NODE=M034

$\pi_2(1670)$

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

$\pi_2(1670)$ MASS

NODE=M034M

NODE=M034M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
$1670.6^{+\ 2.9}_{=\ 1.2}$ OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.						
$1642\ ^{+12}_{-\ 1}$	46M	[1] AGHASYAN	18B	COMP		190 $\pi^- p \to \pi^-\pi^+\pi^- p$
$1749 \pm 10 \pm 100$	145k	LU	05	B852		18 $\pi^- p \to \omega\pi^-\pi^0 p$
$1676 \pm 3 \pm 8$		[2] CHUNG	02	B852		18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$
$1685 \pm 10 \pm 30$		BARBERIS	01			450 $pp \to p_f 3\pi^0 p_s$
$1687 \pm 9 \pm 15$		AMELIN	99	VES		37 $\pi^- A \to \omega\pi^-\pi^0 A^*$
1669 ± 4		BARBERIS	98B			450 $pp \to p_f \rho\pi p_s$
1670 ± 4		BARBERIS	98B			450 $pp \to p_f f_2(1270)\pi p_s$ OCCUR=2
1690 ± 14		[3] BERDNIKOV	94	VES		37 $\pi^- A \to K^+K^-\pi^- A$
1710 ± 20	700	ANTIPOV	87	SIGM	$-$	50 π^- Cu $\to \mu^+\mu^-\pi^-$ Cu
1676 ± 6		[3] EVANGELIS...	81	OMEG	$-$	12 $\pi^- p \to 3\pi p$
1657 ± 14		[3,4] DAUM	80D	SPEC	$-$	63–94 $\pi p \to 3\pi$X
1662 ± 10	2000	[3] BALTAY	77	HBC	$+$	15 $\pi^+ p \to p3\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$1658 \pm 3\ ^{+\ 24}_{-\ 8}$	420k	[5] ALEKSEEV	10	COMP		190 $\pi^- Pb \to \pi^-\pi^-\pi^+ Pb'$
1730 ± 20		[6] AMELIN	95B	VES		36 $\pi^- A \to \pi^+\pi^-\pi^- A$
$1742 \pm 31 \pm 49$		ANTREASYAN	90	CBAL		$e^+e^- \to e^+e^-\pi^0\pi^0\pi^0$
1624 ± 21		[2] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$
1622 ± 35		[7] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$ OCCUR=2
1693 ± 28		[8] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$ OCCUR=3
1710 ± 20		[9] DAUM	81B	SPEC	$-$	63,94 $\pi^- p$
1660 ± 10		[3] ASCOLI	73	HBC	$-$	5–25 $\pi^- p \to p\pi_2$

[1] Statistical error negligible. NODE=M034M;LINKAGE=A

[2] From $f_2(1270)\pi$ decay. NODE=M034M;LINKAGE=F2

[3] From a fit to $J^P = 2^-S$-wave $f_2(1270)\pi$ partial wave. NODE=M034M;LINKAGE=P

[4] Clear phase rotation seen in 2^-S, 2^-P, 2^-D waves. We quote central value and spread of single-resonance fits to three channels. NODE=M034M;LINKAGE=D

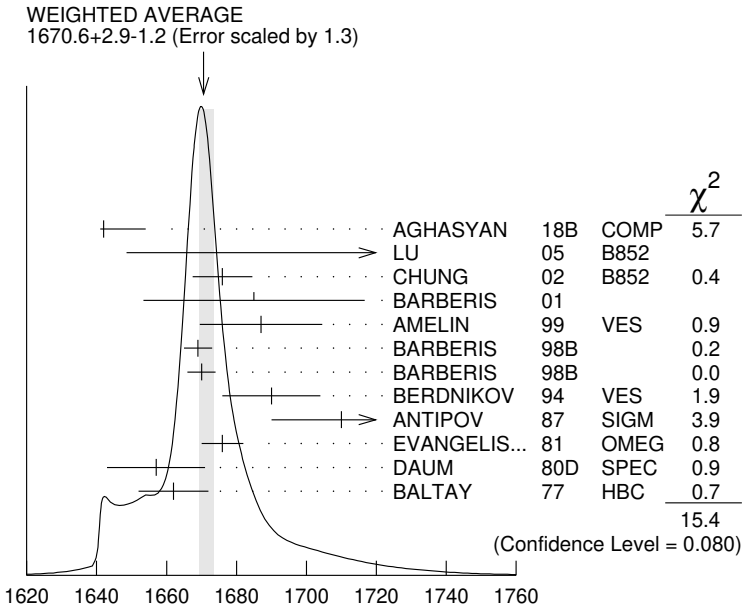
[5] Superseded by AGHASYAN 2018B. NODE=M034M;LINKAGE=B

[6] J^{PC} ambiguous. NODE=M034M;LINKAGE=AX

[7] From $\rho\pi$ decay. NODE=M034M;LINKAGE=R2

[8] From $\sigma\pi$ decay. NODE=M034M;LINKAGE=S2

[9] From a two-resonance fit to four 2^-0^+ waves. This should not be averaged with all the single resonance fits. NODE=M034M;LINKAGE=L



$\pi_2(1670)$ WIDTH

NODE=M034W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
$258^{+\ 8}_{-\ 9}$ OUR AVERAGE Error includes scale factor of 1.2.						
$311^{+\ 12}_{-\ 23}$	46M	[10] AGHASYAN	18B	COMP		190 $\pi^- p \to \pi^-\pi^+\pi^- p$
$408\pm\ 60\pm 250$	145k	LU	05	B852		18 $\pi^- p \to\ \omega\pi^-\pi^0 p$
$254\pm\ 3\pm\ 31$		[11] CHUNG	02	B852		18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$
$265\pm\ 30\pm\ 40$		BARBERIS	01			450 $pp \to\ p_f 3\pi^0 p_s$
$168\pm\ 43\pm\ 53$		AMELIN	99	VES		37 $\pi^- A \to \omega\pi^-\pi^0 A^*$
$268\pm\ 15$		BARBERIS	98B			450 $pp \to\ p_f \rho\pi p_s$
$256\pm\ 15$		BARBERIS	98B			450 $pp \to p_f f_2(1270)\pi p_s$ OCCUR=2
$190\pm\ 50$		[12] BERDNIKOV	94	VES		37 $\pi^- A \to K^+K^-\pi^- A$
$170\pm\ 80$	700	ANTIPOV	87	SIGM	−	50 π^- Cu $\to \mu^+\mu^-\pi^-$ Cu
$260\pm\ 20$		[12] EVANGELIS...	81	OMEG	−	12 $\pi^- p \to\ 3\pi p$
$219\pm\ 20$		[12,13] DAUM	80D	SPEC	−	63–94 $\pi p \to\ 3\pi$X
$285\pm\ 60$	2000	[12] BALTAY	77	HBC	+	15 $\pi^+ p \to\ p3\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$271\pm\ 9^{+\ 22}_{-\ 24}$	420k	[14] ALEKSEEV	10	COMP		190 $\pi^- Pb \to \pi^-\pi^-\pi^+ Pb'$
$310\pm\ 20$		[15] AMELIN	95B	VES		36 $\pi^- A \to \pi^+\pi^-\pi^- A$
$236\pm\ 49\pm\ 36$		ANTREASYAN	90	CBAL		$e^+e^- \to e^+e^-\pi^0\pi^0\pi^0$
$304\pm\ 22$		[11] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$
404 ± 108		[16] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$ OCCUR=2
$330\pm\ 90$		[17] BELLINI	85	SPEC		40 $\pi^- A \to \pi^-\pi^+\pi^- A$ OCCUR=3
$312\pm\ 50$		[18] DAUM	81B	SPEC	−	63,94 $\pi^- p$
$270\pm\ 60$		[12] ASCOLI	73	HBC	−	5–25 $\pi^- p \to\ p\pi_2$

[10] Statistical error negligible. NODE=M034W;LINKAGE=A
[11] From $f_2(1270)\pi$ decay. NODE=M034W;LINKAGE=F2
[12] From a fit to $J^P = 2^-$ $f_2(1270)\pi$ partial wave. NODE=M034W;LINKAGE=P
[13] Clear phase rotation seen in 2^-S, 2^-P, 2^-D waves. We quote central value and spread of single-resonance fits to three channels. NODE=M034W;LINKAGE=D
[14] Superseded by AGHASYAN 2018B. NODE=M034W;LINKAGE=B
[15] J^{PC} ambiguous. NODE=M034W;LINKAGE=AX
[16] From $\rho\pi$ decay. NODE=M034W;LINKAGE=R2

[17] From $\sigma\pi$ decay. NODE=M034W;LINKAGE=S2
[18] From a two-resonance fit to four 2^-0^+ waves. This should not be averaged with all the single resonance fits. NODE=M034W;LINKAGE=L

$\pi_2(1670)$ DECAY MODES

NODE=M034215;NODE=M034

	Mode	Fraction (Γ_i/Γ)	Confidence level	
Γ_1	3π	(95.8±1.4) %		DESIG=20
Γ_2	$\pi^+\pi^-\pi^0$			DESIG=22
Γ_3	$\pi^0\pi^0\pi^0$			DESIG=23
Γ_4	$f_2(1270)\pi$	(56.3±3.2) %		DESIG=8
Γ_5	$\rho\pi$	(31 ±4) %		DESIG=2
Γ_6	$\sigma\pi$	(10 ±4) %		DESIG=13
Γ_7	$\pi(\pi\pi)_S$-wave	(8.7±3.4) %		DESIG=11
Γ_8	$\pi^\pm\pi^+\pi^-$	(53 ±4) %		DESIG=10
Γ_9	$K\overline{K}^*(892)+$ c.c.	(4.2±1.4) %		DESIG=5
Γ_{10}	$\omega\rho$	(2.7±1.1) %		DESIG=14
Γ_{11}	$\pi^\pm\gamma$	(7.0±1.2) $\times 10^{-4}$		DESIG=27
Γ_{12}	$\gamma\gamma$	$< 2.8 \times 10^{-7}$	90%	DESIG=12
Γ_{13}	$\eta\pi$	< 5 %		DESIG=3
Γ_{14}	$\pi^\pm 2\pi^+ 2\pi^-$	< 5 %		DESIG=4
Γ_{15}	$\rho(1450)\pi$	$< 3.6 \times 10^{-3}$	97.7%	DESIG=15
Γ_{16}	$b_1(1235)\pi$	$< 1.9 \times 10^{-3}$	97.7%	DESIG=16
Γ_{17}	$f_1(1285)\pi$	possibly seen		DESIG=25
Γ_{18}	$a_2(1320)\pi$	not seen		DESIG=26

CONSTRAINED FIT INFORMATION

An overall fit to 4 branching ratios uses 6 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 = 1.9$ for 3 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_5	−53		
x_7	−29	−59	
x_9	−8	−21	−9
	x_4	x_5	x_7

$\pi_2(1670)$ PARTIAL WIDTHS

NODE=M034217

$\Gamma(\pi^\pm\gamma)$ Γ_{11}

NODE=M034W2
NODE=M034W2

VALUE (keV)		DOCUMENT ID		TECN	CHG	COMMENT
181±11±27	[19]	ADOLPH	14	COMP	−	190 π^- Pb → $\pi^+\pi^-\pi^-$ Pb′

[19] Primakoff reaction. Assumes incoherent $f_2(1270)\pi$ contribution to 3π final state and uses $B(\pi_2(1670) \to f_2\pi) = 56\%$. NODE=M034W2;LINKAGE=AD

$\Gamma(\gamma\gamma)$ Γ_{12}

NODE=M034W1
NODE=M034W1

VALUE (keV)	CL%		DOCUMENT ID		TECN	CHG	COMMENT
<0.072	90	[20]	ACCIARRI	97T	L3		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •							
<0.19	90	[20]	ALBRECHT	97B	ARG		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$
1.41 ±0.23±0.28			ANTREASYAN	90	CBAL	0	$e^+e^- \to e^+e^-\pi^0\pi^0\pi^0$
0.8 ±0.3 ±0.12		[21]	BEHREND	90C	CELL	0	$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$
1.3 ±0.3 ±0.2		[22]	BEHREND	90C	CELL	0	$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$ OCCUR=2

[20] Decaying into $f_2(1270)\pi$ and $\rho\pi$. NODE=M034W1;LINKAGE=QQ
[21] Constructive interference between $f_2(1270)\pi$,$\rho\pi$ and background. NODE=M034W1;LINKAGE=C
[22] Incoherent Ansatz. NODE=M034W1;LINKAGE=G

$\pi_2(1670)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

NODE=M034230

$\Gamma(\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_2\Gamma_{12}/\Gamma$

NODE=M034G01
NODE=M034G01

VALUE (keV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.1	95	[23] SCHEGELSKY	06	RVUE	$\gamma\gamma \to \pi^+\pi^-\pi^0$

[23] From analysis of L3 data at 183–209 GeV.

NODE=M034G01;LINKAGE=SC

$\pi_2(1670)$ BRANCHING RATIOS

NODE=M034220

$\Gamma(3\pi)/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma = (\Gamma_4+\Gamma_5+\Gamma_7)/\Gamma$

NODE=M034R20
NODE=M034R20

VALUE	DOCUMENT ID
0.958±0.014 OUR FIT	

$\Gamma(\pi^0\pi^0\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_3/Γ_2

NODE=M034R21
NODE=M034R21

VALUE	DOCUMENT ID		COMMENT
0.29±0.03±0.05	BARBERIS	01	450 $pp \to p_f 3\pi^0 p_s$

$\Gamma(\rho\pi)/0.565\Gamma(f_2(1270)\pi)$ $\Gamma_5/0.565\Gamma_4$

NODE=M034R16

(With $f_2(1270) \to \pi^+\pi^-$.)

NODE=M034R16
NODE=M034R16

VALUE	DOCUMENT ID		TECN	COMMENT
0.97±0.09 OUR AVERAGE	Error includes scale factor of 1.9.			
0.76±0.07±0.10	CHUNG	02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$
1.01±0.05	BARBERIS	98B		450 $pp \to p_f \pi^+\pi^-\pi^0 p_s$

$\Gamma(\sigma\pi)/\Gamma(f_2(1270)\pi)$ Γ_6/Γ_4

NODE=M034R15
NODE=M034R15

VALUE	DOCUMENT ID		TECN	COMMENT
0.17±0.02±0.07	CHUNG	02	B852	18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.24±0.10	[24,25] BAKER	99	SPEC	1.94 $\bar{p}p \to 4\pi^0$

$\frac{1}{2}\Gamma(\rho\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$ $\frac{1}{2}\Gamma_5/\Gamma_8 = \frac{1}{2}\Gamma_5/(0.565\Gamma_4+\frac{1}{2}\Gamma_5+0.624\Gamma_7)$

NODE=M034R2
NODE=M034R2

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.29±0.04 OUR FIT					
0.29±0.05	[26] DAUM	81B	SPEC		63,94 $\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.3	BARTSCH	68	HBC	+	8 $\pi^+ p \to 3\pi p$

$0.565\Gamma(f_2(1270)\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$ $0.565\Gamma_4/\Gamma_8 = 0.565\Gamma_4/(0.565\Gamma_4+\frac{1}{2}\Gamma_5+0.624\Gamma_7)$

NODE=M034R3

(With $f_2(1270) \to \pi^+\pi^-$.)

NODE=M034R3
NODE=M034R3

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.604±0.035 OUR FIT					
0.60 ±0.05 OUR AVERAGE	Error includes scale factor of 1.3.				
0.61 ±0.04	[26] DAUM	81B	SPEC		63,94 $\pi^- p$
$0.76\ ^{+0.24}_{-0.34}$	ARMENISE	69	DBC	+	5.1 $\pi^+ d \to d3\pi$
0.35 ±0.20	BALTAY	68	HBC	+	7–8.5 $\pi^+ p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.59	BARTSCH	68	HBC	+	8 $\pi^+ p \to 3\pi p$

$0.624\Gamma(\pi(\pi\pi)_{S\text{-wave}})/\Gamma(\pi^\pm\pi^+\pi^-)$ $0.624\Gamma_7/\Gamma_8 = 0.624\Gamma_7/(0.565\Gamma_4+\frac{1}{2}\Gamma_5+0.624\Gamma_7)$

NODE=M034R11

(With $(\pi\pi)_{S\text{-wave}} \to \pi^+\pi^-$.)

NODE=M034R11
NODE=M034R11

VALUE	DOCUMENT ID		TECN	COMMENT
0.10±0.04 OUR FIT				
0.10±0.05	[26] DAUM	81B	SPEC	63,94 $\pi^- p$

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma(f_2(1270)\pi)$ Γ_9/Γ_4

NODE=M034R13
NODE=M034R13

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.075±0.025 OUR FIT					
0.075±0.025	[27] ARMSTRONG	82B	OMEG	−	16 $\pi^- p \to K^+ K^- \pi^- p$

$\Gamma(\omega\rho)/\Gamma_{\text{total}}$ Γ_{10}/Γ

NODE=M034R17
NODE=M034R17

VALUE	DOCUMENT ID		TECN	COMMENT
0.027±0.004±0.010	[28] AMELIN	99	VES	37 $\pi^- A \to \omega\pi^-\pi^0 A^*$

$\Gamma(\eta\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$ $\Gamma_{13}/\Gamma_8=\Gamma_{13}/(0.565\Gamma_4+\frac{1}{2}\Gamma_5+0.624\Gamma_7)$

NODE=M034R5

(All η decays.)

NODE=M034R5

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
<0.09	BALTAY	68	HBC	+	7–8.5 $\pi^+ p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.10	CRENNELL	70	HBC	−	6 $\pi^- p \rightarrow f_2 \pi^- N$

NODE=M034R5

NODE=M034R5

$\Gamma(\pi^\pm 2\pi^+ 2\pi^-)/\Gamma(\pi^\pm\pi^+\pi^-)$ $\Gamma_{14}/\Gamma_8=\Gamma_{14}/(0.565\Gamma_4+\frac{1}{2}\Gamma_5+0.624\Gamma_7)$

NODE=M034R6

NODE=M034R6

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
<0.10	CRENNELL	70	HBC	−	6 $\pi^- p \rightarrow f_2 \pi^- N$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.1	BALTAY	68	HBC	+	7,8.5 $\pi^+ p$

$\Gamma(\rho(1450)\pi)/\Gamma_{\text{total}}$ Γ_{15}/Γ

NODE=M034R18

NODE=M034R18

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0036	97.7	AMELIN	99	VES	37 $\pi^- A \rightarrow \omega\pi^-\pi^0 A^*$

$\Gamma(b_1(1235)\pi)/\Gamma_{\text{total}}$ Γ_{16}/Γ

NODE=M034R19

NODE=M034R19

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0019	97.7	AMELIN	99	VES	37 $\pi^- A \rightarrow \omega\pi^-\pi^0 A^*$

$\Gamma(f_1(1285)\pi)/\Gamma_{\text{total}}$ Γ_{17}/Γ

NODE=M034R23

NODE=M034R23

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
possibly seen	69k	KUHN	04	B852	18 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^- p$

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$ Γ_{18}/Γ

NODE=M034R24

NODE=M034R24

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
not seen	69k	KUHN	04	B852	18 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^- p$

D-wave/*S*-wave RATIO FOR $\pi_2(1670) \rightarrow f_2(1270)\pi$

NODE=M034R14

NODE=M034R14

VALUE	DOCUMENT ID		TECN	COMMENT
−0.18±0.06	[24] BAKER	99	SPEC	1.94 $\bar{p}p \rightarrow 4\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.22±0.10	[26] DAUM	81B	SPEC	63,94 $\pi^- p$

F-wave/*P*-wave RATIO FOR $\pi_2(1670) \rightarrow \rho\pi$

NODE=M034R22

NODE=M034R22

VALUE	DOCUMENT ID		TECN	COMMENT
−0.72±0.07±0.14	CHUNG	02	B852	18.3 $\pi^- p \rightarrow \pi^+\pi^-\pi^- p$

[24] Using preliminary CBAR data.

NODE=M034R;LINKAGE=BK

[25] With the $\sigma\pi$ in L=2 and the $f_2(1270)\pi$ in L=0.

NODE=M034R15;LINKAGE=A

[26] From a two-resonance fit to four 2^-0^+ waves.

NODE=M034R;LINKAGE=L

[27] From a partial-wave analysis of $K^+K^-\pi^-$ system.

NODE=M034R13;LINKAGE=M

[28] Normalized to the B($\pi_2(1670) \rightarrow f_2\pi$).

NODE=M034R;LINKAGE=DM

$\pi_2(1670)$ REFERENCES

NODE=M034

AGHASYAN	18B	PR D98 092003	M. Aghasyan *et al.*	(COMPASS Collab.)	REFID=59471
ADOLPH	14	EPJ A50 79	C. Adolph *et al.*	(COMPASS Collab.)	REFID=55911
ALEKSEEV	10	PRL 104 241803	M.G. Alekseev *et al.*	(COMPASS Collab.)	REFID=53356
SCHEGELSKY	06	EPJ A27 199	V.A. Schegelsky *et al.*		REFID=51186
LU	05	PRL 94 032002	M. Lu *et al.*	(BNL E852 Collab.)	REFID=50459
KUHN	04	PL B595 109	J. Kuhn *et al.*	(BNL E852 Collab.)	REFID=49773
CHUNG	02	PR D65 072001	S.U. Chung *et al.*	(BNL E852 Collab.)	REFID=48837
BARBERIS	01	PL B507 14	D. Barberis *et al.*		REFID=48324
AMELIN	99	PAN 62 445	D.V. Amelin *et al.*	(VES Collab.)	REFID=46910
		Translated from YAF 62 487.			
BAKER	99	PL B449 114	C.A. Baker *et al.*		REFID=46888
BARBERIS	98B	PL B422 399	D. Barberis *et al.*	(WA 102 Collab.)	REFID=46345
ACCIARRI	97T	PL B413 147	M. Acciarri *et al.*	(L3 Collab.)	REFID=45761
ALBRECHT	97B	ZPHY C74 469	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=45418
AMELIN	95B	PL B356 595	D.V. Amelin *et al.*	(SERP, TBIL)	REFID=44433
BERDNIKOV	94	PL B337 219	E.B. Berdnikov *et al.*	(SERP, TBIL)	REFID=44073
ANTREASYAN	90	ZPHY C48 561	D. Antreasyan *et al.*	(Crystal Ball Collab.)	REFID=41372
BEHREND	90C	ZPHY C46 583	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=41356
ANTIPOV	87	EPL 4 403	Y.M. Antipov *et al.*	(SERP, JINR, INRM+)	REFID=40004
BELLINI	85	SJNP 41 781	D. Bellini *et al.*		REFID=47490
		Translated from YAF 41 1223.			
ARMSTRONG	82B	NP B202 1	T.A. Armstrong, B. Baccari	(AACH3, BARI, BONN+)	REFID=20874
DAUM	81B	NP B182 269	C. Daum *et al.*	(AMST, CERN, CRAC, MPIM+)	REFID=20872
EVANGELIS...	81	NP B178 197	C. Evangelista *et al.*	(BARI, BONN, CERN+)	REFID=20462
Also		NP B186 594	C. Evangelista		REFID=21576
DAUM	80D	PL 89B 285	C. Daum *et al.*	(AMST, CERN, CRAC, MPIM+) JP	REFID=21573
BALTAY	77	PRL 39 591	C. Baltay, C.V. Cautis, M. Kalelkar	(COLU) JP	REFID=20847
ASCOLI	73	PR D7 669	G. Ascoli	(ILL, TNTO, GENO, HAMB, MILA+) JP	REFID=21553
CRENNELL	70	PRL 24 781	D.J. Crennell *et al.*	(BNL)	REFID=20805
ARMENISE	69	LNC 2 501	N. Armenise *et al.*	(BARI, BGNA, FIRZ)	REFID=20689
BALTAY	68	PRL 20 887	C. Baltay *et al.*	(COLU, ROCH, RUTG, YALE) I	REFID=21531
BARTSCH	68	NP B7 345	J. Bartsch *et al.*	(AACH, BERL, CERN) JP	REFID=21532