

**$a_2(1320)$**

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

## $a_2(1320)$ MASS

VALUE (MeV)

DOCUMENT ID

**1318.3 ± 0.6 OUR NEW AVERAGE** Includes data from the 4 datablocks that follow this one. Error includes scale factor of 1.2. [1318.0 ± 0.6 MeV OUR 2002 AVERAGE Scale factor = 1.1]

### 3π MODE

VALUE (MeV)

EVTS

DOCUMENT ID

TECN

CHG

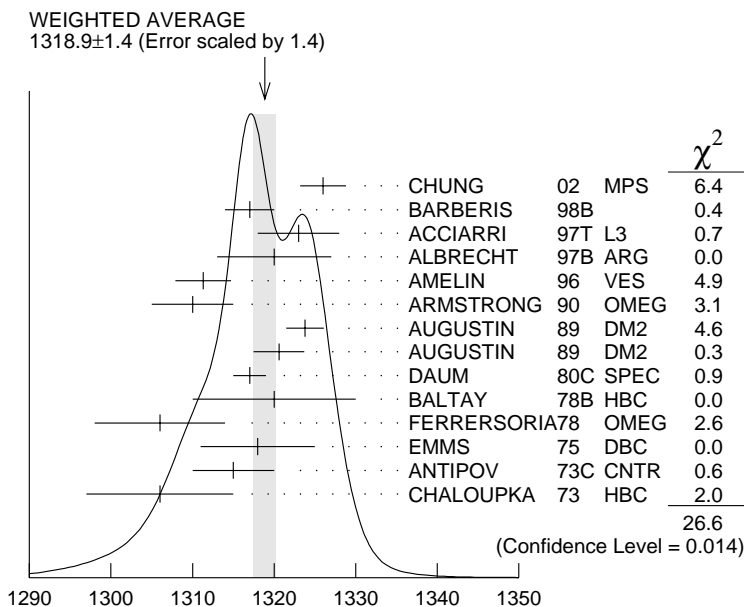
COMMENT

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

**1318.9 ± 1.4 OUR NEW AVERAGE** Error includes scale factor of 1.4. See the ideogram below. [1317.9 ± 1.3 MeV OUR 2002 AVERAGE Scale factor = 1.3]

1326 ± 2 ± 2		CHUNG	02	MPS		18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
1317 ± 3		BARBERIS	98B			450 $p p \rightarrow p_f \pi^+ \pi^- \pi^0 p_S$
1323 ± 4 ± 3		ACCIARRI	97T	L3		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
1320 ± 7		ALBRECHT	97B	ARG		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
1311.3 ± 1.6 ± 3.0	72400	AMELIN	96	VES		36 $\pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$
1310 ± 5		ARMSTRONG	90	OMEG 0		300.0 $p p \rightarrow p p \pi^+ \pi^- \pi^0$
1323.8 ± 2.3	4022	AUGUSTIN	89	DM2 ±		$J/\psi \rightarrow \rho^\pm a_2^\mp$
1320.6 ± 3.1	3562	AUGUSTIN	89	DM2 0		$J/\psi \rightarrow \rho^0 a_2^0$
1317 ± 2	25000	<sup>1</sup> DAUM	80C	SPEC -		63,94 $\pi^- p \rightarrow 3\pi p$
1320 ± 10	1097	<sup>1</sup> BALTAY	78B	HBC +0		15 $\pi^+ p \rightarrow p 4\pi$
1306 ± 8		FERRERSORIA	78	OMEG -		9 $\pi^- p \rightarrow p 3\pi$
1318 ± 7	1600	<sup>1</sup> EMMS	75	DBC 0		4 $\pi^+ n \rightarrow p (3\pi)^0$
1315 ± 5		<sup>1</sup> ANTIPOV	73C	CNTR -		25,40 $\pi^- p \rightarrow p \eta \pi^-$
1306 ± 9	1580	CHALOUPLKA	73	HBC -		3.9 $\pi^- p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
1305 ± 14		CONDO	93	SHF		$\gamma p \rightarrow \eta \pi^+ \pi^+ \pi^-$
1310 ± 2		<sup>1</sup> EVANGELISTA	81	OMEG -		12 $\pi^- p \rightarrow 3\pi p$
1343 ± 11	490	BALTAY	78B	HBC 0		15 $\pi^+ p \rightarrow \Delta 3\pi$
1309 ± 5	5000	BINNIE	71	MMS -		$\pi^- p$ near $a_2$ thresh- old
1299 ± 6	28000	BOWEN	71	MMS -		5 $\pi^- p$
1300 ± 6	24000	BOWEN	71	MMS +		5 $\pi^+ p$
1309 ± 4	17000	BOWEN	71	MMS -		7 $\pi^- p$
1306 ± 4	941	ALSTON-...	70	HBC +		7.0 $\pi^+ p \rightarrow 3\pi p$

<sup>1</sup>From a fit to  $J^P = 2^+ \rho\pi$  partial wave.



$a_2(1320)$  mass,  $3\pi$  mode (MeV)

### $K^\pm K_S^0$ MODE

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	<sup>2,3</sup> CLELAND	82B SPEC	+	50 $\pi^+ p \rightarrow K_S^0 K^+ p$
1324 ± 6	5200	<sup>2,3</sup> CLELAND	82B SPEC	-	50 $\pi^- p \rightarrow K_S^0 K^- p$
1320 ± 2	4000	CHABAUD	80 SPEC	-	17 $\pi^- A \rightarrow K_S^0 K^- A$
1312 ± 4	11000	CHABAUD	78 SPEC	-	9.8 $\pi^- p \rightarrow K^- K_S^0 p$
1316 ± 2	4730	CHABAUD	78 SPEC	-	18.8 $\pi^- p \rightarrow K^- K_S^0 p$
1318 ± 1		<sup>2,4</sup> MARTIN	78D SPEC	-	10 $\pi^- p \rightarrow K_S^0 K^- p$
1320 ± 2	2724	MARGULIE	76 SPEC	-	23 $\pi^- p \rightarrow K^- K_S^0 p$
1313 ± 4	730	FOLEY	72 CNTR	-	20.3 $\pi^- p \rightarrow K^- K_S^0 p$
1319 ± 3	1500	<sup>4</sup> GRAYER	71 ASPK	-	17.2 $\pi^- p \rightarrow K^- K_S^0 p$

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

1330 ± 11	1000	<sup>2,3</sup> CLELAND	82B SPEC	+	30 $\pi^+ p \rightarrow K_S^0 K^+ p$
1324 ± 5	350	HYAMS	78 ASPK	+	12.7 $\pi^+ p \rightarrow K^+ K_S^0 p$

<sup>2</sup> From a fit to  $J^P = 2^+$  partial wave.

<sup>3</sup> Number of events evaluated by us.

<sup>4</sup> Systematic error in mass scale subtracted.

### $\eta\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
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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 $p p \rightarrow p_f \eta \pi^0 p_s$
1316 ± 9		BARBERIS	00H		450 $p p \rightarrow \Delta_f^{++} \eta \pi^- p_s$
1317 ± 1 ± 2		THOMPSON	97 MPS		18 $\pi^- p \rightarrow \eta \pi^- p$
1315 ± 5 ± 2		<sup>5</sup> AMSLER	94D CBAR		0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \eta$
1325.1 ± 5.1		AOYAGI	93 BKEI		$\pi^- p \rightarrow \eta \pi^- p$
1317.7 ± 1.4 ± 2.0		BELADIDZE	93 VES		37 $\pi^- N \rightarrow \eta \pi^- N$
1323 ± 8	1000	<sup>6</sup> KEY	73 OSPK	—	6 $\pi^- p \rightarrow p \pi^- \eta$

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

1324 ± 5		ARMSTRONG	93C E760	0	$\bar{p} p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
1336.2 ± 1.7	2561	DELFOSSÉ	81 SPEC	+	$\pi^\pm p \rightarrow p \pi^\pm \eta$
1330.7 ± 2.4	1653	DELFOSSÉ	81 SPEC	—	$\pi^\pm p \rightarrow p \pi^\pm \eta$
1324 ± 8	6200	<sup>6,7</sup> CONFORTO	73 OSPK	—	6 $\pi^- p \rightarrow p \pi^- \eta$

<sup>5</sup> The systematic error of 2 MeV corresponds to the spread of solutions.

<sup>6</sup> Error includes 5 MeV systematic mass-scale error.

<sup>7</sup> Missing mass with enriched MMS =  $\eta \pi^-$ ,  $\eta = 2\gamma$ .

### $\eta' \pi$ MODE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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The data in this block is included in the average printed for a previous datablock.

#### 1322 ± 7 OUR AVERAGE

1318 ± 8 $\begin{smallmatrix} +3 \\ -5 \end{smallmatrix}$		IVANOV	01 MPS		18 $\pi^- p \rightarrow \eta' \pi^- p$
1327.0 ± 10.7		BELADIDZE	93 VES		37 $\pi^- N \rightarrow \eta' \pi^- N$

### $a_2(1320)$ WIDTH

#### 3 $\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
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#### 104.7 ± 1.9 OUR AVERAGE

108 ± 3 ± 15		CHUNG	02 MPS		18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$
120 ± 10		BARBERIS	98B		450 $p p \rightarrow p_f \pi^+ \pi^- \pi^0 p_s$
105 ± 10 ± 11		ACCIARRI	97T L3		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
120 ± 10		ALBRECHT	97B ARG		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$
103.0 ± 6.0 ± 3.3	72400	AMELIN	96 VES		36 $\pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$
120 ± 10		ARMSTRONG	90 OMEG 0		300.0 $p p \rightarrow p p \pi^+ \pi^- \pi^0$

107.0 ± 9.7	4022	AUGUSTIN	89	DM2	±	$J/\psi \rightarrow \rho^\pm a_2^\mp$
118.5 ± 12.5	3562	AUGUSTIN	89	DM2	0	$J/\psi \rightarrow \rho^0 a_2^0$
97 ± 5		<sup>8</sup> EVANGELISTA	81	OMEG	−	$12 \pi^- p \rightarrow 3\pi p$
96 ± 9	25000	<sup>8</sup> DAUM	80C	SPEC	−	$63,94 \pi^- p \rightarrow 3\pi p$
110 ± 15	1097	<sup>8</sup> BALTAY	78B	HBC	+0	$15 \pi^+ p \rightarrow p 4\pi$
112 ± 18	1600	<sup>8</sup> EMMS	75	DBC	0	$4 \pi^+ n \rightarrow p(3\pi)^0$
122 ± 14	1200	<sup>8,9</sup> WAGNER	75	HBC	0	$7 \pi^+ p \rightarrow \Delta^{++}(3\pi)^0$
115 ± 15		<sup>8</sup> ANTIPOV	73C	CNTR	−	$25,40 \pi^- p \rightarrow p\eta\pi^-$
99 ± 15	1580	CHALOUPKA	73	HBC	−	$3.9 \pi^- p$
105 ± 5	28000	BOWEN	71	MMS	−	$5 \pi^- p$
99 ± 5	24000	BOWEN	71	MMS	+	$5 \pi^+ p$
103 ± 5	17000	BOWEN	71	MMS	−	$7 \pi^- p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
120 ± 40		CONDO	93	SHF		$\gamma p \rightarrow \eta\pi^+\pi^+\pi^-$
115 ± 14	490	BALTAY	78B	HBC	0	$15 \pi^+ p \rightarrow \Delta 3\pi$
72 ± 16	5000	BINNIE	71	MMS	−	$\pi^- p$ near $a_2$ threshold
79 ± 12	941	ALSTON-...	70	HBC	+	$7.0 \pi^+ p \rightarrow 3\pi p$

<sup>8</sup>From a fit to  $J^P = 2^+ \rho\pi$  partial wave.

<sup>9</sup>Width errors enlarged by us to  $4\Gamma/\sqrt{N}$ ; see the note with the  $K^*(892)$  mass.

## $K^\pm K_S^0$ AND $\eta\pi$ MODES

VALUE (MeV)

DOCUMENT ID

**107 ± 5 OUR ESTIMATE**

**110.4 ± 1.7 OUR AVERAGE** Includes data from the 2 datablocks that follow this one.

## $K^\pm K_S^0$ MODE

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	<sup>10,11</sup> CLELAND	82B	SPEC	+	$50 \pi^+ p \rightarrow K_S^0 K^+ p$
120 ± 25	5200	<sup>10,11</sup> CLELAND	82B	SPEC	−	$50 \pi^- p \rightarrow K_S^0 K^- p$
106 ± 4	4000	CHABAUD	80	SPEC	−	$17 \pi^- A \rightarrow K_S^0 K^- A$
126 ± 11	11000	CHABAUD	78	SPEC	−	$9.8 \pi^- p \rightarrow K^- K_S^0 p$
101 ± 8	4730	CHABAUD	78	SPEC	−	$18.8 \pi^- p \rightarrow K^- K_S^0 p$
113 ± 4		<sup>10,12</sup> MARTIN	78D	SPEC	−	$10 \pi^- p \rightarrow K_S^0 K^- p$
105 ± 8	2724	<sup>12</sup> MARGULIE	76	SPEC	−	$23 \pi^- p \rightarrow K^- K_S^0 p$
113 ± 19	730	FOLEY	72	CNTR	−	$20.3 \pi^- p \rightarrow K^- K_S^0 p$
123 ± 13	1500	<sup>12</sup> GRAYER	71	ASPK	−	$17.2 \pi^- p \rightarrow K^- K_S^0 p$

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

121 ± 51	1000	<sup>10,11</sup> CLELAND	82B SPEC +	30 $\pi^+ p \rightarrow K_S^0 K^+ p$
110 ± 18	350	HYAMS	78 ASPK +	12.7 $\pi^+ p \rightarrow K^+ K_S^0 p$

<sup>10</sup> From a fit to  $J^P = 2^+$  partial wave.

<sup>11</sup> Number of events evaluated by us.

<sup>12</sup> Width errors enlarged by us to  $4\Gamma/\sqrt{N}$ ; see the note with the  $K^*(892)$  mass.

### $\eta\pi$ MODE

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 $p p \rightarrow p_f \eta \pi^0 p_S$
112 ± 14		BARBERIS	00H		450 $p p \rightarrow \Delta_f^{++} \eta \pi^- p_S$
112 ± 3 ± 2		<sup>13</sup> AMSLER	94D CBAR		0.0 $\bar{p} p \rightarrow \pi^0 \pi^0 \eta$
103 ± 6 ± 3		BELADIDZE	93 VES		37 $\pi^- N \rightarrow \eta \pi^- N$
112.2 ± 5.7	2561	DELFOSSÉ	81 SPEC +		$\pi^\pm p \rightarrow p \pi^\pm \eta$
116.6 ± 7.7	1653	DELFOSSÉ	81 SPEC -		$\pi^\pm p \rightarrow p \pi^\pm \eta$
108 ± 9	1000	KEY	73 OSPK -		6 $\pi^- p \rightarrow p \pi^- \eta$

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

127 ± 2 ± 2		<sup>14</sup> THOMPSON	97 MPS		18 $\pi^- p \rightarrow \eta \pi^- p$
118 ± 10		ARMSTRONG	93C E760 0		$\bar{p} p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
104 ± 9	6200	<sup>15</sup> CONFORTO	73 OSPK -		6 $\pi^- p \rightarrow p \text{MM}^-$

<sup>13</sup> The systematic error of 2 MeV corresponds to the spread of solutions.

<sup>14</sup> Resolution is not unfolded.

<sup>15</sup> Missing mass with enriched MMS =  $\eta \pi^-$ ,  $\eta = 2\gamma$ .

### $\eta'\pi$ MODE

VALUE (MeV)      DOCUMENT ID      TECN      COMMENT

#### 119 ± 25 OUR AVERAGE

140 ± 35 ± 20		IVANOV	01 MPS		18 $\pi^- p \rightarrow \eta' \pi^- p$
106 ± 32		BELADIDZE	93 VES		37 $\pi^- N \rightarrow \eta' \pi^- N$

### $a_2(1320)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level
$\Gamma_1$ $\rho\pi$	(70.1 ± 2.7) %	S=1.2
$\Gamma_2$ $\eta\pi$	(14.5 ± 1.2) %	
$\Gamma_3$ $\omega\pi\pi$	(10.6 ± 3.2) %	S=1.3
$\Gamma_4$ $K\bar{K}$	(4.9 ± 0.8) %	
$\Gamma_5$ $\eta'(958)\pi$	(5.3 ± 0.9) × 10 <sup>-3</sup>	
$\Gamma_6$ $\pi^\pm\gamma$	(2.68 ± 0.31) × 10 <sup>-3</sup>	
$\Gamma_7$ $\gamma\gamma$	(9.4 ± 0.7) × 10 <sup>-6</sup>	
$\Gamma_8$ $\pi^+\pi^-\pi^-$	< 8 %	CL=90%
$\Gamma_9$ $e^+e^-$	< 6 × 10 <sup>-9</sup>	CL=90%

## 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  $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$ , 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.

$x_2$	10		
$x_3$	-89	-46	
$x_4$	-1	-2	-24
	$x_1$	$x_2$	$x_3$

### $a_2(1320)$ PARTIAL WIDTHS

$\Gamma(\pi^\pm \gamma)$						$\Gamma_6$
VALUE (keV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	
<b>287 ± 30 OUR AVERAGE</b>						
284 ± 25 ± 25	7100	MOLCHANOV 01	SELX		600 $\pi^- A \rightarrow \pi^+ \pi^- \pi^- A$	
295 ± 60		CIHANGIR 82	SPEC	+	200 $\pi^+ A$	
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
461 ± 110		<sup>18</sup> MAY	77	SPEC	±	9.7 $\gamma A$

$\Gamma(\gamma\gamma)$						$\Gamma_7$
VALUE (keV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	
<b>1.00 ± 0.06 OUR AVERAGE</b>						
0.98 ± 0.05 ± 0.09		ACCIARRI 97T L3			$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
0.96 ± 0.03 ± 0.13		ALBRECHT 97B ARG			$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.26 ± 0.26 ± 0.18	36	BARU 90 MD1			$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.00 ± 0.07 ± 0.15	415	BEHREND 90C CELL	0		$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.03 ± 0.13 ± 0.21		BUTLER 90 MRK2			$e^+ e^- \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	
1.01 ± 0.14 ± 0.22	85	OEST 90 JADE			$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	
0.90 ± 0.27 ± 0.15	56	<sup>16</sup> ALTHOFF 86 TASS	0		$e^+ e^- \rightarrow e^+ e^- 3\pi$	
1.14 ± 0.20 ± 0.26		<sup>17</sup> ANTREASYAN 86 CBAL	0		$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	
1.06 ± 0.18 ± 0.19		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 ± 0.19 <sup>+0.42</sup> <sub>-0.11</sub>	35	<sup>16</sup> BEHREND 83B CELL	0		$e^+ e^- \rightarrow e^+ e^- 3\pi$	
0.77 ± 0.18 ± 0.27	22	<sup>17</sup> EDWARDS 82F CBAL	0		$e^+ e^- \rightarrow e^+ e^- \pi^0 \eta$	

<sup>16</sup> From  $\rho\pi$  decay mode.

<sup>17</sup> From  $\eta\pi^0$  decay mode.

$\Gamma(e^+e^-)$					$\Gamma_9$
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	$e^+e^- \rightarrow \pi^0\eta$	
<sup>18</sup> Assuming one-pion exchange.					

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

$\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$				$\Gamma_4\Gamma_7/\Gamma$
VALUE (keV)	DOCUMENT ID	TECN	COMMENT	
<b>0.126 ± 0.007 ± 0.028</b>	<sup>19</sup> 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	<sup>20</sup> ALBRECHT	90G ARG	$e^+e^- \rightarrow e^+e^- K^+ K^-$	
<sup>19</sup> Using an incoherent background.				
<sup>20</sup> Using a coherent background.				

### $a_2(1320)$ BRANCHING RATIOS

$\Gamma(K\bar{K})/\Gamma(\rho\pi)$					$\Gamma_4/\Gamma_1$
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>0.070 ± 0.012 OUR FIT</b>					
<b>0.078 ± 0.017</b>		CHABAUD	78 RVUE		
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.011 ± 0.003		<sup>21</sup> BERTIN	98B OBLX		0.0 $\bar{p}p \rightarrow K^\pm K_S^0 \pi^\mp$
0.056 ± 0.014	50	<sup>22</sup> CHALOUPKA	73 HBC	-	3.9 $\pi^- p$
0.097 ± 0.018	113	<sup>22</sup> ALSTON-...	71 HBC	+	7.0 $\pi^+ p$
0.06 ± 0.03		<sup>22</sup> ABRAMOVI...	70B HBC	-	3.93 $\pi^- p$
0.054 ± 0.022		<sup>22</sup> CHUNG	68 HBC	-	3.2 $\pi^- p$
<sup>21</sup> Using 4 $\pi$ data from BERTIN 97D.					
<sup>22</sup> Included in CHABAUD 78 review.					

$\Gamma(\eta\pi)/[\Gamma(\rho\pi) + \Gamma(\eta\pi) + \Gamma(K\bar{K})]$					$\Gamma_2/(\Gamma_1 + \Gamma_2 + \Gamma_4)$
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>0.162 ± 0.012 OUR FIT</b>					
<b>0.140 ± 0.028 OUR AVERAGE</b>					
0.13 ± 0.04		ESPIGAT	72 HBC	±	0.0 $\bar{p}p$
0.15 ± 0.04	34	BARNHAM	71 HBC	+	3.7 $\pi^+ p$

$\Gamma(\eta\pi)/\Gamma(\rho\pi)$

$\Gamma_2/\Gamma_1$

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

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

$\Gamma_5/\Gamma$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
● ● ● 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 $\pi^+ p$

$\Gamma(\eta'(958)\pi)/\Gamma(\rho\pi)$

$\Gamma_5/\Gamma_1$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
● ● ● 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 $\begin{smallmatrix} +0.03 \\ -0.04 \end{smallmatrix}$		BOECKMANN	70	HBC	0 5.0 $\pi^+ p$

$\Gamma(K\bar{K})/[\Gamma(\rho\pi) + \Gamma(\eta\pi) + \Gamma(K\bar{K})]$

$\Gamma_4/(\Gamma_1+\Gamma_2+\Gamma_4)$

<u>VALUE</u>	<u>EVTs</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
<b>0.054±0.009 OUR FIT</b>					
<b>0.048±0.012 OUR AVERAGE</b>					
0.05 ±0.02		TOET	73	HBC	+ 5 $\pi^+ p$
0.09 ±0.04		TOET	73	HBC	0 5 $\pi^+ p$
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		<sup>23</sup> ESPIGAT	72	HBC	± 0.0 $\bar{p}p$

<sup>23</sup>Not averaged because of discrepancy between masses from  $K\bar{K}$  and  $\rho\pi$  modes.

$\Gamma(\pi^+ \pi^- \pi^-)/\Gamma(\rho\pi)$

$\Gamma_8/\Gamma_1$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
<b>&lt;0.12</b>	90	ABRAMOVI...	70B	HBC	− 3.93 $\pi^- p$



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

$\Gamma_6 / \Gamma$

VALUE                      DOCUMENT ID    TECN    COMMENT

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

$0.005^{+0.005}_{-0.003}$                       <sup>24</sup> EISENBERG    72    HBC    4.3,5.25,7.5  $\gamma p$

<sup>24</sup> Pion-exchange model used in this estimation.

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

$\Gamma_3 / \Gamma_1$

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.

$0.28 \pm 0.09$                       60                      DIAZ                      74    DBC    0                       $6 \pi^+ n$

$0.18 \pm 0.08$                       <sup>25</sup> KARSHON                      74    HBC                      Avg. of above two

$0.10 \pm 0.05$                       279                      CHALOUPIKA                      73    HBC    -                       $3.9 \pi^- p$

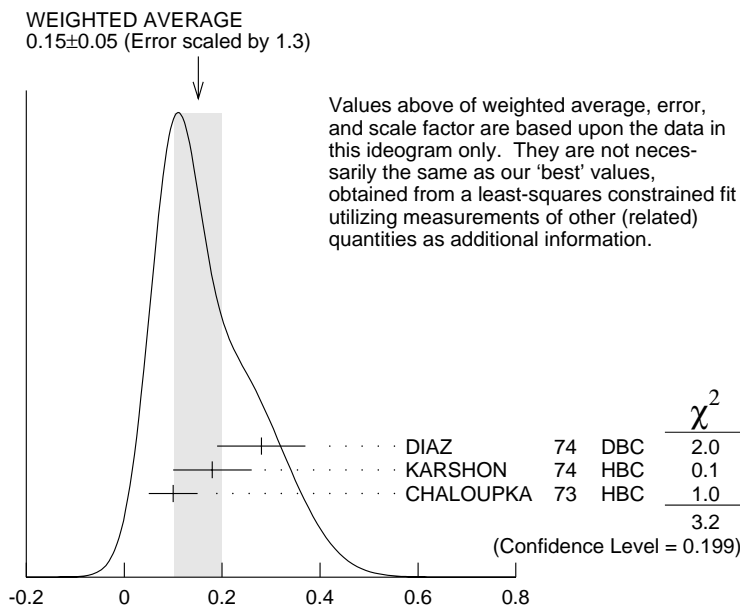
• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.29 \pm 0.08$                       140                      <sup>25</sup> KARSHON                      74    HBC    0                       $4.9 \pi^+ p$

$0.10 \pm 0.04$                       60                      <sup>25</sup> KARSHON                      74    HBC    +                       $4.9 \pi^+ p$

$0.19 \pm 0.08$                       DEFOIX                      73    HBC    0                       $0.7 \bar{p} p$

<sup>25</sup> 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.



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

### $\Gamma(\eta'(958)\pi)/\Gamma(\eta\pi)$

$\Gamma_5/\Gamma_2$

VALUE	DOCUMENT ID	TECN	COMMENT
<b><math>0.037 \pm 0.006</math> OUR AVERAGE</b>			
$0.032 \pm 0.009$	ABELE	97C CBAR	$0.0 \bar{p}p \rightarrow \pi^0 \pi^0 \eta'$
$0.047 \pm 0.010 \pm 0.004$	<sup>26</sup> BELADIDZE	93 VES	$37\pi^- N \rightarrow a_2^- N$
$0.034 \pm 0.008 \pm 0.005$	BELADIDZE	92 VES	$36\pi^- C \rightarrow a_2^- C$

<sup>26</sup> Using  $B(\eta' \rightarrow \pi^+ \pi^- \eta) = 0.441$ ,  $B(\eta \rightarrow \gamma\gamma) = 0.389$  and  $B(\eta \rightarrow \pi^+ \pi^- \pi^0) = 0.236$ .

### $\Gamma(K\bar{K})/\Gamma(\eta\pi)$

$\Gamma_4/\Gamma_2$

VALUE	DOCUMENT ID	TECN	COMMENT
$0.08 \pm 0.02$	<sup>27</sup> BERTIN	98B OBLX	$0.0 \bar{p}p \rightarrow K^\pm K_S \pi^\mp$

<sup>27</sup> Using  $\eta\pi\pi$  data from AMSLER 94D.

### $\Gamma(e^+e^-)/\Gamma_{\text{total}}$

$\Gamma_9/\Gamma$

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

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