$\pi_1(1400)$

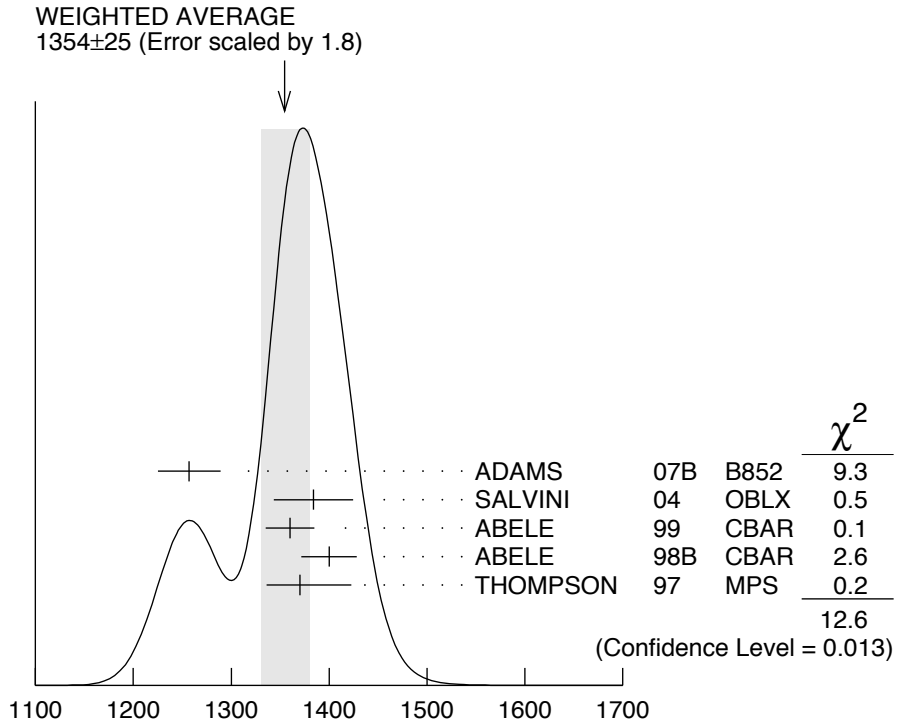
$I^G(J^{PC}) = 1^-(1^{-+})$

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

$\pi_1(1400)$ MASS

VALUE (MeV)			*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1354	**±25**	**OUR AVERAGE**		Error includes scale factor of 1.8. See the ideogram below.				
1257	±20	±25	23.5k	ADAMS	07B	B852		18 $\pi^- p \rightarrow \eta\pi^0 n$
1384	±20	±35	90k	SALVINI	04	OBLX		$\overline{p}p \rightarrow 2\pi^+ 2\pi^-$
1360	±25			ABELE	99	CBAR		0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta$
1400	±20	±20		ABELE	98B	CBAR		0.0 $\overline{p}n \rightarrow \pi^-\pi^0\eta$
1370	±16	$^{+50}_{-30}$		[1] 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			[2] AOYAGI	93	BKEI		$\pi^- p \rightarrow \eta\pi^- p$
1406	±20			[3] ALDE	88B	GAM4	0	100 $\pi^- p \rightarrow \eta\pi^0 n$

[1] Natural parity exchange, questioned by DZIERBA 03.
[2] Unnatural parity exchange.
[3] 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*
330	**±35**	**OUR AVERAGE**						
354	±64	± 58	23.5k	ADAMS	07B	B852		18 $\pi^- p \rightarrow \eta\pi^0 n$
378	±50	± 50	90k	SALVINI	04	OBLX		$\overline{p}p \rightarrow 2\pi^+ 2\pi^-$
220	±90			ABELE	99	CBAR		0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta$
310	±50	$^{+\ 50}_{-\ 30}$		ABELE	98B	CBAR		0.0 $\overline{p}n \rightarrow \pi^-\pi^0\eta$
385	±40	$^{+\ 65}_{-105}$		[4] 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		[5] AOYAGI	93	BKEI		$\pi^- p \rightarrow \eta\pi^- p$
180	±20	[6] ALDE	88B	GAM4	0	100 $\pi^- p \rightarrow \eta\pi^0 n$

[4] Resolution is not unfolded, natural parity exchange, questioned by DZIERBA 03.
[5] Unnatural parity exchange.
[6] Seen in the P_0-wave intensity of the $\eta\pi^0$ system, unnatural parity exchange.

$\pi_1(1400)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\eta\pi^0$	seen
Γ_2	$\eta\pi^-$	seen
Γ_3	$\eta'\pi$	

$\pi_1(1400)$ BRANCHING RATIOS

$\Gamma(\eta\pi^0)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
not seen	PROKOSHKIN	95B	GAM4		100 $\pi^- p \rightarrow \eta\pi^0 n$
not seen	[7] BUGG	94	RVUE		$\overline{p}p \rightarrow \eta 2\pi^0$
not seen	[8] APEL	81	NICE	0	40 $\pi^- p \rightarrow \eta\pi^0 n$

[7] Using Crystal Barrel data.
[8] A general fit allowing S, D, and P waves (including m=0) is not done because of limited statistics.

$\Gamma(\eta\pi^-)/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
possibly seen	BELADIDZE	93	VES	$37\pi^- N \rightarrow \eta\pi^- N$

$\Gamma(\eta'\pi)/\Gamma(\eta\pi^0)$ Γ_3/Γ_1

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.80	95	BOUTEMEUR	90	GAM4	100 $\pi^- p \rightarrow 4\gamma n$

$\pi_1(1400)$ REFERENCES

ADAMS	07B	PL B657 27	G.S. Adams *et al.*	(BNL E852 Collab.)	
PDG	06	JPG 33 1	W.-M. Yao *et al.*	(PDG Collab.)	
SALVINI	04	EPJ C35 21	P. Salvini *et al.*	(OBELIX Collab.)	
DZIERBA	03	PR D67 094015	A.R. Dzierba *et al.*		
ABELE	99	PL B446 349	A. Abele *et al.*	(Crystal Barrel Collab.)	
ABELE	98B	PL B423 175	A. Abele *et al.*	(Crystal Barrel Collab.)	
THOMPSON	97	PRL 79 1630	D.R. Thompson *et al.*	(BNL E852 Collab.)	
PROKOSHKIN	95B	PAN 58 606	Y.D. Prokoshkin, S.A. Sadovsky	(SERP)	
		Translated from YAF 58 662.			
BUGG	94	PR D50 4412	D.V. Bugg *et al.*	(LOQM)	
AOYAGI	93	PL B314 246	H. Aoyagi *et al.*	(BKEI Collab.)	
BELADIDZE	93	PL B313 276	G.M. Beladidze *et al.*	(VES Collab.)	
BOUTEMEUR	90	Hadron 89 Conf. p 119	M. Boutemeur, M. Poulet	(SERP, BELG, LANL+)	
ALDE	88B	PL B205 397	D.M. Alde *et al.*	(SERP, BELG, LANL, LAPP)	IGJPC
APEL	81	NP B193 269	W.D. Apel *et al.*	(SERP, CERN)	