$\pi_1(1400)$

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

See also the mini-review under non-$q\overline{q}$ candidates. (See the index for the page number.)

$\pi_1(1400)$ MASS

VALUE (MeV)			*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1376	**±17**	**OUR AVERAGE**					
1360	±25		ABELE	99	CBAR		0.0 $\overline{p}p \to \pi^0\pi^0\eta$
1400	±20	±20	ABELE	98B	CBAR		0.0 $\overline{p}n \to \pi^-\pi^0\eta$
1370	±16	$^{+50}_{-30}$	[1] THOMPSON	97	MPS		18 $\pi^- p \to \eta\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •							
1323.1	± 4.6		[2] AOYAGI	93	BKEI		$\pi^- p \to \eta\pi^- p$
1406	±20		[3] ALDE	88B	GAM4	0	100 $\pi^- p \to \eta\pi^0 n$

[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)			*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
300	**±40**	**OUR AVERAGE**					
220	±90		ABELE	99	CBAR		0.0 $\overline{p}p \to \pi^0\pi^0\eta$
310	±50	$^{+\ 50}_{-\ 30}$	ABELE	98B	CBAR		0.0 $\overline{p}n \to \pi^-\pi^0\eta$
385	±40	$^{+\ 65}_{-105}$	[4] THOMPSON	97	MPS		18 $\pi^- p \to \eta\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •							
143.2	±12.5		[5] AOYAGI	93	BKEI		$\pi^- p \to \eta\pi^- p$
180	±20		[6] ALDE	88B	GAM4	0	100 $\pi^- p \to \eta\pi^0 n$

[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

$\Gamma(\eta\pi^0)/\Gamma_{total}$ 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 $\pi^- p \to \eta\pi^0 n$
not seen	[7] BUGG	94	RVUE		$\overline{p}p \to \eta 2\pi^0$
not seen	[8] APEL	81	NICE	0	40 $\pi^- p \to \eta\pi^0 n$

[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.

$\Gamma(\eta\pi^-)/\Gamma_{total}$ 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	$37\pi^- N \to \eta\pi^- N$

$\Gamma(\eta'\pi)/\Gamma(\eta\pi^0)$ 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 $\pi^- p \to 4\gamma n$

$\pi_1(1400)$ REFERENCES

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.*	(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)

OTHER RELATED PAPERS

COOK	06	PR D74 094501	M.S. Cook, H.R. Fiebig	
CUI	06	PR D73 014018	Y. Cui *et al.*	
HEDDITCH	05	PR D72 114507	J.N. Hedditch *et al.*	
ZHANG	05	PR D71 011502R	Z.F. Zhang, H.Y. Jin	
BERNARD	03	PR D68 074505	C. Bernard *et al.*	
JIN	03	PR D67 014025	H.Y. Jin, J.G. Korener, T.G. Steele	
SZCZEPANIAK	03B	PRL 91 092002	A.P. Szczepaniak *et al.*	
ZHANG	03	PR D67 074020	A. Zhang, T.G. Steele	
ACHASOV	02J	PAN 65 552	N.N. Achasov, G.N. Shestakov	
		Translated from YAF 65 579.		
CHUNG	02C	EPL A15 539	S.U. Chung, E. Klempt, J.G. Korener	
ZHANG	02	PR D65 096005	R. Zhang *et al.*	
IDDIR	01	PL B507 183	F. Iddir, A.S. Safir	
SADOVSKY	00	NP A655 131c	S.A. Sadovsky	
ALDE	99B	PAN 62 421	D. Alde *et al.*	(GAMS Collab.)
		Translated from YAF 62 462.		
CHUNG	99	PR D60 092001	S.U. Chung *et al.*	(BNL E852 Collab.)
DONNACHIE	98	PR D58 114012	A. Donnachie *et al.*	
LACOCK	97	PL B401 308	P. Lacock *et al.*	(EDIN, LIVP)
SVEC	97C	PR D56 4355	M. Svec	(MCGI)
PROKOSHKIN	95C	PAN 58 853	Y.D. Prokoshkin, S.A. Sadovsky	(SERP)
		Translated from YAF 58 921.		
KALASHNIK...	94	ZPHY C62 323	Y.S. Kalashnikova	(ITEP)
TUAN	88	PL B213 537	S.F. Tuan, T. Ferbel, R.H. Dalitz	(HAWA, ROCH+)
ZIELINSKI	87	ZPHY C34 255	M. Zielinski	(ROCH)