NODE=M175

$\eta(1475)$

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

See the $\eta(1405)$ and the related review on "Spectroscopy of Light Meson Resonances." NODE=M175

$\eta(1475)$ MASS

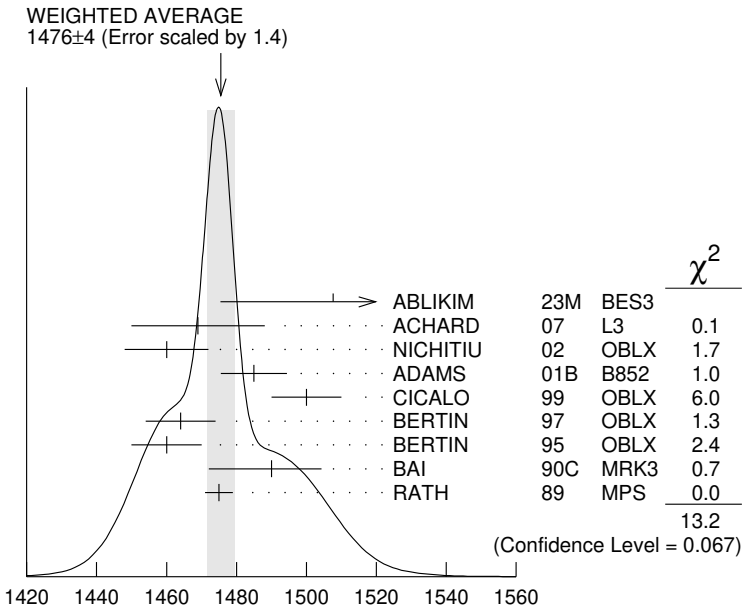
NODE=M175M5

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1476 ± 4 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.			
$1507.6 \pm 1.6^{+15.5}_{-32.2}$	126K	[1] ABLIKIM	23M	BES3	$J/\psi \to \gamma K^0_S K^0_S \pi^0$
1469 ±14 ±13	74	ACHARD	07	L3	183–209 $e^+e^- \to e^+e^- K^0_S K^\pm \pi^\mp$
1460 ±12	3651	NICHITIU	02	OBLX	0 $\overline{p}p \to K^+K^-\pi^+\pi^-\pi^0$
1485 ± 8 ± 5	20k	ADAMS	01B	B852	18 GeV $\pi^- p \to K^+K^-\pi^0 n$
1500 ±10		CICALO	99	OBLX	0 $\overline{p}p \to K^\pm K^0_S \pi^\mp \pi^+ \pi^-$
1464 ±10		BERTIN	97	OBLX	0 $\overline{p}p \to K^\pm (K^0) \pi^\mp \pi^+ \pi^-$ OCCUR=2
1460 ±10		BERTIN	95	OBLX	0 $\overline{p}p \to K\overline{K}\pi\pi\pi$ OCCUR=2
$1490 \; ^{+14}_{-8} \; ^{+3}_{-16}$	1100	BAI	90C	MRK3	$J/\psi \to \gamma K^0_S K^\pm \pi^\mp$
1475 ± 4		RATH	89	MPS	21.4 $\pi^- p \to n K^0_S K^0_S \pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1477 ± 7 ±13		[2] ABLIKIM	18I	BES3	$J/\psi \to \gamma\gamma\phi(1020)$
1565 ± 8 $^{+0}_{-63}$		[3] ABLIKIM	15T	BES3	$J/\psi \to \gamma K^0_S K^0_S \eta$
1421 ±14		AUGUSTIN	92	DM2	$J/\psi \to \gamma K\overline{K}\pi$ OCCUR=2

[1] ABLIKIM 23M reports for this state a significance from the fit much higher than 35 σ. NODE=M175M5;LINKAGE=C

[2] From a fit to $\gamma\phi$ invariant mass. Angular analysis consistent with $J^{PC} = 0^{-+}$. Other J^{PC} not excluded. NODE=M175M5;LINKAGE=B

[3] Could also be the $\eta(1405)$. NODE=M175M5;LINKAGE=A



$\eta(1475)$ mass (MeV)

$\eta(1475)$ WIDTH

NODE=M175W5

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
96 ± 9 OUR AVERAGE		Error includes scale factor of 1.7. See the ideogram below.			
$115.8 \pm 2.4^{+14.8}_{-10.9}$	126K	ABLIKIM	23M	BES3	$J/\psi \to \gamma K^0_S K^0_S \pi^0$
67 ±18 ± 7	74	ACHARD	07	L3	183–209 $e^+e^- \to e^+e^- K^0_S K^\pm \pi^\mp$
120 ±15	3651	NICHITIU	02	OBLX	0 $\overline{p}p \to K^+K^-\pi^+\pi^-\pi^0$
98 ±18 ± 3	20k	ADAMS	01B	B852	18 GeV $\pi^- p \to K^+K^-\pi^0 n$
100 ±20		CICALO	99	OBLX	0 $\overline{p}p \to K^\pm K^0_S \pi^\mp \pi^+ \pi^-$

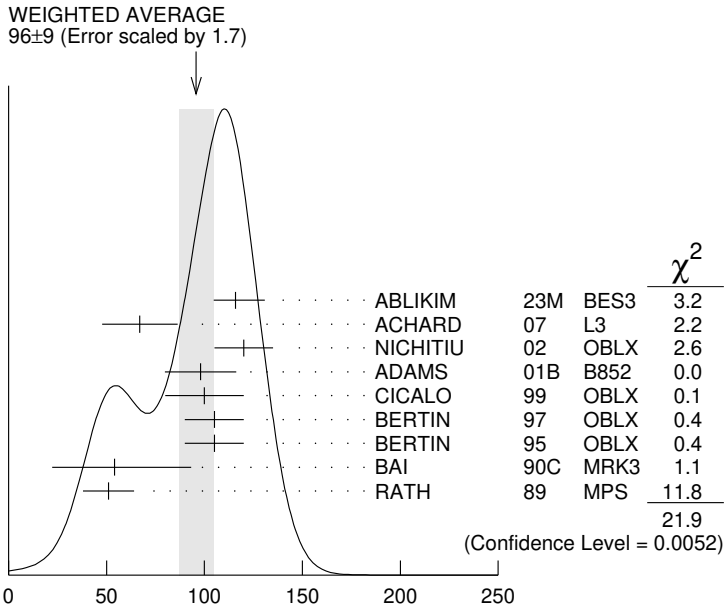
105	±15		BERTIN	97	OBLX	0.0 $\overline{p}p \rightarrow$ $K^{\pm}(K^0)\pi^{\mp}\pi^{+}\pi^{-}$	OCCUR=2
105	±15		BERTIN	95	OBLX	0 $\overline{p}p \rightarrow$ $K\overline{K}\pi\pi\pi$	OCCUR=2
54	$^{+37}_{-21}$	$^{+13}_{-24}$	BAI	90C	MRK3	$J/\psi \rightarrow$ $\gamma K^0_S K^{\pm}\pi^{\mp}$	
51	±13		RATH	89	MPS	21.4 $\pi^- p \rightarrow$ $nK^0_S K^0_S \pi^0$	

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

118	±22	±17	[1] ABLIKIM	18I	BES3	$J/\psi \rightarrow$ $\gamma\gamma\phi(1020)$	
45	$^{+14}_{-13}$	$^{+21}_{-28}$	[2] ABLIKIM	15T	BES3	$J/\psi \rightarrow$ $\gamma K^0_S K^0_S \eta$	
63	±18		AUGUSTIN	92	DM2	$J/\psi \rightarrow$ $\gamma K\overline{K}\pi$	OCCUR=2

[1] From a fit to $\gamma\phi$ invariant mass. Angular analysis consistent with $J^{PC} = 0^{-+}$. Other J^{PC} not excluded. NODE=M175W5;LINKAGE=B

[2] Could also be the $\eta(1405)$. NODE=M175W5;LINKAGE=A



$\eta(1475)$ DECAY MODES

NODE=M175215;NODE=M175

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$K\overline{K}\pi$	seen	DESIG=2;OUR EST;→ UNCHECKED ←
Γ_2	$K\overline{K}^*(892)+$ c.c.	seen	DESIG=1;OUR EST;→ UNCHECKED ←
Γ_3	$a_0(980)\pi$	seen	DESIG=4;OUR EST;→ UNCHECKED ←
Γ_4	$\gamma\gamma$	seen	DESIG=7;OUR EST;→ UNCHECKED ←
Γ_5	$K^0_S K^0_S \eta$	possibly seen	DESIG=8;OUR EVAL;→ UNCHECKED ←
Γ_6	$\gamma\phi(1020)$	possibly seen	DESIG=9

$\eta(1475)$ Γ(i)Γ($\gamma\gamma$)/Γ(total)

NODE=M175220

$\Gamma(K\overline{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ **$\Gamma_1\Gamma_4/\Gamma$**

NODE=M175G2

VALUE (keV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.23±0.05±0.05		74	[1] ACHARD	07	L3	183–209 $e^+e^- \rightarrow$ $e^+e^- K^0_S K^{\pm}\pi^{\mp}$

NODE=M175G2

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

< 0.089	90	[2,3] AHOHE	05	CLE2	10.6 $e^+e^- \rightarrow$ $e^+e^- K^0_S K^{\pm}\pi^{\mp}$	

[1] Supersedes ACCIARRI 01G. Using B($K^0_S \rightarrow \pi^+\pi^-$)= 0.6895. NODE=M175G2;LINKAGE=CH

[2] Using $\eta(1475)$ mass of 1481 MeV and width of 48 MeV. The upper limit increases to 0.140 keV if the world average value, 87 MeV, of the width is used. NODE=M175G2;LINKAGE=AH

[3] Assuming three-body phase-space decay to $K^0_S K^{\pm}\pi^{\mp}$. NODE=M175G2;LINKAGE=B3

$\eta(1475)$ BRANCHING RATIOS

NODE=M175225

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma(K\overline{K}\pi)$ Γ_2/Γ_1

NODE=M175R1
NODE=M175R1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.50 ± 0.10	[1] BAILLON	67	HBC	$0.0\ \overline{p}p \rightarrow\ K\overline{K}\pi\pi\pi$

[1] Data could also refer to $\eta(1405)$.

NODE=M175R;LINKAGE=BL

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/[\Gamma(K\overline{K}^*(892)+\text{c.c.})+\Gamma(a_0(980)\pi)]$ $\Gamma_2/(\Gamma_2+\Gamma_3)$

NODE=M175R6
NODE=M175R6

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.25	90	EDWARDS	82E	CBAL	$J/\psi \rightarrow\ K^+K^-\pi^0\gamma$

$\Gamma(\gamma\gamma)/\Gamma(K\overline{K}\pi)$ Γ_4/Γ_1

NODE=M175R01
NODE=M175R01

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<1.27 \times 10^{-3}}$	90	[1] ABLIKIM	18O	BES3	$\psi(2S) \rightarrow\ \pi^+\pi^-\gamma\gamma\gamma$

[1] Using results from BAI 00D.

NODE=M175R01;LINKAGE=A

$\Gamma(\gamma\phi(1020))/\Gamma_{\text{total}}$ Γ_6/Γ

NODE=M175R00
NODE=M175R00

VALUE	DOCUMENT ID		TECN	COMMENT
possibly seen	[1] ABLIKIM	18I	BES3	$J/\psi \rightarrow\ \gamma\gamma\phi(1020)$

[1] Seen as a peak in $\gamma\phi$ invariant mass. Angular analysis consistent with $J^{PC} = 0^{-+}$. Other J^{PC} not excluded. Also see $\eta(1405)$.

NODE=M175R00;LINKAGE=A

$\eta(1475)$ REFERENCES

NODE=M175

ABLIKIM	23M	JHEP 2303 121	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18I	PR D97 051101	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18O	PR D97 072014	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	15T	PRL 115 091803	M. Ablikim *et al.*	(BESIII Collab.)
ACHARD	07	JHEP 0703 018	P. Achard *et al.*	(L3 Collab.)
AHOHE	05	PR D71 072001	R. Ahohe *et al.*	(CLEO Collab.)
NICHITIU	02	PL B545 261	F. Nichitiu *et al.*	(OBELIX Collab.)
ACCIARRI	01G	PL B501 1	M. Acciarri *et al.*	(L3 Collab.)
ADAMS	01B	PL B516 264	G.S. Adams *et al.*	(BNL E852 Collab.)
BAI	00D	PL B476 25	J.Z. Bai *et al.*	(BES Collab.)
CICALO	99	PL B462 453	C. Cicalo *et al.*	(OBELIX Collab.)
BERTIN	97	PL B400 226	A. Bertin *et al.*	(OBELIX Collab.)
BERTIN	95	PL B361 187	A. Bertin *et al.*	(OBELIX Collab.)
AUGUSTIN	92	PR D46 1951	J.E. Augustin, G. Cosme	(DM2 Collab.)
BAI	90C	PRL 65 2507	Z. Bai *et al.*	(Mark III Collab.)
RATH	89	PR D40 693	M.G. Rath *et al.*	(NDAM, BRAN, BNL, CUNY+)
EDWARDS	82E	PRL 49 259	C. Edwards *et al.*	(CIT, HARV, PRIN+)
BAILLON	67	NC 50A 393	P.H. Baillon *et al.*	(CERN, CDEF, IRAD)

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