

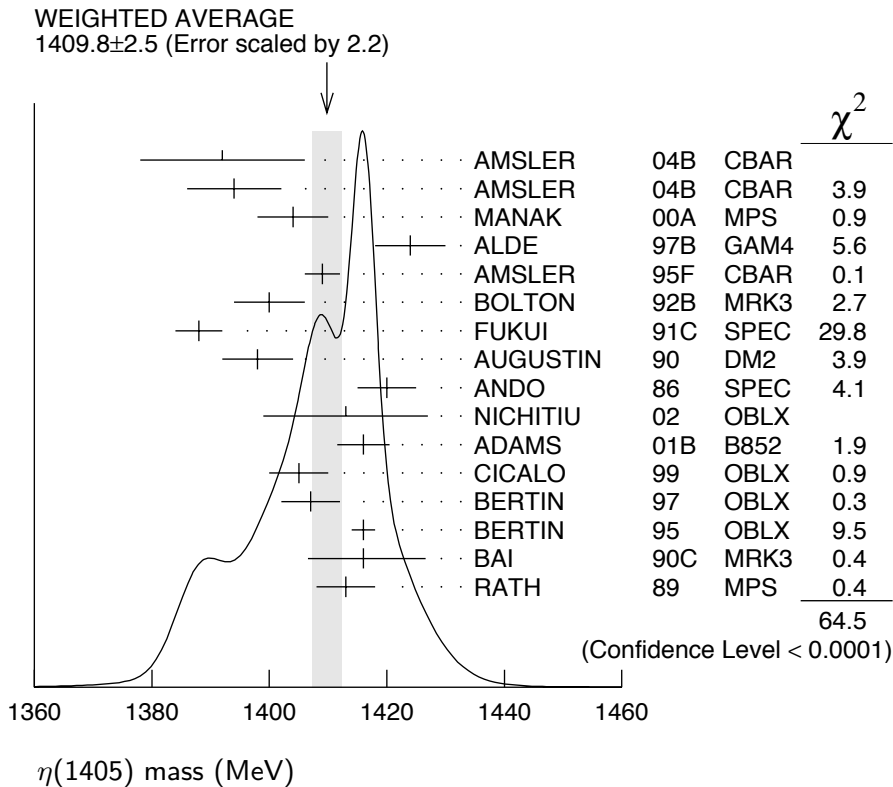
$\eta(1405)$

$$I^G(J^{PC}) = 0^+(0^{-+})$$

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$\eta(1405)$ MASS

VALUE (MeV) DOCUMENT ID
1409.8 \pm 2.5 OUR AVERAGE Includes data from the 2 datablocks that follow this one.
 Error includes scale factor of 2.2. See the ideogram below.



$\eta\pi\pi$ MODE

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

1405 \pm 4 OUR AVERAGE Error includes scale factor of 2.3. See the ideogram below.

1392 \pm 14	900 \pm 375	AMSLER	04B	CBAR	0 $\bar{p}p \rightarrow \pi^+\pi^-\pi^+\pi^-\eta$
1394 \pm 8	6.6 \pm 2.0k	AMSLER	04B	CBAR	0 $\bar{p}p \rightarrow \pi^+\pi^-\pi^0\pi^0\eta$
1404 \pm 6	9082	MANAK	00A	MPS	18 $\pi^-p \rightarrow \eta\pi^+\pi^-n$
1424 \pm 6	2200	ALDE	97B	GAM4	100 $\pi^-p \rightarrow \eta\pi^0\pi^0n$
1409 \pm 3		AMSLER	95F	CBAR	0 $\bar{p}p \rightarrow \pi^+\pi^-\pi^0\pi^0\eta$
1400 \pm 6		¹ BOLTON	92B	MRK3	$J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
1388 \pm 4		FUKUI	91C	SPEC	8.95 $\pi^-p \rightarrow \eta\pi^+\pi^-n$
1398 \pm 6	261	² AUGUSTIN	90	DM2	$J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
1420 \pm 5		ANDO	86	SPEC	8 $\pi^-p \rightarrow \eta\pi^+\pi^-n$

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

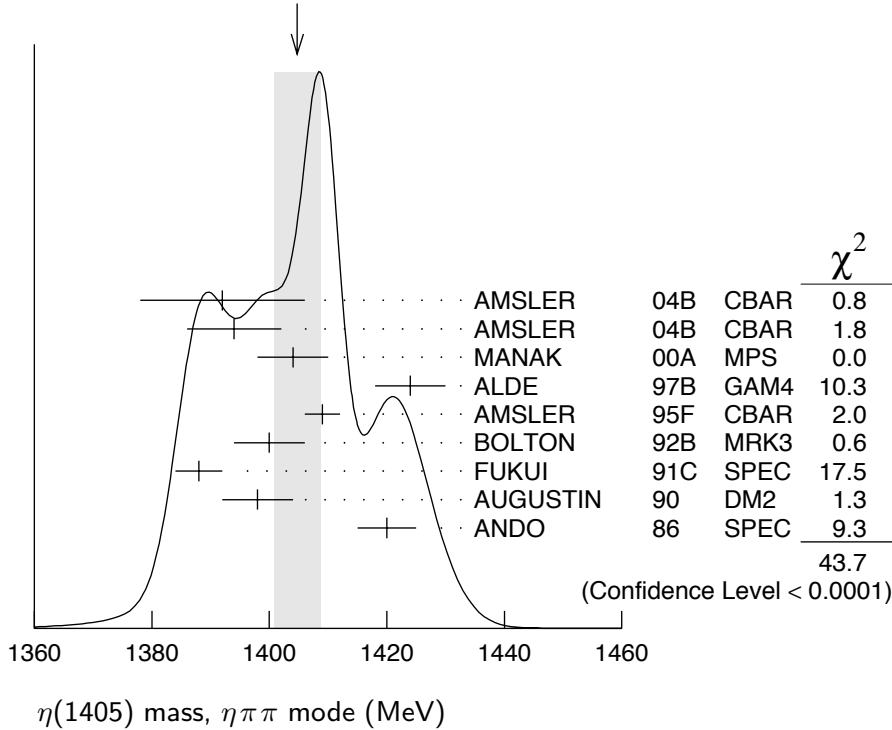
1385 ± 7

BAI

99 BES

$J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$

WEIGHTED AVERAGE
1405 ± 4 (Error scaled by 2.3)



$K \bar{K} \pi$ MODE ($a_0(980)\pi$ or direct $K \bar{K} \pi$)

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

1413.9 ± 1.7 OUR AVERAGE		Error includes scale factor of 1.1.			
1413 ± 14	3651	³ NICHITIU	02	OBLX	
1416 ± 4 ± 2	20k	ADAMS	01B	B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1405 ± 5		⁴ CICALO	99	OBLX	0 $\bar{p} p \rightarrow K^\pm K_S^0 \pi^\mp \pi^+ \pi^-$
1407 ± 5		⁴ BERTIN	97	OBLX	0 $\bar{p} p \rightarrow K^\pm (K^0) \pi^\mp \pi^+ \pi^-$
1416 ± 2		⁴ BERTIN	95	OBLX	0 $\bar{p} p \rightarrow K \bar{K} \pi \pi$
1416 ± 8 $\begin{smallmatrix} +7 \\ -5 \end{smallmatrix}$	700	⁵ BAI	90C	MRK3	$J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$
1413 ± 5		⁵ RATH	89	MPS	21.4 $\pi^- p \rightarrow n K_S^0 K_S^0 \pi^0$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
1459 ± 5		⁶ AUGUSTIN	92	DM2	$J/\psi \rightarrow \gamma K \bar{K} \pi$

$\pi \pi \gamma$ MODE

VALUE (MeV) EVTS DOCUMENT ID TECN COMMENT
1390 ± 12 235 ± 91 AMSLER 04B CBAR 0 $\bar{p} p \rightarrow \pi^+ \pi^- \pi^+ \pi^- \gamma$

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

1424 ± 10 ± 11	547	BAI	04J	BES2	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
1401 ± 18		^{7,8} AUGUSTIN	90	DM2	$J/\psi \rightarrow \pi^+\pi^-\gamma\gamma$
1432 ± 8		⁸ COFFMAN	90	MRK3	$J/\psi \rightarrow \pi^+\pi^-\gamma$

4π MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

1420 ± 20		BUGG	95	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
1489 ± 12	3270	⁹ BISELLO	89B	DM2	$J/\psi \rightarrow 4\pi\gamma$

$K\bar{K}\pi$ MODE (unresolved)

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

1437.6 ± 3.2	249 ± 35	^{10,11} ABLIKIM	08E	BES2	$J/\psi \rightarrow \omega K_S^0 K^+\pi^- + \text{c.c.}$
1445.9 ± 5.7	62 ± 18	^{10,11} ABLIKIM	08E	BES2	$J/\psi \rightarrow \omega K^+ K^-\pi^0$
1442 ± 10	410	¹⁰ BAI	98C	BES	$J/\psi \rightarrow \gamma K^+ K^-\pi^0$
1445 ± 8	693	¹⁰ AUGUSTIN	90	DM2	$J/\psi \rightarrow \gamma K_S^0 K^\pm\pi^\mp$
1433 ± 8	296	¹⁰ AUGUSTIN	90	DM2	$J/\psi \rightarrow \gamma K^+ K^-\pi^0$
1413 ± 8	500	¹⁰ DUCH	89	ASTE	$\bar{p}p \rightarrow \pi^+\pi^- K^\pm\pi^\mp K^0$
1453 ± 7	170	¹⁰ RATH	89	MPS	$21.4 \pi^- p \rightarrow K_S^0 K_S^0 \pi^0 n$
1419 ± 1	8800	¹⁰ BIRMAN	88	MPS	$8 \pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
1424 ± 3	620	¹⁰ REEVES	86	SPEC	$6.6 p\bar{p} \rightarrow K\bar{K}\pi X$
1421 ± 2		¹⁰ CHUNG	85	SPEC	$8 \pi^- p \rightarrow K\bar{K}\pi n$
1440 ⁺²⁰ ₋₁₅	174	¹⁰ EDWARDS	82E	CBAL	$J/\psi \rightarrow \gamma K^+ K^-\pi^0$
1440 ⁺¹⁰ ₋₁₅		¹⁰ SCHARRE	80	MRK2	$J/\psi \rightarrow \gamma K_S^0 K^\pm\pi^\mp$
1425 ± 7	800	^{10,12} BAILLON	67	HBC	$0 \bar{p}p \rightarrow K\bar{K}\pi\pi\pi$

¹ From fit to the $a_0(980)\pi 0^-+$ partial wave.

² Best fit with a single Breit Wigner.

³ Decaying dominantly directly to $K^+ K^-\pi^0$.

⁴ Decaying into $(K\bar{K})_S\pi$, $(K\pi)_S\bar{K}$, and $a_0(980)\pi$.

⁵ From fit to the $a_0(980)\pi 0^-+$ partial wave. Cannot rule out a $a_0(980)\pi 1^++$ partial wave.

⁶ Excluded from averaging because averaging would be meaningless.

⁷ Best fit with a single Breit Wigner.

⁸ This peak in the $\gamma\rho$ channel may not be related to the $\eta(1405)$.

⁹ Estimated by us from various fits.

¹⁰ These experiments identify only one pseudoscalar in the 1400–1500 range. Data could also refer to $\eta(1475)$.

¹¹ Systematic uncertainty not evaluated.

¹² From best fit of 0^-+ partial wave, 50% $K^*(892)K$, 50% $a_0(980)\pi$.

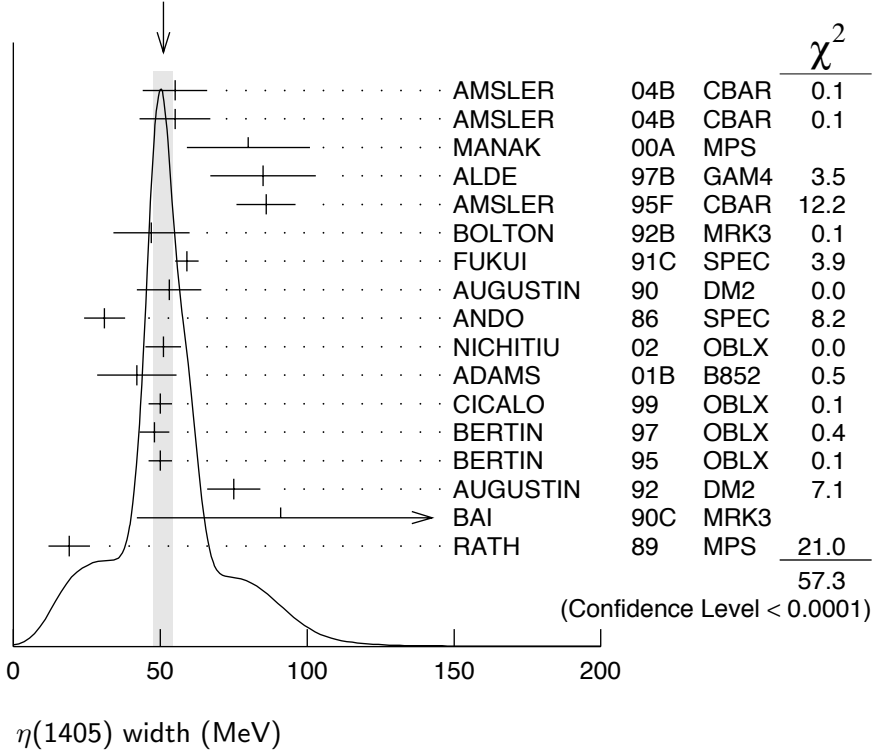
$\eta(1405)$ WIDTH

VALUE (MeV)

DOCUMENT ID

51.1±3.4 OUR AVERAGE Includes data from the 2 datablocks that follow this one. Error includes scale factor of 2.0. See the ideogram below.

WEIGHTED AVERAGE
51.1±3.4 (Error scaled by 2.0)



$\eta\pi\pi$ MODE

VALUE (MeV)

EVTS

DOCUMENT ID

TECN

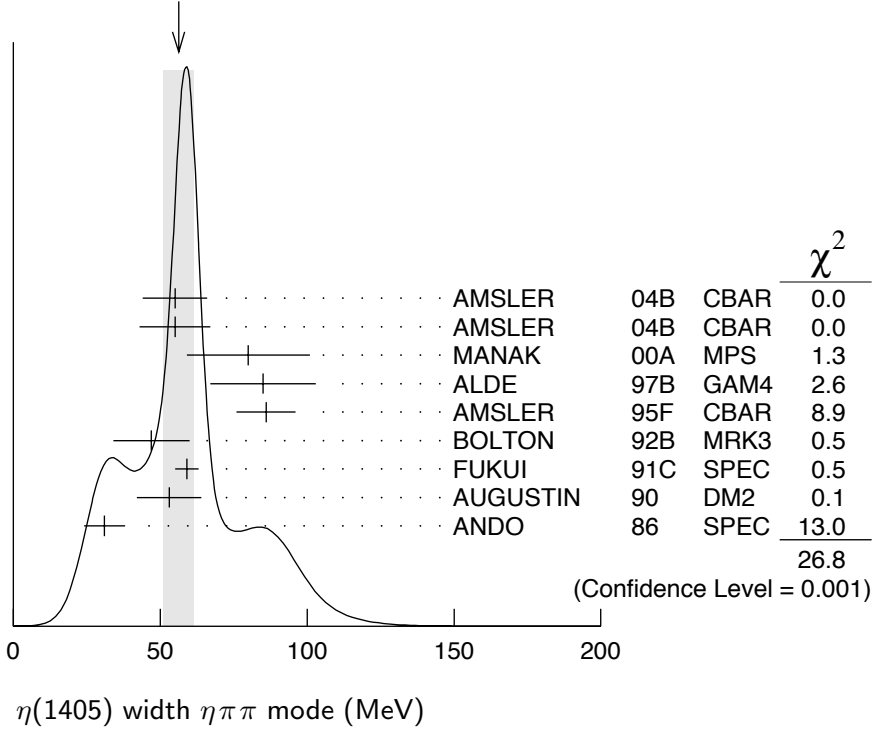
COMMENT

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

56± 5 OUR AVERAGE Error includes scale factor of 1.8. See the ideogram below.

55±11	900 ± 375	AMSLER	04B	CBAR	0	$\bar{p}p \rightarrow \pi^+\pi^-\pi^+\pi^-\eta$
55±12	6.6 ± 2.0k	AMSLER	04B	CBAR	0	$\bar{p}p \rightarrow \pi^+\pi^-\pi^0\pi^0\gamma$
80±21	9082	MANAK	00A	MPS	18	$\pi^-p \rightarrow \eta\pi^+\pi^-n$
85±18	2200	ALDE	97B	GAM4	100	$\pi^-p \rightarrow \eta\pi^0\pi^0n$
86±10		AMSLER	95F	CBAR	0	$\bar{p}p \rightarrow \pi^+\pi^-\pi^0\pi^0\eta$
47±13		¹³ BOLTON	92B	MRK3		$J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
59± 4		FUKUI	91C	SPEC	8.95	$\pi^-p \rightarrow \eta\pi^+\pi^-n$
53±11		¹⁴ AUGUSTIN	90	DM2		$J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
31± 7		ANDO	86	SPEC	8	$\pi^-p \rightarrow \eta\pi^+\pi^-n$

WEIGHTED AVERAGE
 56 ± 5 (Error scaled by 1.8)

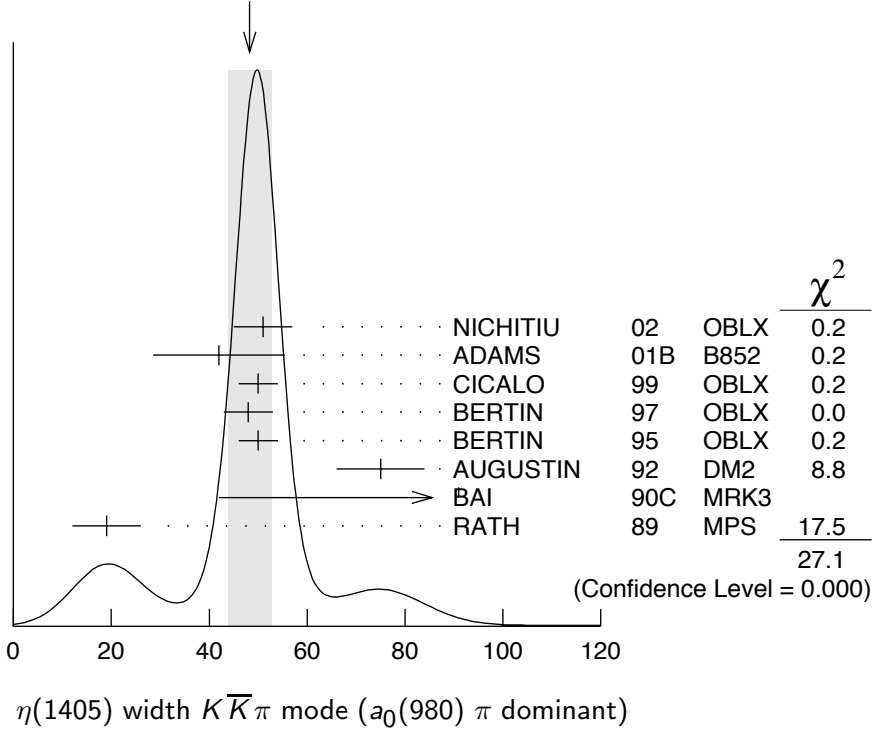


$K\bar{K}\pi$ MODE ($a_0(980)\pi$ or direct $K\bar{K}\pi$)

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

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
48 ± 4	OUR AVERAGE			Error includes scale factor of 2.1. See the ideogram below.
51 ± 6	3651	¹⁵ NICHITIU	02	OBLX
$42 \pm 10 \pm 9$	20k	ADAMS	01B	B852 $18 \text{ GeV } \pi^- p \rightarrow K^+ K^- \pi^0 n$
50 ± 4		CICALO	99	OBLX $0 \bar{p} p \rightarrow K^\pm K_S^0 \pi^\mp \pi^+ \pi^-$
48 ± 5		¹⁶ BERTIN	97	OBLX $0.0 \bar{p} p \rightarrow K^\pm (K^0) \pi^\mp \pi^+ \pi^-$
50 ± 4		¹⁶ BERTIN	95	OBLX $0 \bar{p} p \rightarrow K\bar{K}\pi\pi\pi$
75 ± 9		AUGUSTIN	92	DM2 $J/\psi \rightarrow \gamma K\bar{K}\pi$
$91^{+67}_{-31} + 15_{-38}$		¹⁷ BAI	90C	MRK3 $J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$
19 ± 7		¹⁷ RATH	89	MPS $21.4 \pi^- p \rightarrow n K_S^0 K_S^0 \pi^0$

WEIGHTED AVERAGE
 48 ± 4 (Error scaled by 2.1)



$\pi\pi\gamma$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
64 ± 18	235 ± 91	AMSLER	04B CBAR	$0 \bar{p}p \rightarrow \pi^+\pi^-\pi^+\pi^-\gamma$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
101.0 ± 8.8 ± 8.8	547	BAI	04J BES2	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
174 ± 44		AUGUSTIN	90 DM2	$J/\psi \rightarrow \pi^+\pi^-\gamma\gamma$
90 ± 26		18 COFFMAN	90 MRK3	$J/\psi \rightarrow \pi^+\pi^-2\gamma$

4 π MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
160 ± 30		BUGG	95 MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
144 ± 13	3270	19 BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$

$K\bar{K}\pi$ MODE (unresolved)

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
48.9 ± 9.0	249 ± 35	20,21 ABLIKIM	08E BES2	$J/\psi \rightarrow \omega K_S^0 K^+\pi^- + c.c.$
34.2 ± 18.5	62 ± 18	20,21 ABLIKIM	08E BES2	$J/\psi \rightarrow \omega K^+K^-\pi^0$
93 ± 14	296	20 AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma K^+K^-\pi^0$
105 ± 10	693	20 AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma K_S^0 K^\pm\pi^\mp$
62 ± 16	500	20 DUCH	89 ASTE	$\bar{p}p \rightarrow K\bar{K}\pi\pi$
100 ± 11	170	20 RATH	89 MPS	$21.4 \pi^-p \rightarrow K_S^0 K_S^0 \pi^0 n$

66 ± 2	8800	20 BIRMAN	88 MPS	$8 \pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
60 ± 10	620	20 REEVES	86 SPEC	$6.6 p \bar{p} \rightarrow K K \pi X$
60 ± 10		20 CHUNG	85 SPEC	$8 \pi^- p \rightarrow K \bar{K} \pi n$
55 $\begin{smallmatrix} +20 \\ -30 \end{smallmatrix}$	174	20 EDWARDS	82E CBAL	$J/\psi \rightarrow \gamma K^+ K^- \pi^0$
50 $\begin{smallmatrix} +30 \\ -20 \end{smallmatrix}$		20 SCHARRE	80 MRK2	$J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$
80 ± 10	800	20,22 BAILLON	67 HBC	$0.0 \bar{p} p \rightarrow K \bar{K} \pi \pi \pi$

¹³ From fit to the $a_0(980)\pi 0^-+$ partial wave.

¹⁴ From $\eta\pi^+\pi^-$ mass distribution - mainly $a_0(980)\pi$ - no spin-parity determination available.

¹⁵ Decaying dominantly directly to $K^+K^-\pi^0$.

¹⁶ Decaying into $(K\bar{K})_S\pi$, $(K\pi)_S\bar{K}$, and $a_0(980)\pi$.

¹⁷ From fit to the $a_0(980)\pi 0^-+$ partial wave, but $a_0(980)\pi 1^{++}$ cannot be excluded.

¹⁸ This peak in the $\gamma\rho$ channel may not be related to the $\eta(1405)$.

¹⁹ Estimated by us from various fits.

²⁰ These experiments identify only one pseudoscalar in the 1400–1500 range. Data could also refer to $\eta(1475)$.

²¹ Systematic uncertainty not evaluated.

²² From best fit to 0^-+ partial wave, 50% $K^*(892)K$, 50% $a_0(980)\pi$.

$\eta(1405)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)	Confidence level
Γ_1 $K\bar{K}\pi$	seen	
Γ_2 $\eta\pi\pi$	seen	
Γ_3 $a_0(980)\pi$	seen	
Γ_4 $\eta(\pi\pi)_S$ -wave	seen	
Γ_5 $f_0(980)\eta$	seen	
Γ_6 4π	seen	
Γ_7 $\rho\rho$	<58 %	99.85%
Γ_8 $\gamma\gamma$		
Γ_9 $\rho^0\gamma$		
Γ_{10} $\phi\gamma$		
Γ_{11} $K^*(892)K$	seen	

$\eta(1405)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(K\bar{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_1\Gamma_8/\Gamma$			
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT

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

<0.035	90	23,24 AHOHE	05	CLE2	$10.6 e^+ e^- \rightarrow e^+ e^- K_S^0 K^\pm \pi^\mp$
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$\Gamma(\eta\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_2\Gamma_8/\Gamma$			
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT

<0.095	95	ACCIARRI	01G	L3	$183-202 e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$
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$\Gamma(\rho^0\gamma) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_9\Gamma_8/\Gamma$

VALUE (keV) CL% DOCUMENT ID TECN COMMENT

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

<1.5 95 ALTHOFF 84E TASS $e^+e^- \rightarrow e^+e^-\pi^+\pi^-\gamma$

²³ Using $\eta(1405)$ mass and width 1410 MeV and 51 MeV, respectively.

²⁴ Assuming three-body phase-space decay to $K_S^0 K^\pm \pi^\mp$.

$\eta(1405)$ BRANCHING RATIOS

$\Gamma(\eta\pi\pi)/\Gamma(K\bar{K}\pi)$ Γ_2/Γ_1

VALUE CL% DOCUMENT ID TECN COMMENT

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

1.09 ± 0.48 ²⁵ AMSLER 04B CBAR $0 \bar{p}p \rightarrow \pi^+\pi^-\pi^+\pi^-\eta$

<0.5 90 EDWARDS 83B CBAL $J/\psi \rightarrow \eta\pi\pi\gamma$

<1.1 90 SCHARRE 80 MRK2 $J/\psi \rightarrow \eta\pi\pi\gamma$

<1.5 95 FOSTER 68B HBC $0.0 \bar{p}p$

$\Gamma(\rho^0\gamma)/\Gamma(\eta\pi\pi)$ Γ_9/Γ_2

VALUE DOCUMENT ID TECN COMMENT

0.111 ± 0.064 AMSLER 04B CBAR $0 \bar{p}p$

$\Gamma(a_0(980)\pi)/\Gamma(K\bar{K}\pi)$ Γ_3/Γ_1

VALUE EVTS DOCUMENT ID TECN COMMENT

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

~ 0.15 ²⁶ BERTIN 95 OBLX $0 \bar{p}p \rightarrow K\bar{K}\pi\pi\pi$

~ 0.8 500 ²⁶ DUCH 89 ASTE $\bar{p}p \rightarrow \pi^+\pi^-\pi^0 K^\pm \pi^\mp K^0$

~ 0.75 ²⁶ REEVES 86 SPEC $6.6 \rho\bar{p} \rightarrow K K \pi X$

$\Gamma(a_0(980)\pi)/\Gamma(\eta\pi\pi)$ Γ_3/Γ_2

VALUE EVTS DOCUMENT ID TECN COMMENT

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

0.29 ± 0.10 ABELE 98E CBAR $0 \rho\bar{p} \rightarrow \eta\pi^0\pi^0\pi^0$

0.19 ± 0.04 2200 ²⁷ ALDE 97B GAM4 $100 \pi^-\rho \rightarrow \eta\pi^0\pi^0n$

0.56 ± 0.04 ± 0.03 ²⁷ AMSLER 95F CBAR $0 \bar{p}p \rightarrow \pi^+\pi^-\pi^0\pi^0\eta$

$\Gamma(a_0(980)\pi)/\Gamma(\eta(\pi\pi)_{\text{S-wave}})$ Γ_3/Γ_4

VALUE EVTS DOCUMENT ID TECN COMMENT

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

0.91 ± 0.12 ANISOVICH 01 SPEC $0.0 \bar{p}p \rightarrow \eta\pi^+\pi^-\pi^+\pi^-$

0.15 ± 0.04 9082 MANAK 00A MPS $18 \pi^-\rho \rightarrow \eta\pi^+\pi^-n$

0.70 ± 0.12 ± 0.20 ²⁸ BAI 99 BES $J/\psi \rightarrow \gamma\eta\pi^+\pi^-$

$\Gamma(\rho^0\gamma)/\Gamma(K\bar{K}\pi)$ Γ_9/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
0.0152±0.0038	²⁹ COFFMAN 90	MRK3	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$

$\Gamma(\eta(\pi\pi)_{S\text{-wave}})/\Gamma(\eta\pi\pi)$ Γ_4/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.81±0.04	2200	ALDE	97B	GAM4 100 $\pi^- p \rightarrow \eta\pi^0\pi^0 n$

$\Gamma(a_0(980)\pi)/\Gamma(\eta(\pi\pi)_{S\text{-wave}})$ Γ_3/Γ_4

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.32±0.07	³⁰ ANISOVICH 99	SPEC	0.9–1.2 $\bar{p}p \rightarrow \eta 3\pi^0$

$\Gamma(\rho\rho)/\Gamma_{\text{total}}$ Γ_7/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.58	99.85 ^{25,31}	AMSLER 04B	CBAR	0 $\bar{p}p$

$\Gamma(K^*(892)K)/\Gamma(a_0(980)\pi)$ Γ_{11}/Γ_3

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.084±0.024	³² ADAMS 01B	B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$

$\Gamma(\phi\gamma)/\Gamma(\rho^0\gamma)$ Γ_{10}/Γ_9

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.77	95	³³ BAI 04J	BES2	$J/\psi \rightarrow \gamma\gamma K^+ K^-$

²⁵ Using the data of BAILLON 67 on $\bar{p}p \rightarrow K\bar{K}\pi$.

²⁶ Assuming that the $a_0(980)$ decays only into $K\bar{K}$.

²⁷ Assuming that the $a_0(980)$ decays only into $\eta\pi$.

²⁸ Assuming that the $a_0(980)$ decays only into $\eta\pi$.

²⁹ Using $B(J/\psi \rightarrow \gamma\eta(1405) \rightarrow \gamma K\bar{K}\pi) = 4.2 \times 10^{-3}$ and $B(J/\psi \rightarrow \gamma\eta(1405) \rightarrow \gamma\gamma\rho^0) = 6.4 \times 10^{-5}$ and assuming that the $\gamma\rho^0$ signal does not come from the $f_1(1420)$.

³⁰ Using preliminary Crystal Barrel data.

³¹ Assuming that the $\eta(1405)$ decays are saturated by the $\pi\pi\eta$, $K\bar{K}\pi$ and $\rho\rho$ modes.

³² Statistical error only.

³³ Calculated by us from $B(J/\psi \rightarrow \eta(1405)\gamma \rightarrow \phi\gamma\gamma) < 0.82 \times 10^{-4}$ and $B(J/\psi \rightarrow \eta(1405)\gamma \rightarrow \rho^0\gamma\gamma) = (1.07 \pm 0.17 \pm 0.11) \times 10^{-4}$.

$\eta(1405)$ REFERENCES

ABLIKIM	08E	PR D77 032005	M. Ablikim <i>et al.</i>	(BES Collab.)
AHOHE	05	PR D71 072001	R. Ahohe <i>et al.</i>	(CLEO Collab.)
AMSLER	04B	EPJ C33 23	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
BAI	04J	PL B594 47	J.Z. Bai <i>et al.</i>	(BES Collab.)
NICHITIU	02	PL B545 261	F. Nichitiu <i>et al.</i>	(OBELIX Collab.)
ACCIARRI	01G	PL B501 1	M. Acciarri <i>et al.</i>	(L3 Collab.)
ADAMS	01B	PL B516 264	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)
ANISOVICH	01	NP A690 567	A.V. Anisovich <i>et al.</i>	
MANAK	00A	PR D62 012003	J.J. Manak <i>et al.</i>	(BNL E852 Collab.)
ANISOVICH	99I	PL B468 304	A.V. Anisovich <i>et al.</i>	
BAI	99	PL B446 356	J.Z. Bai <i>et al.</i>	(BES Collab.)
CICALO	99	PL B462 453	C. Cicalo <i>et al.</i>	(OBELIX Collab.)
ABELE	98E	NP B514 45	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
BAI	98C	PL B440 217	J.Z. Bai <i>et al.</i>	(BES Collab.)
ALDE	97B	PAN 60 386	D. Alde <i>et al.</i>	(GAMS Collab.)
BERTIN	97	PL B400 226	A. Bertin <i>et al.</i>	(OBELIX Collab.)
AMSLER	95F	PL B358 389	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
BERTIN	95	PL B361 187	A. Bertin <i>et al.</i>	(OBELIX Collab.)
BUGG	95	PL B353 378	D.V. Bugg <i>et al.</i>	(LOQM, PNPI, WASH)
AUGUSTIN	92	PR D46 1951	J.E. Augustin, G. Cosme	(DM2 Collab.)
BOLTON	92B	PRL 69 1328	T. Bolton <i>et al.</i>	(Mark III Collab.)
FUKUI	91C	PL B267 293	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
AUGUSTIN	90	PR D42 10	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
BAI	90C	PRL 65 2507	Z. Bai <i>et al.</i>	(Mark III Collab.)
COFFMAN	90	PR D41 1410	D.M. Coffman <i>et al.</i>	(Mark III Collab.)
BISELLO	89B	PR D39 701	G. Busetto <i>et al.</i>	(DM2 Collab.)
DUCH	89	ZPHY C45 223	K.D. Duch <i>et al.</i>	(ASTERIX Collab.) JP
RATH	89	PR D40 693	M.G. Rath <i>et al.</i>	(NDAM, BRAN, BNL, CUNY+)
BIRMAN	88	PRL 61 1557	A. Birman <i>et al.</i>	(BNL, FSU, IND, MASD) JP
ANDO	86	PRL 57 1296	A. Ando <i>et al.</i>	(KEK, KYOT, NIRS, SAGA+) JP
REEVES	86	PR D34 1960	D.F. Reeves <i>et al.</i>	(FLOR, BNL, IND+) JP
CHUNG	85	PRL 55 779	S.U. Chung <i>et al.</i>	(BNL, FLOR, IND+) JP
ALTHOFF	84E	PL 147B 487	M. Althoff <i>et al.</i>	(TASSO Collab.)
EDWARDS	83B	PRL 51 859	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
EDWARDS	82E	PRL 49 259	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
Also		PRL 50 219	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
SCHARRE	80	PL 97B 329	D.L. Scharre <i>et al.</i>	(SLAC, LBL)
FOSTER	68B	NP B8 174	M. Foster <i>et al.</i>	(CERN, CDEF)
BAILLON	67	NC 50A 393	P.H. Baillon <i>et al.</i>	(CERN, CDEF, IRAD)

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MASONI	06	JPG 32 R293	A. Masoni, C. Cicalo, G.L. Usai	(INFN, CAGL)
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LI	03C	EPJ C28 335	D.M. Li <i>et al.</i>	
LI	03D	IJMP A18 3335	D.M. Li <i>et al.</i>	
ADAMS	01	PRL 87 041801	T. Adams <i>et al.</i>	(NuTeV Collab.)
ANISOVICH	00F	EPJ A6 247	A.V. Anisovich <i>et al.</i>	
CARVALHO	99	EPJ C7 95	W.S. Carvalho <i>et al.</i>	
ABELE	98	PR D57 3860	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
NEKRASOV	98	EPJ C5 507	M.L. Nekrasov	
BARBERIS	97C	PL B413 225	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARNES	97	PR D55 4157	T. Barnes <i>et al.</i>	(ORNL, RAL, MCHS)
CLOSE	97	PL B397 333	F. Close <i>et al.</i>	(RAL, BIRM)
CLOSE	97B	PR D55 5749	F. Close <i>et al.</i>	(RAL, RUTG, BEIJT)
CLOSE	97D	ZPHY C76 469	F.E. Close <i>et al.</i>	
BERTIN	96	PL B385 493	A. Bertin <i>et al.</i>	(Obelix Collab.)
FARRAR	96	PRL 76 4111	G.R. Farrar	(RUTG)
AMELIN	95	ZPHY C66 71	D.V. Amelin <i>et al.</i>	(VES Collab.)
GENOVESE	94	ZPHY C61 425	M. Genovese, D.B. Lichtenberg, E. Predazzi	(TORI+)
BALI	93	PL B309 378	G.S. Bali <i>et al.</i>	(LIVP)
BAUER	93B	PR D48 3976	D.A. Bauer <i>et al.</i>	(SLAC)
ARMSTRONG	91B	ZPHY C52 389	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
KING	91	NPBPS B21 11	E. King <i>et al.</i>	(FSU, BNL+)

CALDWELL	90	Hadron 89 Conf. p 127	D.O. Caldwell	(UCSB)
LONGACRE	90	PR D42 874	R.S. Longacre	(BNL)
AHMAD	89	NP B (PROC.)8 50	S. Ahmad <i>et al.</i>	(ASTERIX Collab.)
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ARMSTRONG	84	PL 146B 273	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
BITYUKOV	84	SJNP 39 735	S. Bityukov <i>et al.</i>	(SERP)
		Translated from YAF 39 1165.		
GAVILLET	82	ZPHY C16 119	P. Gavillet <i>et al.</i>	(CERN, CDEF, PADO+)
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