

$T_{c\bar{c}}(4055)^+$

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

I, G, C need confirmation.

OMITTED FROM SUMMARY TABLE
was $X(4055)^\pm$

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

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

$T_{c\bar{c}}(4055)^+$ MASS

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

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 $e^+e^- \rightarrow \pi^+\pi^-\psi(2S)$ 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%.

$T_{c\bar{c}}(4055)^+$ WIDTH

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

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 $e^+e^- \rightarrow \pi^+\pi^-\psi(2S)$ 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%.

$T_{c\bar{c}}(4055)^+$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \pi^+\psi(2S)$	seen
$\Gamma_2 \quad \pi^\pm\psi(3770)$	not seen

$T_{c\bar{c}}(4055)^+$ BRANCHING RATIOS

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
seen	¹ WANG	15A BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$

¹ Statistical significance of 3.5 σ .

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
not seen	¹ ABLIKIM	19AR BES3	$e^+e^- \rightarrow \pi^+\pi^-D\bar{D}$

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

$T_{c\bar{c}}(4055)^+$ REFERENCES

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