of both the  $\eta\pi$  and  $\eta'\pi$  systems using ADOLPH 15 data. The width is extracted from the T-matrix pole.

<sup>2</sup> T-matrix pole.

<sup>3</sup> Statistical error negligible.

<sup>4</sup> Breit-Wigner width.

<sup>5</sup> Superseded by RODAS 19.

<sup>6</sup> From analysis of L3 data at 183–209 GeV.

<sup>7</sup> Statistical error only.

<sup>8</sup> Spin 2 dominant, isospin not determined, could also be  $I=1$ .

### $a_2(1700)$ DECAY MODES

Mode	Fraction ( $\Gamma_j/\Gamma$ )
$\Gamma_1$ $\eta\pi$	(3.7 ± 1.0) %
$\Gamma_2$ $\gamma\gamma$	(1.16 ± 0.27) × 10 <sup>-6</sup>
$\Gamma_3$ $\rho\pi$	seen
$\Gamma_4$ $f_2(1270)\pi$	seen
$\Gamma_5$ $K\bar{K}$	(1.9 ± 1.2) %
$\Gamma_6$ $\omega\pi^-\pi^0$	seen
$\Gamma_7$ $\omega\rho$	seen

### $a_2(1700)$ PARTIAL WIDTHS

$\Gamma(\eta\pi)$					$\Gamma_1$
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>9.5 ± 2.0</b>	870	<sup>1</sup> SCHEGELSKY 06A	RVUE	$\gamma\gamma \rightarrow K_S^0 K_S^0$	

  

$\Gamma(\gamma\gamma)$					$\Gamma_2$
VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.30 ± 0.05</b>	870	<sup>1</sup> SCHEGELSKY 06A	RVUE	$\gamma\gamma \rightarrow K_S^0 K_S^0$	

$\Gamma(K\bar{K})$  $\Gamma_5$ 

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>5.0±3.0</b>	870	<sup>1</sup> SCHEGELSKY 06A	RVUE	$\gamma\gamma \rightarrow K_S^0 K_S^0$

<sup>1</sup> From analysis of L3 data at 91 and 183–209 GeV, using  $a_2(1700)$  mass of 1730 MeV and width of 340 MeV, and SU(3) relations.

 $a_2(1700) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$ 

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.29±0.04±0.02</b>		ACCIARRI 97T	L3	$\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$

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

$0.37^{+0.12}_{-0.08} \pm 0.10$	18k	<sup>1</sup> SCHEGELSKY 06	RVUE	$\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$
---------------------------------	-----	----------------------------	------	--

 $\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$  $\Gamma_5 \Gamma_2/\Gamma$ 

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
------------	-------------	------	---------

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

$20.6 \pm 4.2 \pm 4.6$	<sup>2</sup> ABE 04	BELL	$10.6 e^+ e^- \rightarrow e^+ e^- K^+ K^-$
$49 \pm 11 \pm 13$	<sup>3</sup> ACCIARRI 01H	L3	$\gamma\gamma \rightarrow K_S^0 K_S^0, E_{\text{cm}}^{ee} = 91, 183\text{--}209 \text{ GeV}$

<sup>1</sup> From analysis of L3 data at 183–209 GeV.

<sup>2</sup> Assuming spin 2.

<sup>3</sup> Spin 2 dominant, isospin not determined, could also be  $I=1$ .

 $a_2(1700)$  BRANCHING RATIOS $\Gamma(\rho\pi)/\Gamma(f_2(1270)\pi)$  $\Gamma_3/\Gamma_4$ 

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
-------	------	-------------	------	---------

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

$3.4 \pm 0.4 \pm 0.1$	18k	<sup>1</sup> SCHEGELSKY 06	RVUE	$\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$
-----------------------	-----	----------------------------	------	--

<sup>1</sup> From analysis of L3 data at 183–209 GeV.

 $a_2(1700)$  REFERENCES

RODAS 19	PRL 122 042002	A. Rodas <i>et al.</i>	(JPAC Collab.)
AGHASYAN 18B	PR D98 092003	M. Aghasyan <i>et al.</i>	(COMPASS Collab.)
JACKURA 18	PL B779 464	A. Jackura <i>et al.</i>	(JPAC and COMPASS Collab.)
ABLIKIM 17K	PR D95 032002	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ADOLPH 15	PL B740 303	M. Adolph <i>et al.</i>	(COMPASS Collab.)
ANISOVICH 09	IJMP A24 2481	V.V. Anisovich, A.V. Sarantsev	
SCHEGELSKY 06	EPJ A27 199	V.A. Schegelsky <i>et al.</i>	
SCHEGELSKY 06A	EPJ A27 207	V.A. Schegelsky <i>et al.</i>	
UMAN 06	PR D73 052009	I. Uman <i>et al.</i>	(FNAL E835)
LU 05	PRL 94 032002	M. Lu <i>et al.</i>	(BNL E852 Collab.)
ABE 04	EPJ C32 323	K. Abe <i>et al.</i>	(BELLE Collab.)
AMSLER 02	EPJ C23 29	C. Amsler <i>et al.</i>	
ACCIARRI 01H	PL B501 173	M. Acciarri <i>et al.</i>	(L3 Collab.)
ABELE 99B	EPJ C8 67	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
GRYGOREV 99	PAN 62 470	V.K. Grygorev <i>et al.</i>	
ACCIARRI 97T	PL B413 147	M. Acciarri <i>et al.</i>	(L3 Collab.)
	Translated from YAF 62 513.		