

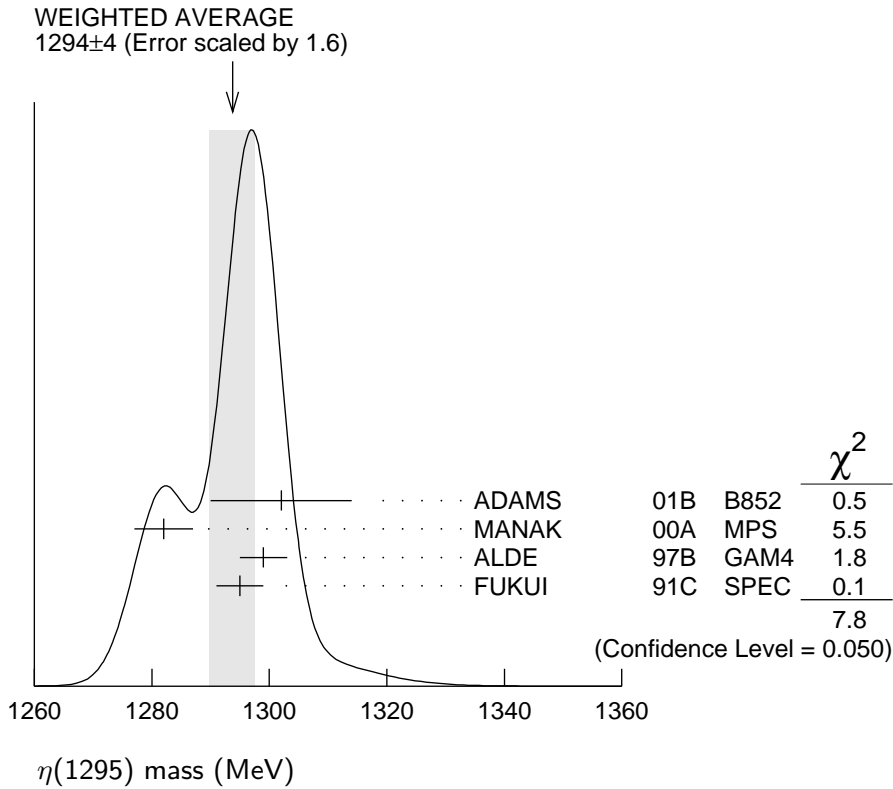
# $\eta(1295)$

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

See also the mini-review under  $\eta(1405)$

## $\eta(1295)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1294±4 OUR AVERAGE</b> Error includes scale factor of 1.6. See the ideogram below.				
1302±9±8	20k	ADAMS	01B B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1282±5	9082	MANAK	00A MPS	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$
1299±4	2100	ALDE	97B GAM4	100 $\pi^- p \rightarrow \eta \pi^0 \pi^0 n$
1295±4		FUKUI	91C SPEC	8.95 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1264±8		<sup>1</sup> AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$
~ 1275		STANTON	79 CNTR	8.4 $\pi^- p \rightarrow n \eta 2\pi$



<sup>1</sup>PWA analysis of AUGUSTIN 92 assigns  $0^{-+}$  quantum numbers to this state rather than  $1^{++}$  as before.

## $\eta(1295)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>55 ± 5 OUR AVERAGE</b>				
57 ± 23 ± 21	20k	ADAMS	01B B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
66 ± 13	9082	MANAK	00A MPS	18 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$
53 ± 6		FUKUI	91C SPEC	8.95 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
<40	2100	ALDE	97B GAM4	100 $\pi^- p \rightarrow \eta \pi^0 \pi^0 n$
44 ± 20		<sup>2</sup> AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$
~ 70		STANTON	79 CNTR	8.4 $\pi^- p \rightarrow n \eta 2\pi$
<sup>2</sup> PWA analysis of AUGUSTIN 92 assigns $0^{-+}$ quantum numbers to this state rather than $1^{++}$ as before.				

## $\eta(1295)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $\eta \pi^+ \pi^-$	seen
$\Gamma_2$ $a_0(980) \pi$	seen
$\Gamma_3$ $\gamma \gamma$	
$\Gamma_4$ $\eta \pi^0 \pi^0$	seen
$\Gamma_5$ $\eta(\pi\pi) S$ -wave	seen
$\Gamma_6$ $\sigma \eta$	
$\Gamma_7$ $K \bar{K} \pi$	

## $\eta(1295)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\eta \pi^+ \pi^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$				$\Gamma_1 \Gamma_3/\Gamma$
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.066</b>	95	ACCIARRI	01G L3	183–202 $e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$

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

<0.6	90	AIHARA	88C TPC	$e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$
<0.3		ANTREASYAN	87 CBAL	$e^+ e^- \rightarrow e^+ e^- \eta \pi \pi$

$\Gamma(K \bar{K} \pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$				$\Gamma_7 \Gamma_3/\Gamma$
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT

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

<0.014	90	<sup>3,4</sup> AHOHE	05 CLE2	10.6 $e^+ e^- \rightarrow e^+ e^- K_S^0 K^\pm \pi^\mp$
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<sup>3</sup> Using  $\eta(1295)$  mass and width 1294 MeV and 55 MeV, respectively.

<sup>4</sup> Assuming three-body phase-space decay to  $K_S^0 K^\pm \pi^\mp$ .

## $\eta(1295)$ BRANCHING RATIOS

### $\Gamma(a_0(980)\pi)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	BERTIN	97	OBLX 0.0 $\bar{p}p \rightarrow K^\pm (K^0)\pi^\mp \pi^+ \pi^-$
seen	BIRMAN	88	MPS 8 $\pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
large	ANDO	86	SPEC 8 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$
large	STANTON	79	CNTR 8.4 $\pi^- p \rightarrow n \eta 2\pi$

### $\Gamma(a_0(980)\pi)/\Gamma(\eta\pi^0\pi^0)$ $\Gamma_2/\Gamma_4$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.65 ± 0.10</b>	<sup>5</sup> ALDE	97B	GAM4 100 $\pi^- p \rightarrow \eta \pi^0 \pi^0 n$

<sup>5</sup> Assuming that  $a_0(980)$  decays only to  $\eta\pi$ .

### $\Gamma(\eta(\pi\pi)_{\text{S-wave}})/\Gamma(\eta\pi^0\pi^0)$ $\Gamma_5/\Gamma_4$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.35 ± 0.10</b>	ALDE	97B	GAM4 100 $\pi^- p \rightarrow \eta \pi^0 \pi^0 n$

### $\Gamma(a_0(980)\pi)/\Gamma(\sigma\eta)$ $\Gamma_2/\Gamma_6$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.48 ± 0.22</b>	9082	MANAK	00A	MPS 18 $\pi^- p \rightarrow \eta \pi^+ \pi^- n$

## $\eta(1295)$ REFERENCES

AHOHE	05	PR D71 072001	R. Ahohe <i>et al.</i>	(CLEO Collab.)
ACCIARRI	01G	PL B501 1	M. Acciarri <i>et al.</i>	(L3 Collab.)
ADAMS	01B	PL B516 264	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)
MANAK	00A	PR D62 012003	J.J. Manak <i>et al.</i>	(BNL E852 Collab.)
ALDE	97B	PAN 60 386	D. Alde <i>et al.</i>	(GAMS Collab.)
		Translated from YAF 60 458.		
BERTIN	97	PL B400 226	A. Bertin <i>et al.</i>	(OBELIX Collab.)
AUGUSTIN	92	PR D46 1951	J.E. Augustin, G. Cosme	(DM2 Collab.)
FUKUI	91C	PL B267 293	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
AUGUSTIN	90	PR D42 10	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
AIHARA	88C	PR D38 1	H. Aihara <i>et al.</i>	(TPC-2 $\gamma$ Collab.)
BIRMAN	88	PRL 61 1557	A. Birman <i>et al.</i>	(BNL, FSU, IND, MASD) JP
ANTREASYAN	87	PR D36 2633	D. Antreasyan <i>et al.</i>	(Crystal Ball Collab.)
ANDO	86	PRL 57 1296	A. Ando <i>et al.</i>	(KEK, KYOT, NIRS, SAGA+) IJP
STANTON	79	PRL 42 346	N.R. Stanton <i>et al.</i>	(OSU, CARL, MCGI+) JP