NODE=M012

$a_2(1320)$

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

$a_2(1320)$ MASS

NODE=M012205

VALUE (MeV)	DOCUMENT ID

NODE=M012M0

1318.3±0.6 OUR AVERAGE Includes data from the 4 datablocks that follow this one. Error includes scale factor of 1.2.

3π MODE

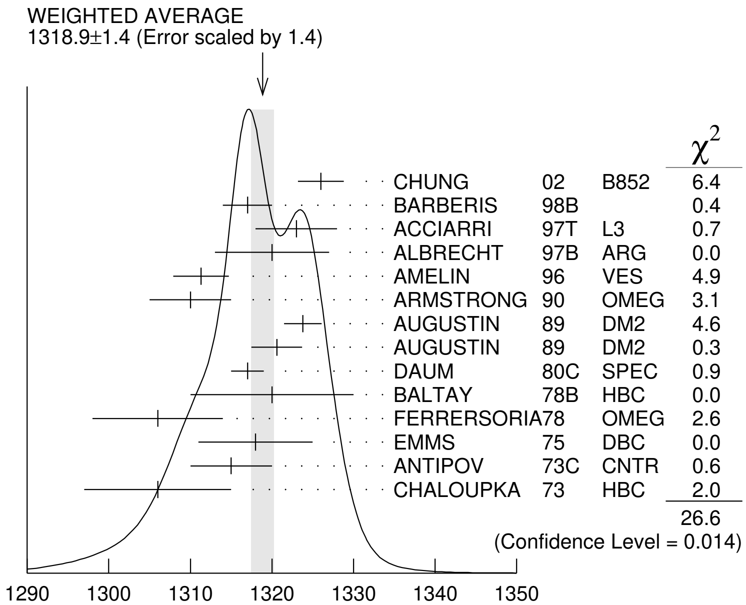
NODE=M012M1

The data in this block is included in the average printed for a previous datablock.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT	
1318.9± 1.4 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.					
1326 ± 2 ±2		CHUNG	02	B852		18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$	
1317 ± 3		BARBERIS	98B			450 $pp \to p_f \pi^+\pi^-\pi^0 p_s$	
1323 ± 4 ±3		ACCIARRI	97T	L3		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$	
1320 ± 7		ALBRECHT	97B	ARG		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$	
1311.3± 1.6±3.0	72.4k	AMELIN	96	VES		36 $\pi^- p \to \pi^+\pi^-\pi^0 n$	
1310 ± 5		ARMSTRONG	90	OMEG	0	300.0$pp \to pp\pi^+\pi^-\pi^0$	
1323.8± 2.3	4022	AUGUSTIN	89	DM2	±	$J/\psi \to \rho^\pm a_2^\mp$	
1320.6± 3.1	3562	AUGUSTIN	89	DM2	0	$J/\psi \to \rho^0 a_2^0$	OCCUR=2
1317 ± 2	25k	[1] DAUM	80C	SPEC	−	63,94 $\pi^- p \to 3\pi p$	
1320 ±10	1097	[1] BALTAY	78B	HBC	+0	15 $\pi^+ p \to p 4\pi$	
1306 ± 8		FERRERSORIA	78	OMEG	−	9 $\pi^- p \to p 3\pi$	
1318 ± 7	1.6k	[1] EMMS	75	DBC	0	4 $\pi^+ n \to p(3\pi)^0$	
1315 ± 5		[1] ANTIPOV	73C	CNTR	−	25,40 $\pi^- p \to p\eta\pi^-$	
1306 ± 9	1580	CHALOUPKA	73	HBC	−	3.9 $\pi^- p$	
• • • We do not use the following data for averages, fits, limits, etc. • • •							
1300 ± 2 ±4	18k	[2] SCHEGELSKY	06	RVUE	0	$\gamma\gamma \to \pi^+\pi^-\pi^0$	
1305 ±14		CONDO	93	SHF		$\gamma p \to \eta\pi^+\pi^+\pi^-$	
1310 ± 2		[1] EVANGELIS...	81	OMEG	−	12 $\pi^- p \to 3\pi p$	
1343 ±11	490	BALTAY	78B	HBC	0	15 $\pi^+ p \to \Delta 3\pi$	OCCUR=2
1309 ± 5	5k	BINNIE	71	MMS	−	$\pi^- p$ near a_2 threshold	OCCUR=2
1299 ± 6	28k	BOWEN	71	MMS	−	5 $\pi^- p$	
1300 ± 6	24k	BOWEN	71	MMS	+	5 $\pi^+ p$	OCCUR=2
1309 ± 4	17k	BOWEN	71	MMS	−	7 $\pi^- p$	OCCUR=3
1306 ± 4	941	ALSTON-...	70	HBC	+	7.0 $\pi^+ p \to 3\pi p$	

[1] From a fit to $J^P = 2^+$ $\rho\pi$ partial wave. NODE=M012M1;LINKAGE=P

[2] From analysis of L3 data at 183–209 GeV. NODE=M012M1;LINKAGE=SC



$a_2(1320)$ mass, 3π mode (MeV)

$K\overline{K}$ MODE

NODE=M012M2
NODE=M012M2

VALUE (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*CHG*	*COMMENT*	
The data in this block is included in the average printed for a previous datablock.						
1318.1± 0.7 OUR AVERAGE						
1319 ± 5	4700	[3,4] CLELAND 82B	SPEC	+	50 $\pi^+ p \to K^0_S K^+ p$	OCCUR=2
1324 ± 6	5200	[3,4] CLELAND 82B	SPEC	−	50 $\pi^- p \to K^0_S K^- p$	OCCUR=3
1320 ± 2	4000	CHABAUD 80	SPEC	−	17 π^- A $\to K^0_S K^-$ A	
1312 ± 4	11000	CHABAUD 78	SPEC	−	9.8 $\pi^- p \to K^- K^0_S p$	
1316 ± 2	4730	CHABAUD 78	SPEC	−	18.8 $\pi^- p \to K^- K^0_S p$	OCCUR=2
1318 ± 1		[3,5] MARTIN 78D	SPEC	−	10 $\pi^- p \to K^0_S K^- p$	
1320 ± 2	2724	MARGULIE 76	SPEC	−	23 $\pi^- p \to K^- K^0_S p$	
1313 ± 4	730	FOLEY 72	CNTR	−	20.3 $\pi^- p \to K^- K^0_S p$	
1319 ± 3	1500	[5] GRAYER 71	ASPK	−	17.2 $\pi^- p \to K^- K^0_S p$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1304 ±10	870	[6] SCHEGELSKY 06A	RVUE	0	$\gamma\gamma \to K^0_S K^0_S$	
1330 ±11	1000	[3,4] CLELAND 82B	SPEC	+	30 $\pi^+ p \to K^0_S K^+ p$	
1324 ± 5	350	HYAMS 78	ASPK	+	12.7 $\pi^+ p \to K^+ K^0_S p$	

[3] From a fit to $J^P = 2^+$ partial wave. NODE=M012M2;LINKAGE=P
[4] Number of events evaluated by us. NODE=M012M2;LINKAGE=W
[5] Systematic error in mass scale subtracted. NODE=M012M2;LINKAGE=S
[6] From analysis of L3 data at 91 and 183–209 GeV. NODE=M012M2;LINKAGE=SC

$\eta\pi$ MODE

NODE=M012M3
NODE=M012M3

VALUE (MeV)	*EVTS*	*DOCUMENT ID*	*TECN*	*CHG*	*COMMENT*	
The data in this block is included in the average printed for a previous datablock.						
1317.7±1.4 OUR AVERAGE						
1308 ±9		BARBERIS 00H			450 $p p \to p_f \eta \pi^0 p_s$	
1316 ±9		BARBERIS 00H			450 $p p \to \Delta^{++}_f \eta \pi^- p_s$	OCCUR=2
1317 ±1 ±2		THOMPSON 97	MPS		18 $\pi^- p \to \eta \pi^- p$	
1315 ±5 ±2		[7] AMSLER 94D	CBAR		0.0 $\overline{p} p \to \pi^0 \pi^0 \eta$	
1325.1±5.1		AOYAGI 93	BKEI		$\pi^- p \to \eta \pi^- p$	
1317.7±1.4±2.0		BELADIDZE 93	VES		37$\pi^- N \to \eta \pi^- N$	
1323 ±8	1000	[8] KEY 73	OSPK	−	6 $\pi^- p \to p \pi^- \eta$	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1324 ±5		ARMSTRONG 93C	E760	0	$\overline{p} p \to \pi^0 \eta \eta \to 6\gamma$	
1336.2±1.7	2561	DELFOSSE 81	SPEC	+	$\pi^\pm p \to p \pi^\pm \eta$	
1330.7±2.4	1653	DELFOSSE 81	SPEC	−	$\pi^\pm p \to p \pi^\pm \eta$	OCCUR=2
1324 ±8	6200	[8,9] CONFORTO 73	OSPK	−	6 $\pi^- p \to p$MM$^-$	

[7] The systematic error of 2 MeV corresponds to the spread of solutions. NODE=M012M3;LINKAGE=DD
[8] Error includes 5 MeV systematic mass-scale error. NODE=M012M3;LINKAGE=E
[9] Missing mass with enriched MMS = $\eta\pi^-$, $\eta = 2\gamma$. NODE=M012M3;LINKAGE=M

$\eta'\pi$ MODE

NODE=M012M4

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.			
1322 ± 7 OUR AVERAGE			
1318 ± 8 $^{+3}_{-5}$	IVANOV 01	B852	18 $\pi^- p \to \eta'\pi^- p$
1327.0±10.7	BELADIDZE 93	VES	37$\pi^- N \to \eta'\pi^- N$

a_2(1320) WIDTH

NODE=M012210

3π MODE

NODE=M012W1

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	
104.7± 1.9 OUR AVERAGE						
108 ± 3 ±15		CHUNG 02	B852		18.3 $\pi^- p \to \pi^+\pi^-\pi^- p$	
120 ±10		BARBERIS 98B			450 $pp \to p_f \pi^+\pi^-\pi^0 p_s$	
105 ±10 ±11		ACCIARRI 97T	L3		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$	
120 ±10		ALBRECHT 97B	ARG		$e^+e^- \to e^+e^-\pi^+\pi^-\pi^0$	
103.0± 6.0± 3.3	72.4k	AMELIN 96	VES		36 $\pi^- p \to \pi^+\pi^-\pi^0 n$	
120 ±10		ARMSTRONG 90	OMEG	0	300.0$pp \to pp\pi^+\pi^-\pi^0$	
107.0± 9.7	4022	AUGUSTIN 89	DM2	±	$J/\psi \to \rho^\pm a_2^\mp$	
118.5±12.5	3562	AUGUSTIN 89	DM2	0	$J/\psi \to \rho^0 a_2^0$	OCCUR=2
97 ± 5		[10] EVANGELIS... 81	OMEG	−	12 $\pi^- p \to 3\pi p$	
96 ± 9	25k	[10] DAUM 80C	SPEC	−	63,94 $\pi^- p \to 3\pi p$	
110 ±15	1097	[10] BALTAY 78B	HBC	+0	15 $\pi^+ p \to p 4\pi$	
112 ±18	1.6k	[10] EMMS 75	DBC	0	4 $\pi^+ n \to p(3\pi)^0$	
122 ±14	1.2k	[10,11] WAGNER 75	HBC	0	7 $\pi^+ p \to \Delta^{++}(3\pi)^0$	
115 ±15		[10] ANTIPOV 73C	CNTR	−	25,40 $\pi^- p \to p\eta\pi^-$	
99 ±15	1580	CHALOUPKA 73	HBC	−	3.9 $\pi^- p$	
105 ± 5	28k	BOWEN 71	MMS	−	5 $\pi^- p$	
99 ± 5	24k	BOWEN 71	MMS	+	5 $\pi^+ p$	OCCUR=2
103 ± 5	17k	BOWEN 71	MMS	−	7 $\pi^- p$	OCCUR=3
• • • We do not use the following data for averages, fits, limits, etc. • • •						
117 ± 6 ±20	18k	[12] SCHEGELSKY 06	RVUE	0	$\gamma\gamma \to \pi^+\pi^-\pi^0$	
120 ±40		CONDO 93	SHF		$\gamma p \to \eta\pi^+\pi^+\pi^-$	
115 ±14	490	BALTAY 78B	HBC	0	15 $\pi^+ p \to \Delta 3\pi$	OCCUR=2
72 ±16	5k	BINNIE 71	MMS	−	$\pi^- p$ near a_2 threshold	OCCUR=2
79 ±12	941	ALSTON-... 70	HBC	+	7.0 $\pi^+ p \to 3\pi p$	

[10] From a fit to $J^P = 2^+$ $\rho\pi$ partial wave. NODE=M012W1;LINKAGE=P

[11] Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass. NODE=M012W1;LINKAGE=S

[12] From analysis of L3 data at 183–209 GeV. NODE=M012W1;LINKAGE=SC

$K\overline{K}$ AND $\eta\pi$ MODES

NODE=M012W0

VALUE (MeV)	DOCUMENT ID
107 ±5 OUR ESTIMATE	
110.4±1.7 OUR AVERAGE Includes data from the 2 datablocks that follow this one.	

→ NOT CHECKED ←

$K\overline{K}$ MODE

NODE=M012W2

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	
The data in this block is included in the average printed for a previous datablock.						
109.8± 2.4 OUR AVERAGE						
112 ±20	4700	[13,14] CLELAND 82B	SPEC	+	50 $\pi^+ p \to K^0_S K^+ p$	OCCUR=2
120 ±25	5200	[13,14] CLELAND 82B	SPEC	−	50 $\pi^- p \to K^0_S K^- p$	OCCUR=3
106 ± 4	4000	CHABAUD 80	SPEC	−	17 π^- A $\to K^0_S K^-$ A	
126 ±11	11000	CHABAUD 78	SPEC	−	9.8 $\pi^- p \to K^- K^0_S p$	
101 ± 8	4730	CHABAUD 78	SPEC	−	18.8 $\pi^- p \to K^- K^0_S p$	OCCUR=2
113 ± 4		[13,15] MARTIN 78D	SPEC	−	10 $\pi^- p \to K^0_S K^- p$	
105 ± 8	2724	[15] MARGULIE 76	SPEC	−	23 $\pi^- p \to K^- K^0_S p$	
113 ±19	730	FOLEY 72	CNTR	−	20.3 $\pi^- p \to K^- K^0_S p$	
123 ±13	1500	[15] GRAYER 71	ASPK	−	17.2 $\pi^- p \to K^- K^0_S p$	

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

120	±15	870	[16] SCHEGELSKY	06A	RVUE	0	$\gamma\gamma \to K^0_S K^0_S$
121	±51	1000	[13,14] CLELAND	82B	SPEC	+	30 $\pi^+ p \to K^0_S K^+ p$
110	±18	350	HYAMS	78	ASPK	+	12.7 $\pi^+ p \to K^+ K^0_S p$

[13] From a fit to $J^P = 2^+$ partial wave.
[14] Number of events evaluated by us.
[15] Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.
[16] From analysis of L3 data at 91 and 183–209 GeV.

NODE=M012W2;LINKAGE=P
NODE=M012W2;LINKAGE=W
NODE=M012W2;LINKAGE=S
NODE=M012W2;LINKAGE=SC

$\eta\pi$ MODE

NODE=M012W3
NODE=M012W3

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
The data in this block is included in the average printed for a previous datablock.						
111.1± 2.4 OUR AVERAGE						
115 ±20		BARBERIS	00H			450 $pp \to p_f \eta\pi^0 p_s$
112 ±14		BARBERIS	00H			450 $pp \to \Delta_f^{++} \eta\pi^- p_s$
112 ± 3 ±2		[17] AMSLER	94D	CBAR		0.0 $\overline{p}p \to \pi^0\pi^0\eta$
103 ± 6 ±3		BELADIDZE	93	VES		$37\pi^- N \to \eta\pi^- N$
112.2± 5.7	2561	DELFOSSE	81	SPEC	+	$\pi^\pm p \to p\pi^\pm\eta$
116.6± 7.7	1653	DELFOSSE	81	SPEC	−	$\pi^\pm p \to p\pi^\pm\eta$
108 ± 9	1000	KEY	73	OSPK	−	6 $\pi^- p \to p\pi^-\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
127 ± 2 ±2		[18] THOMPSON	97	MPS		18 $\pi^- p \to \eta\pi^- p$
118 ±10		ARMSTRONG	93C	E760	0	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$
104 ± 9	6200	[19] CONFORTO	73	OSPK	−	6 $\pi^- p \to p MM^-$

OCCUR=2 (BARBERIS 00H, second entry)
OCCUR=2 (DELFOSSE 81, second entry)

[17] The systematic error of 2 MeV corresponds to the spread of solutions.
[18] Resolution is not unfolded.
[19] Missing mass with enriched MMS $= \eta\pi^-$, $\eta = 2\gamma$.

NODE=M012W3;LINKAGE=DD
NODE=M012W3;LINKAGE=A
NODE=M012W3;LINKAGE=M

$\eta'\pi$ MODE

NODE=M012W4
NODE=M012W4

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
119±25 OUR AVERAGE				
140±35±20	IVANOV	01	B852	18 $\pi^- p \to \eta'\pi^- p$
106±32	BELADIDZE	93	VES	$37\pi^- N \to \eta'\pi^- N$

$a_2(1320)$ DECAY MODES

NODE=M012215;NODE=M012

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	
Γ_1	3π	(70.1 ±2.7) %	S=1.2	DESIG=1
Γ_2	$\rho(770)\pi$			DESIG=11
Γ_3	$f_2(1270)\pi$			DESIG=12
Γ_4	$\rho(1450)\pi$			DESIG=13
Γ_5	$\eta\pi$	(14.5 ±1.2) %		DESIG=3
Γ_6	$\omega\pi\pi$	(10.6 ±3.2) %	S=1.3	DESIG=4
Γ_7	$K\overline{K}$	(4.9 ±0.8) %		DESIG=2
Γ_8	$\eta'(958)\pi$	(5.3 ±0.9) $\times 10^{-3}$		DESIG=8
Γ_9	$\pi^\pm\gamma$	(2.68±0.31) $\times 10^{-3}$		DESIG=7
Γ_{10}	$\gamma\gamma$	(9.4 ±0.7) $\times 10^{-6}$		DESIG=9
Γ_{11}	e^+e^-	< 6 $\times 10^{-9}$	CL=90%	DESIG=10

CONSTRAINED FIT INFORMATION

An overall fit to 5 branching ratios uses 18 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 =$ 9.3 for 15 degrees of freedom.

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

x_5	10		
x_6	−89	−46	
x_7	−1	−2	−24
	x_1	x_5	x_6

$a_2(1320)$ PARTIAL WIDTHS

NODE=M012220

$\Gamma(\eta\pi)$ Γ_5

NODE=M012W6
NODE=M012W6

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
18.5 ± 3.0	870	[20] SCHEGELSKY	06A	RVUE	0	$\gamma\gamma\rightarrow K^0_S K^0_S$

[20] From analysis of L3 data at 91 and 183–209 GeV, using $\Gamma(a_2(1320)\rightarrow\gamma\gamma)=0.91$ keV and SU(3) relations.

NODE=M012W6;LINKAGE=SC

$\Gamma(K\overline{K})$ Γ_7

NODE=M012W5
NODE=M012W5

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$7.0^{+2.0}_{-1.5}$	870	[21] SCHEGELSKY	06A	RVUE	0	$\gamma\gamma\rightarrow K^0_S K^0_S$

[21] From analysis of L3 data at 91 and 183–209 GeV, using $\Gamma(a_2(1320)\rightarrow\gamma\gamma)=0.91$ keV and SU(3) relations.

NODE=M012W5;LINKAGE=SC

$\Gamma(\pi^\pm\gamma)$ Γ_9

NODE=M012W7
NODE=M012W7

VALUE (keV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
$287\pm$ 30 OUR AVERAGE						
$284\pm$ 25 ± 25	7100	MOLCHANOV	01	SELX		$600\ \pi^- A\rightarrow\pi^+\pi^-\pi^- A$
$295\pm$ 60		CIHANGIR	82	SPEC	$+$	$200\ \pi^+$ A
• • • We do not use the following data for averages, fits, limits, etc. • • •						
461 ± 110		[22] MAY	77	SPEC	$\pm$	$9.7\ \gamma$A

[22] Assuming one-pion exchange.

NODE=M012W;LINKAGE=M2

$\Gamma(\gamma\gamma)$ Γ_{10}

NODE=M012W9
NODE=M012W9

VALUE (keV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1.00 ± 0.06 OUR AVERAGE						
$0.98\pm0.05\pm0.09$		ACCIARRI	97T	L3		$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
$0.96\pm0.03\pm0.13$		ALBRECHT	97B	ARG		$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
$1.26\pm0.26\pm0.18$	36	BARU	90	MD1		$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
$1.00\pm0.07\pm0.15$	415	BEHREND	90C	CELL	0	$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
$1.03\pm0.13\pm0.21$		BUTLER	90	MRK2		$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
$1.01\pm0.14\pm0.22$	85	OEST	90	JADE		$e^+e^-\rightarrow e^+e^-\pi^0\eta$
$0.90\pm0.27\pm0.15$	56	[23] ALTHOFF	86	TASS	0	$e^+e^-\rightarrow e^+e^-3\pi$
$1.14\pm0.20\pm0.26$		[24] ANTREASYAN	86	CBAL	0	$e^+e^-\rightarrow e^+e^-\pi^0\eta$
$1.06\pm0.18\pm0.19$		BERGER	84C	PLUT	0	$e^+e^-\rightarrow e^+e^-3\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$0.81\pm0.19^{+0.42}_{-0.11}$	35	[23] BEHREND	83B	CELL	0	$e^+e^-\rightarrow e^+e^-3\pi$
$0.77\pm0.18\pm0.27$	22	[24] EDWARDS	82F	CBAL	0	$e^+e^-\rightarrow e^+e^-\pi^0\eta$

[23] From $\rho\pi$ decay mode.

NODE=M012W;LINKAGE=F

[24] From $\eta\pi^0$ decay mode.

NODE=M012W;LINKAGE=G

$\Gamma(e^+e^-)$ Γ_{11}

NODE=M012W10
NODE=M012W10

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
$<$ 0.56	90	ACHASOV	00K	SND	$e^+e^-\rightarrow\pi^0\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<25	90	VOROBYEV	88	ND	$e^+e^-\rightarrow\pi^0\eta$

$a_2(1320)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

NODE=M012223

$\Gamma(3\pi)\times\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_1\Gamma_{10}/\Gamma$

NODE=M012G2
NODE=M012G2

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.65\pm0.02\pm0.02$	18k	[25] SCHEGELSKY	06	RVUE	$\gamma\gamma\rightarrow\pi^+\pi^-\pi^0$

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

NODE=M012G2;LINKAGE=SC

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_7\Gamma_{10}/\Gamma$

NODE=M012G1
NODE=M012G1

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.126±0.007±0.028	[26] ALBRECHT	90G	ARG	$e^+e^- \rightarrow e^+e^-K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.081±0.006±0.027	[27] ALBRECHT	90G	ARG	$e^+e^- \rightarrow e^+e^-K^+K^-$

OCCUR=2

[26] Using an incoherent background. NODE=M012G1;LINKAGE=A

[27] Using a coherent background. NODE=M012G1;LINKAGE=B

$a_2(1320)$ BRANCHING RATIOS

NODE=M012225

$[\Gamma(f_2(1270)\pi) + \Gamma(\rho(1450)\pi)]/\Gamma(\rho(770)\pi)$ $(\Gamma_3+\Gamma_4)/\Gamma_2$

NODE=M012R9
NODE=M012R9

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
<0.12	90	ABRAMOVI...	70B	HBC	−	3.93 π^-p

$\Gamma(\eta\pi)/\Gamma(3\pi)$ Γ_5/Γ_1

NODE=M012R3
NODE=M012R3

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.207±0.018 OUR FIT						
0.213±0.020 OUR AVERAGE						
0.18 ±0.05		FORINO	76	HBC		11 π^-p
0.22 ±0.05	52	ANTIPOV	73	CNTR	−	40 π^-p
0.211±0.044	149	CHALOUPKA	73	HBC	−	3.9 π^-p
0.246±0.042	167	ALSTON-...	71	HBC	+	7.0 π^+p
0.25 ±0.09	15	BOECKMANN	70	HBC	+	5.0 π^+p
0.23 ±0.08	22	ASCOLI	68	HBC	−	5 π^-p
0.12 ±0.08		CHUNG	68	HBC	−	3.2 π^-p
0.22 ±0.09		CONTE	67	HBC	−	11.0 π^-p

$\Gamma(\omega\pi\pi)/\Gamma(3\pi)$ Γ_6/Γ_1

NODE=M012R12
NODE=M012R12

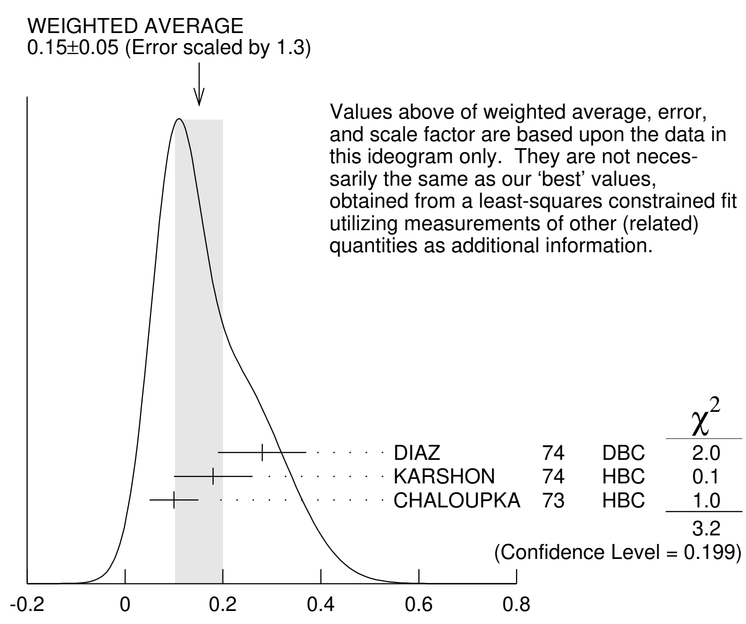
VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.15±0.05 OUR FIT Error includes scale factor of 1.3.						
0.15±0.05 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.						
0.28±0.09	60	DIAZ	74	DBC	0	6 π^+n
0.18±0.08		[28] KARSHON	74	HBC		Avg. of above two
0.10±0.05	279	CHALOUPKA	73	HBC	−	3.9 π^-p
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.29±0.08	140	[28] KARSHON	74	HBC	0	4.9 π^+p
0.10±0.04	60	[28] KARSHON	74	HBC	+	4.9 π^+p
0.19±0.08		DEFOIX	73	HBC	0	0.7 $\overline{p}p$

OCCUR=3

OCCUR=2

[28] KARSHON 74 suggest an additional $I = 0$ state strongly coupled to $\omega\pi\pi$ which could explain discrepancies in branching ratios and masses. We use a central value and a systematic spread.

NODE=M012R12;LINKAGE=K



$\Gamma(\omega\pi\pi)/\Gamma(3\pi)$

$\Gamma(K\overline{K})/\Gamma(3\pi)$ — Γ_7/Γ_1

NODE=M012R1

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.070±0.012 OUR FIT						
0.078±0.017		CHABAUD	78	RVUE		
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.011±0.003		[29] BERTIN	98B	OBLX		0.0 $\overline{p}p \rightarrow K^{\pm}K_s\pi^{\mp}$
0.056±0.014	50	[30] CHALOUPKA	73	HBC	−	3.9 $\pi^- p$
0.097±0.018	113	[30] ALSTON-...	71	HBC	+	7.0 $\pi^+ p$
0.06 ±0.03		[30] ABRAMOVI...	70B	HBC	−	3.93 $\pi^- p$
0.054±0.022		[30] CHUNG	68	HBC	−	3.2 $\pi^- p$

[29] Using 4π data from BERTIN 97D. NODE=M012R1;LINKAGE=BE

[30] Included in CHABAUD 78 review. NODE=M012R1;LINKAGE=C

$\Gamma(K\overline{K})/\Gamma(\eta\pi)$ — Γ_7/Γ_5

NODE=M012R14

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.08±0.02	[31] BERTIN	98B	OBLX	0.0 $\overline{p}p \rightarrow K^{\pm}K_s\pi^{\mp}$

[31] Using $\eta\pi\pi$ data from AMSLER 94D. NODE=M012R14;LINKAGE=BE

$\Gamma(\eta\pi)/[\Gamma(3\pi)+\Gamma(\eta\pi)+\Gamma(K\overline{K})]$ — $\Gamma_5/(\Gamma_1+\Gamma_5+\Gamma_7)$

NODE=M012R2

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.162±0.012 OUR FIT						
0.140±0.028 OUR AVERAGE						
0.13 ±0.04		ESPIGAT	72	HBC	±	0.0 $\overline{p}p$
0.15 ±0.04	34	BARNHAM	71	HBC	+	3.7 $\pi^+ p$

$\Gamma(K\overline{K})/[\Gamma(3\pi)+\Gamma(\eta\pi)+\Gamma(K\overline{K})]$ — $\Gamma_7/(\Gamma_1+\Gamma_5+\Gamma_7)$

NODE=M012R8

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.054±0.009 OUR FIT						
0.048±0.012 OUR AVERAGE						
0.05 ±0.02		TOET	73	HBC	+	5 $\pi^+ p$
0.09 ±0.04		TOET	73	HBC	0	5 $\pi^+ p$ OCCUR=2
0.03 ±0.02	8	DAMERI	72	HBC	−	11 $\pi^- p$
0.06 ±0.03	17	BARNHAM	71	HBC	+	3.7 $\pi^+ p$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.020±0.004		[32] ESPIGAT	72	HBC	±	0.0 $\overline{p}p$

[32] Not averaged because of discrepancy between masses from $K\overline{K}$ and $\rho\pi$ modes. NODE=M012R8;LINKAGE=A

$\Gamma(\eta'(958)\pi)/\Gamma_{total}$ — Γ_8/Γ

NODE=M012R4

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.006	95	ALDE	92B	GAM2		38,100 $\pi^- p \rightarrow \eta'\pi^0 n$
<0.02	97	BARNHAM	71	HBC	+	3.7 $\pi^+ p$
0.004±0.004		BOESEBECK	68	HBC	+	8 $\pi^+ p$

$\Gamma(\eta'(958)\pi)/\Gamma(3\pi)$ — Γ_8/Γ_1

NODE=M012R5

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.011	90	EISENSTEIN	73	HBC	−	5 $\pi^- p$
<0.04		ALSTON-...	71	HBC	+	7.0 $\pi^+ p$
$0.04^{+0.03}_{-0.04}$		BOECKMANN	70	HBC	0	5.0 $\pi^+ p$

$\Gamma(\eta'(958)\pi)/\Gamma(\eta\pi)$ — Γ_8/Γ_5

NODE=M012R13

VALUE	DOCUMENT ID		TECN	COMMENT
0.037±0.006 OUR AVERAGE				
0.032±0.009	ABELE	97C	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta'$
0.047±0.010±0.004	[33] BELADIDZE	93	VES	$37\pi^- N \rightarrow a_2^- N$
0.034±0.008±0.005	BELADIDZE	92	VES	$36\pi^- C \rightarrow a_2^- C$

[33] Using $B(\eta' \rightarrow \pi^+\pi^-\eta) = 0.441$, $B(\eta \rightarrow \gamma\gamma) = 0.389$ and $B(\eta \rightarrow \pi^+\pi^-\pi^0) = 0.236$. NODE=M012R13;LINKAGE=A

$\Gamma(\pi^{\pm}\gamma)/\Gamma_{\text{total}}$ Γ_9/Γ

NODE=M012R11
NODE=M012R11

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.005^{+0.005}_{-0.003}$	[34] EISENBERG 72	HBC	4.3,5.25,7.5 γp

[34] Pion-exchange model used in this estimation.

NODE=M012R11;LINKAGE=R

$\Gamma(e^+e^-)/\Gamma_{\text{total}}$ Γ_{11}/Γ

NODE=M012R15
NODE=M012R15

VALUE (units 10^{-9})	CL%	DOCUMENT ID	TECN	COMMENT
<6	90	ACHASOV 00K	SND	$e^+e^- \rightarrow \pi^0\pi^0$

$a_2(1320)$ REFERENCES

NODE=M012

SCHEGELSKY	06	EPJ A27 199	V.A. Schegelsky *et al.*		REFID=51186
SCHEGELSKY	06A	EPJ A27 207	V.A. Schegelsky *et al.*		REFID=51185
CHUNG	02	PR D65 072001	S.U. Chung *et al.*	(BNL E852 Collab.)	REFID=48837
IVANOV	01	PRL 86 3977	E.I. Ivanov *et al.*	(BNL E852 Collab.)	REFID=48317
MOLCHANOV	01	PL B521 171	V.V. Molchanov *et al.*	(FNAL SELEX Collab.)	REFID=48559
ACHASOV	00K	PL B492 8	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=47933
BARBERIS	00H	PL B488 225	D. Barberis *et al.*	(WA 102 Collab.)	REFID=47964
BARBERIS	98B	PL B422 399	D. Barberis *et al.*	(WA 102 Collab.)	REFID=46345
BERTIN	98B	PL B434 180	A. Bertin *et al.*	(OBELIX Collab.)	REFID=46351
ABELE	97C	PL B404 179	A. Abele *et al.*	(Crystal Barrel Collab.)	REFID=45531
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
THOMPSON	97	PRL 79 1630	D.R. Thompson *et al.*	(BNL E852 Collab.)	REFID=45584
AMELIN	96	ZPHY C70 71	D.V. Amelin *et al.*	(SERP, TBIL)	REFID=44649
AMSLER	94D	PL B333 277	C. Amsler *et al.*	(Crystal Barrel Collab.)	REFID=44093
AOYAGI	93	PL B314 246	H. Aoyagi *et al.*	(BKEI Collab.)	REFID=43599
ARMSTRONG	93C	PL B307 394	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)	REFID=43587
BELADIDZE	93	PL B313 276	G.M. Beladidze *et al.*	(VES Collab.)	REFID=43598
CONDO	93	PR D48 3045	G.T. Condo *et al.*	(SLAC Hybrid Collab.)	REFID=43600
ALDE	92B	ZPHY C54 549	D.M. Alde *et al.*	(SERP, BELG, LANL, LAPP+)	REFID=41852
BELADIDZE	92	ZPHY C54 235	G.M. Beladidze *et al.*	(VES Collab.)	REFID=42171
ALBRECHT	90G	ZPHY C48 183	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41374
ARMSTRONG	90	ZPHY C48 213	T.A. Armstrong, M. Benayoun, W. Beusch		REFID=41375
BARU	90	ZPHY C48 581	S.E. Baru *et al.*	(MD-1 Collab.)	REFID=41366
BEHREND	90C	ZPHY C46 583	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=41356
BUTLER	90	PR D42 1368	F. Butler *et al.*	(Mark II Collab.)	REFID=41363
OEST	90	ZPHY C47 343	T. Oest *et al.*	(JADE Collab.)	REFID=41358
AUGUSTIN	89	NP B320 1	J.E. Augustin, G. Cosme	(DM2 Collab.)	REFID=41004
VOROBYEV	88	SJNP 48 273	P.V. Vorobiev *et al.*	(NOVO)	REFID=41023
		Translated from YAF 48 436.			
ALTHOFF	86	ZPHY C31 537	M. Althoff *et al.*	(TASSO Collab.)	REFID=21287
ANTREASYAN	86	PR D33 1847	D. Antreasyan *et al.*	(Crystal Ball Collab.)	REFID=20469
BERGER	84C	PL 149B 427	C. Berger *et al.*	(PLUTO Collab.)	REFID=21286
BEHREND	83B	PL 125B 518 (erratum)	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=20302
CIHANGIR	82	PL 117B 123	S. Cihangir *et al.*	(FNAL, MINN, ROCH)	REFID=21280
CLELAND	82B	NP B208 228	W.E. Cleland *et al.*	(DURH, GEVA, LAUS+)	REFID=21281
EDWARDS	82F	PL 110B 82	C. Edwards *et al.*	(CIT, HARV, PRIN+)	REFID=20747
DELFOSSE	81	NP B183 349	A. Delfosse *et al.*	(GEVA, LAUS)	REFID=21277
EVANGELIS...	81	NP B178 197	C. Evangelista *et al.*	(BARI, BONN, CERN+)	REFID=20462
CHABAUD	80	NP B175 189	V. Chabaud *et al.*	(CERN, MPIM, AMST)	REFID=21274
DAUM	80C	PL 89B 276	C. Daum *et al.*	(AMST, CERN, CRAC, MPIM+) JP	REFID=21275
BALTAY	78B	PR D17 62	C. Baltay *et al.*	(COLU, BING)	REFID=21265
CHABAUD	78	NP B145 349	V. Chabaud *et al.*	(CERN, MPIM)	REFID=21267
FERRERSORIA	78	PL 74B 287	A. Ferrer Soria *et al.*	(ORSAY, CERN, CDEF+)	REFID=21270
HYAMS	78	NP B146 303	B.D. Hyams *et al.*	(CERN, MPIM, ATEN)	REFID=21271
MARTIN	78D	PL 74B 417	A.D. Martin *et al.*	(DURH, GEVA) JP	REFID=21272
MAY	77	PR D16 1983	E.N. May *et al.*	(ROCH, CORN)	REFID=20450
FORINO	76	NC 35A 465	A. Forino *et al.*	(BGNA, FIRZ, GENO, MILA+)	REFID=21259
MARGULIE	76	PR D14 667	M. Margulies *et al.*	(BNL, CUNY)	REFID=21261
EMMS	75	PL 58B 117	M.J. Emms *et al.*	(BIRM, DURH, RHEL) JP	REFID=21254
WAGNER	75	PL 58B 201	F. Wagner, M. Tabak, D.M. Chew	(LBL) JP	REFID=20843
DIAZ	74	PRL 32 260	J. Diaz *et al.*	(CASE, CMU)	REFID=21248
KARSHON	74	PRL 32 852	U. Karshon *et al.*	(REHO)	REFID=21249
ANTIPOV	73	NP B63 175	Y.M. Antipov *et al.*	(CERN, SERP) JP	REFID=21238
ANTIPOV	73C	NP B63 153	Y.M. Antipov *et al.*	(CERN, SERP) JP	REFID=20817
CHALOUPKA	73	PL 44B 211	V. Chaloupka *et al.*	(CERN)	REFID=21242
CONFORTO	73	PL 45B 154	G. Conforto *et al.*	(EFI, FNAL, TNTO+)	REFID=21243
DEFOIX	73	PL 43B 141	C. Defoix *et al.*	(CDEF)	REFID=21244
EISENSTEIN	73	PR D7 278	L. Eisenstein *et al.*	(ILL)	REFID=21245
KEY	73	PRL 30 503	A.W. Key *et al.*	(TNTO, EFI, FNAL, WISC)	REFID=21246
TOET	73	NP B63 248	D.Z. Toet *et al.*	(NIJM, BONN, DURH, TORI)	REFID=20714
DAMERI	72	NC 9A 1	M. Dameri *et al.*	(GENO, MILA, SACL)	REFID=20338
EISENBERG	72	PR D5 15	Y. Eisenberg *et al.*	(REHO, SLAC, TELA)	REFID=20098
ESPIGAT	72	NP B36 93	P. Espigat *et al.*	(CERN, CDEF)	REFID=21232
FOLEY	72	PR D6 747	K.J. Foley *et al.*	(BNL, CUNY)	REFID=21233
ALSTON-...	71	PL 34B 156	M. Alston-Garnjost *et al.*	(LRL)	REFID=21214
BARNHAM	71	PRL 26 1494	K.W.J. Barnham *et al.*	(LBL)	REFID=21215
BINNIE	71	PL 36B 257	D.M. Binnie *et al.*	(LOIC, SHMP)	REFID=21217
BOWEN	71	PRL 26 1663	D.R. Bowen *et al.*	(NEAS, STON)	REFID=21219
GRAYER	71	PL 34B 333	G. Grayer *et al.*	(CERN, MPIM)	REFID=21223
ABRAMOVI...	70B	NP B23 466	M. Abramovich *et al.*	(CERN) JP	REFID=21195
ALSTON-...	70	PL 33B 607	M. Alston-Garnjost *et al.*	(LRL)	REFID=21196
BOECKMANN	70	NP B16 221	K. Boeckmann *et al.*	(BONN, DURH, NIJM+)	REFID=21202
ASCOLI	68	PRL 20 1321	G. Ascoli *et al.*	(ILL) JP	REFID=21171
BOESEBECK	68	NP B4 501	K. Boesebeck *et al.*	(AACH, BERL, CERN)	REFID=20585
CHUNG	68	PR 165 1491	S.U. Chung *et al.*	(LRL)	REFID=20059
CONTE	67	NC 51A 175	F. Conte *et al.*	(GENO, HAMB, MILA, SACL)	REFID=21166

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DZIERBA	06	PR D73 072001	A.R. Dzierba *et al.*	(BNL E852 Collab.)	REFID=51077
ALDE	99B	PAN 62 421	D. Alde *et al.*	(GAMS Collab.)	REFID=46913
		Translated from YAF 62 462.			
JENNI	83	PR D27 1031	P. Jenni *et al.*	(SLAC, LBL)	REFID=20304
BEHREND	82C	PL 114B 378	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=20303
ADERHOLZ	65	PR 138 B897	M. Aderholz	(AACH3, BERL, BIRM, BONN, HAMB+)	REFID=21143
ALITTI	65	PL 15 69	J. Alitti *et al.*	(SACL, BGNA) JP	REFID=20774
CHUNG	65	PRL 15 325	S.U. Chung *et al.*	(LRL)	REFID=20667
FORINO	65B	PL 19 68	A. Forino *et al.*	(BGNA, BARI, FIRZ, ORSAY+)	REFID=21146
LEFEBVRES	65	PL 19 434	F. Lefebvres *et al.*		REFID=21147
SEIDLITZ	65	PRL 15 217	L. Seidlitz, O.I. Dahl, D.H. Miller	(LRL)	REFID=21148
ADERHOLZ	64	PL 10 226	M. Aderholz *et al.*	(AACH3, BERL, BIRM+)	REFID=20770
CHUNG	64	PRL 12 621	S.U. Chung *et al.*	(LRL)	REFID=21138
GOLDHABER	64	PRL 12 336	G. Goldhaber *et al.*	(LRL, UCB)	REFID=20013
LANDER	64	PRL 13 346A	R.L. Lander *et al.*	(UCSD)	REFID=21141