$\boxed{\psi(4390)}$

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

I needs confirmation.

OMITTED FROM SUMMARY TABLE
was $X(4390)$

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

$\psi(4390)$ MASS

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

$\psi(4390)$ WIDTH

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

$\psi(4390)$ DECAY MODES

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

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

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

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	$e^+e^- \to \eta J/\psi$

[1] Solution 1 of three equivalent fit solutions using three resonant structures.
[2] Solution 2 of three equivalent fit solutions using three resonant structures.
[3] Solution 3 of three equivalent fit solutions using three resonant structures.

$\psi(4390)$ BRANCHING RATIOS

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

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

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

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

[1] With a significance of 6.0 σ.

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

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

[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.

$\psi(4390)$ REFERENCES

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