

# $\pi_1(1400)$

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

See also the mini-review under non- $q\bar{q}$  candidates in PDG 06, Journal of Physics, G **33** 1 (2006).

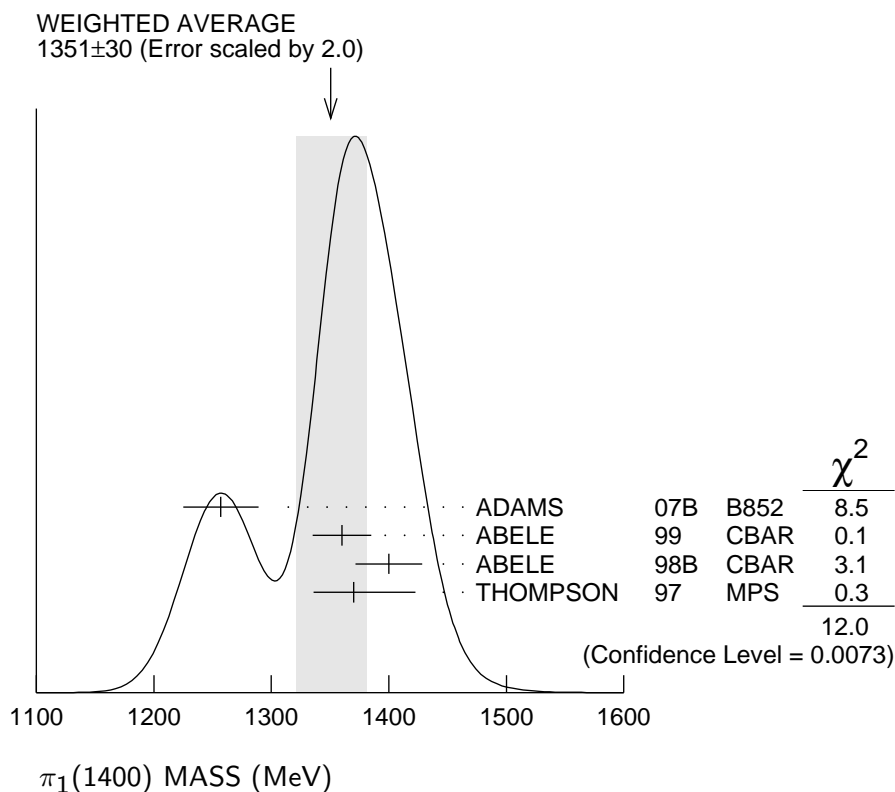
## $\pi_1(1400)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>1351 ± 30</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 2.0. See the ideogram below.			
1257 ± 20 ± 25	23.5k	ADAMS	07B	B852	18 $\pi^- p \rightarrow \eta \pi^0 n$
1360 ± 25		ABELE	99	CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \eta$
1400 ± 20 ± 20		ABELE	98B	CBAR	0.0 $\bar{p} n \rightarrow \pi^- \pi^0 \eta$
1370 ± 16	+50 -30	<sup>1</sup> THOMPSON	97	MPS	18 $\pi^- p \rightarrow \eta \pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1323.1 ± 4.6		<sup>2</sup> AOYAGI	93	BKEI	$\pi^- p \rightarrow \eta \pi^- p$
1406 ± 20		<sup>3</sup> ALDE	88B	GAM4	0 100 $\pi^- p \rightarrow \eta \pi^0 n$

<sup>1</sup> Natural parity exchange, questioned by DZIERBA 03.

<sup>2</sup> Unnatural parity exchange.

<sup>3</sup> Seen in the  $P_0$ -wave intensity of the  $\eta \pi^0$  system, unnatural parity exchange.



### $\pi_1(1400)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>313 ±40</b>	<b>OUR AVERAGE</b>				
354 ±64 ± 58	23.5k	ADAMS	07B	B852	18 $\pi^- p \rightarrow \eta \pi^0 n$
220 ±90		ABELE	99	CBAR	0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \eta$
310 ±50 $\begin{smallmatrix} + 50 \\ - 30 \end{smallmatrix}$		ABELE	98B	CBAR	0.0 $\bar{p} n \rightarrow \pi^- \pi^0 \eta$
385 ±40 $\begin{smallmatrix} + 65 \\ - 105 \end{smallmatrix}$		<sup>4</sup> THOMPSON	97	MPS	18 $\pi^- p \rightarrow \eta \pi^- p$

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

143.2 ±12.5		<sup>5</sup> AOYAGI	93	BKEI	$\pi^- p \rightarrow \eta \pi^- p$
180 ±20		<sup>6</sup> ALDE	88B	GAM4 0	100 $\pi^- p \rightarrow \eta \pi^0 n$

<sup>4</sup> Resolution is not unfolded, natural parity exchange, questioned by DZIERBA 03.

<sup>5</sup> Unnatural parity exchange.

<sup>6</sup> Seen in the  $P_0$ -wave intensity of the  $\eta \pi^0$  system, unnatural parity exchange.

### $\pi_1(1400)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad \eta \pi^0$	seen
$\Gamma_2 \quad \eta \pi^-$	seen
$\Gamma_3 \quad \eta' \pi$	

### $\pi_1(1400)$ BRANCHING RATIOS

$\Gamma(\eta \pi^0)/\Gamma_{\text{total}}$	VALUE	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_1/\Gamma$
not seen		PROKOSHKIN 95B	GAM4		100 $\pi^- p \rightarrow \eta \pi^0 n$	
not seen		<sup>7</sup> BUGG	94	RVUE	$\bar{p} p \rightarrow \eta 2\pi^0$	
not seen		<sup>8</sup> APEL	81	NICE 0	40 $\pi^- p \rightarrow \eta \pi^0 n$	

<sup>7</sup> Using Crystal Barrel data.

<sup>8</sup> A general fit allowing  $S$ ,  $D$ , and  $P$  waves (including  $m=0$ ) is not done because of limited statistics.

$\Gamma(\eta \pi^-)/\Gamma_{\text{total}}$	VALUE	DOCUMENT ID	TECN	COMMENT	$\Gamma_2/\Gamma$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

possibly seen		BELADIDZE	93	VES	$37 \pi^- N \rightarrow \eta \pi^- N$
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$\Gamma(\eta' \pi)/\Gamma(\eta \pi^0)$	VALUE	CL%	DOCUMENT ID	TECN	COMMENT	$\Gamma_3/\Gamma_1$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.80	95	BOUTEMEUR	90	GAM4	100 $\pi^- p \rightarrow 4\gamma n$
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## $\pi_1(1400)$ REFERENCES

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