

$T_{c\bar{c}s1}(4220)^+$

$$I(J^P) = \frac{1}{2}(1^+)$$

OMITTED FROM SUMMARY TABLE

was  $Z_{cs}(4220)^+$

Properties incompatible with a  $q\bar{q}$  structure (exotic state). See the review on "Heavy Non- $q\bar{q}$  Mesons."

Seen by AAIJ 21E in  $B^+ \rightarrow T_{c\bar{c}s1}(4220)^+ \phi$  with  $T_{c\bar{c}s1}(4220)^+ \rightarrow J/\psi K^+$  using an amplitude analysis of  $B^+ \rightarrow J/\psi \phi K^+$  with a significance (accounting for systematic uncertainties) of  $5.9 \sigma$ . The  $J^P = 1^+$  assignment is favored over  $1^-$  with a significance of  $2 \sigma$  and other assignments are disfavored by  $4.9 \sigma$ .

### $T_{c\bar{c}s1}(4220)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$4216 \pm 24^{+43}_{-30}$	24k	<sup>1</sup> AAIJ	21E LHCB	$B^+ \rightarrow J/\psi \phi K^+$

<sup>1</sup> From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi \phi K^+$  with a significance of  $5.9 \sigma$ .

### $T_{c\bar{c}s1}(4220)^+$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$233 \pm 52^{+97}_{-73}$	24k	<sup>1</sup> AAIJ	21E LHCB	$B^+ \rightarrow J/\psi \phi K^+$

<sup>1</sup> From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi \phi K^+$  with a significance of  $5.9 \sigma$ .

### $T_{c\bar{c}s1}(4220)^+$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad J/\psi K^+$	seen

### $T_{c\bar{c}s1}(4220)^+$ BRANCHING RATIOS

$\Gamma(J/\psi K^+)/\Gamma_{\text{total}}$					$\Gamma_1/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>seen</b>	24k	<sup>1</sup> AAIJ	21E LHCB	$B^+ \rightarrow J/\psi \phi K^+$	

<sup>1</sup> From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi \phi K^+$  with a significance of  $5.9 \sigma$ .

### $T_{c\bar{c}s1}(4220)^+$ REFERENCES

AAIJ	21E	PRL 127 082001	R. Aaij <i>et al.</i>	(LHCb Collab.) JP
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