NODE=M236

$\psi(4390)$

$I^G(J^{PC}) = 0^-(1^{--})$
I needs confirmation.

OMITTED FROM SUMMARY TABLE
was $X(4390)$

This state shows properties different from a conventional $q\overline{q}$ state. NODE=M236
A candidate for an exotic structure. See the review on non-$q\overline{q}$ states.

$\psi(4390)$ MASS

NODE=M236M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4390 ± 6 OUR AVERAGE				
$4382.0 \pm 13.3 \pm 1.7$	[1] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
$4391.5^{+\ 6.3}_{-\ 6.8} \pm 1.0$	ABLIKIM	17G	BES3	$e^+e^- \to \pi^+\pi^- h_c$

[1] From a fit of the measured cross section in the range $\sqrt{s} = 3.808$–4.600 GeV. NODE=M236M;LINKAGE=B

$\psi(4390)$ WIDTH

NODE=M236W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
139 $^{+16}_{-20}$ OUR AVERAGE				
$135.8 \pm 60.8 \pm 22.5$	[1] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
$139.5^{+16.2}_{-20.6} \pm 0.6$	ABLIKIM	17G	BES3	$e^+e^- \to \pi^+\pi^- h_c$

[1] From a fit of the measured cross section in the range $\sqrt{s} = 3.808$–4.600 GeV. NODE=M236W;LINKAGE=B

$\psi(4390)$ DECAY MODES

NODE=M236215;NODE=M236

	Mode	Fraction (Γ_i/Γ)	
Γ_1	e^+e^-		DESIG=5
Γ_2	$\pi^+\pi^- h_c$	seen	DESIG=1
Γ_3	$\eta J/\psi$	seen	DESIG=4
Γ_4	$\pi^+\pi^-\psi(3770)$	possibly seen	DESIG=3

$\psi(4390)$ Γ(i)$\Gamma(e^+e^-)/\Gamma$(total)

NODE=M236218

$\Gamma(\eta J/\psi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_3\Gamma_1/\Gamma$

NODE=M236R04

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3.4 ± 2.2	[1] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
1.5 ± 1.0	[2] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
1.7 ± 1.1	[3] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$

NODE=M236R04
NODE=M236R04
OCCUR=2
OCCUR=3

[1] Solution 1 of three equivalent fit solutions using three resonant structures. NODE=M236R04;LINKAGE=A
[2] Solution 2 of three equivalent fit solutions using three resonant structures. NODE=M236R04;LINKAGE=B
[3] Solution 3 of three equivalent fit solutions using three resonant structures. NODE=M236R04;LINKAGE=C

$\psi(4390)$ BRANCHING RATIOS

NODE=M236220

$\Gamma(\pi^+\pi^- h_c)/\Gamma_{\text{total}}$ Γ_2/Γ

NODE=M236R01

VALUE	DOCUMENT ID		TECN	COMMENT
seen	ABLIKIM	17G	BES3	$e^+e^- \to \pi^+\pi^- h_c$

NODE=M236R01

$\Gamma(\eta J/\psi)/\Gamma_{\text{total}}$ Γ_3/Γ

NODE=M236R03

VALUE	DOCUMENT ID		TECN	COMMENT
seen	[1] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$

NODE=M236R03

[1] With a significance of 6.0 σ. NODE=M236R03;LINKAGE=A

$\Gamma(\pi^+\pi^-\psi(3770))/\Gamma_{\text{total}}$ Γ_4/Γ

NODE=M236R02

VALUE	DOCUMENT ID		TECN	COMMENT
possibly seen	[1] ABLIKIM	19AR	BES3	$e^+e^- \to \pi^+\pi^- D\overline{D}$

NODE=M236R02

[1] Observe $e^+e^- \to \pi^+\pi^-\psi(3770)$ at $\sqrt{s} = 4.26$, 4.36, and 4.42 GeV but cannot establish if continuum or resonant. NODE=M236R02;LINKAGE=A

$\psi(4390)$ REFERENCES

NODE=M236

ABLIKIM	20O	PR D102 031101	M. Ablikim *et al.*	(BESIII Collab.)	REFID=60344
ABLIKIM	19AR	PR D100 032005	M. Ablikim *et al.*	(BESIII Collab.)	REFID=59910
ABLIKIM	17G	PRL 118 092002	M. Ablikim *et al.*	(BESIII Collab.)	REFID=57915