$X(4055)^{\pm}$

$I^G(J^{PC}) = 1^+(?^{?-})$
I, G, C need confirmation.

OMITTED FROM SUMMARY TABLE

Properties incompatible with a $q\overline{q}$ structure (exotic state). See the review on non-$q\overline{q}$ states.

Needs confirmation. Seen by WANG 15A in the $\psi(2S)\pi^+$ invariant mass distribution in $\psi(4360) \to \psi(2S)\pi^+\pi^-$ decay.

$X(4055)^{\pm}$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
4054 ±3 ±1	[1] WANG	15A	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4039.3±6.0	[2] ABLIKIM	18K	BES3	$e^+e^- \to \pi^0\pi^0\psi(2S)$
4032.1±2.4	[3] ABLIKIM	17V	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$

[1] Statistical significance of 3.5 σ.
[2] Statistical error only, with significance of 5.9 σ (from a fit with a 19% CL). Identified as the same structure observed in ABLIKIM 17V in $e^+e^- \to \pi^+\pi^-\psi(2S)$ decays.
[3] Statistical error only, with significance of 9.2 σ. From an unbinned maximum likelihood fit of the $\pi^+\pi^-\psi(2S)$ Dalitz plot from data collected at $\sqrt{s} = 4.416$ GeV for a $J^C = 1^+$ state. The fit does not match the detailed structure of the data, having a C.L. of only 8%.

$X(4055)^{\pm}$ WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
45 ±11 ±6	[1] WANG	15A	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
31.9±14.8	[2] ABLIKIM	18K	BES3	$e^+e^- \to \pi^0\pi^0\psi(2S)$
26.1± 5.3	[3] ABLIKIM	17V	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$

[1] Statistical significance of 3.5 σ.
[2] Statistical error only, with significance of 5.9 σ (from a fit with a 19% CL). Identified as the same structure observed in ABLIKIM 17V in $e^+e^- \to \pi^+\pi^-\psi(2S)$ decays.
[3] Statistical error only, with significance of 9.2 σ. From an unbinned maximum likelihood fit of the $\pi^+\pi^-\psi(2S)$ Dalitz plot from data collected at $\sqrt{s} = 4.416$ GeV for a $J^C = 1^+$ state. The fit does not match the detailed structure of the data, having a C.L. of only 8%.

$X(4055)^{\pm}$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\pi^+\psi(2S)$	seen
Γ_2	$\pi^{\pm}\psi(3770)$	not seen

$X(4055)^{\pm}$ BRANCHING RATIOS

$\Gamma(\pi^+\psi(2S))/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
seen	[1] WANG	15A	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$

[1] Statistical significance of 3.5 σ.

$\Gamma(\pi^{\pm}\psi(3770))/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	[1] ABLIKIM	19AR	BES3	$e^+e^- \to \pi^+\pi^- D\overline{D}$

[1] From a measurement of $\sigma(e^+e^- \to \pi^+\pi^- D\overline{D})$ between $\sqrt{s} = 4.08$ and 4.6 GeV.

$X(4055)^{\pm}$ REFERENCES

ABLIKIM	19AR	PR D100 032005	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18K	PR D97 052001	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17V	PR D96 032004	M. Ablikim *et al.*	(BESIII Collab.)
Also		PR D99 019903 (errat.)	M. Ablikim *et al.*	(BESIII Collab.)
WANG	15A	PR D91 112007	X.L. Wang *et al.*	(BELLE Collab.)