$T_{cc\overline{c}\overline{c}}(6900)^0$

$I^G(J^{PC}) = 0^+(2^{++})$

was $X(6900)$

Assuming that all structures seen in the $J/\psi J/\psi$ final state have the same quantum numbers, CMS determined those to $J^{PC} = 2^{++}$ (HAYRAPETYAN 25AG). State incompatible with a $q\overline{q}$ structure. See the review on "Heavy Non-$q\overline{q}$ Mesons."

$T_{cc\overline{c}\overline{c}}(6900)^0$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
6898±12 OUR AVERAGE Error includes scale factor of 1.2.				
$6847^{+44}_{-28}{}^{+48}_{-20}$	[1] HAYRAPETY...24		CMS	$pp \to J/\psi J/\psi X$
$6910 \pm 10 \pm 10$	[2] AAD	23BL	ATLS	$pp \to J/\psi J/\psi X$
$6886 \pm 11 \pm 11$	[3] AAIJ	20AY	LHCB	$pp \to J/\psi J/\psi X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$6960 \pm 50 \pm 30$	[4] AAD	23BL	ATLS	$pp \to J/\psi\psi(2S)X$

[1] In a model with three resonances described by interfering relativistic Breit-Wigner functions above background from non-resonant single and double parton scattering and a threshold enhancement.

[2] In a model with two resonances, with the $T_{cc\overline{c}\overline{c}}(6600)$ interfering with single parton scattering, and a non-interfering $T_{cc\overline{c}\overline{c}}(6900)$.

[3] In a model where the broad structure above threshold interferes with non-resonant single parton scattering. Without interference the mass is 6905 ± 11 ± 7 MeV.

[4] Assuming a single resonance (could be another state). A 3σ signal is observed for an additional resonance with mass $7220 \pm 30^{+10}_{-40}$ MeV and width $90 \pm 60^{+60}_{-50}$ MeV.

$T_{cc\overline{c}\overline{c}}(6900)^0$ WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
161± 26 OUR AVERAGE				
$191^{+\ 66}_{-\ 49}{}^{+\ 25}_{-\ 17}$	[1] HAYRAPETY...24		CMS	$pp \to J/\psi J/\psi X$
$150 \pm 30 \pm 10$	[2] AAD	23BL	ATLS	$pp \to J/\psi J/\psi X$
$168 \pm 33 \pm 69$	[3] AAIJ	20AY	LHCB	$pp \to J/\psi J/\psi X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$510 \pm 170^{+110}_{-100}$	[4] AAD	23BL	ATLS	$pp \to J/\psi\psi(2S)X$

[1] In a model with three resonances described by interfering relativistic Breit-Wigner functions above background from non-resonant single and double parton scattering and a threshold enhancement.

[2] In a model with two resonances, with the $T_{cc\overline{c}\overline{c}}(6600)$ interfering with single parton scattering, and a non-interfering $T_{cc\overline{c}\overline{c}}(6900)$.

[3] In a model where the broad structure above threshold interferes with non-resonant single parton scattering. Without interference the width is 80 ± 38 MeV.

[4] Assuming a single resonance (could be another state). A 3σ signal is observed for an additional resonance with mass $7220 \pm 30^{+10}_{-40}$ MeV and width $90 \pm 60^{+60}_{-50}$ MeV.

$T_{cc\overline{c}\overline{c}}(6900)^0$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$J/\psi\, J/\psi$	seen

$T_{cc\overline{c}\overline{c}}(6900)^0$ BRANCHING RATIOS

$\Gamma(J/\psi\, J/\psi)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	HAYRAPETY...24	CMS	$pp \to J/\psi\, J/\psi X$
seen	AAD 23BL	ATLS	$pp \to J/\psi\, J/\psi X$
seen	AAIJ 20AY	LHCB	$pp \to J/\psi\, J/\psi X$

$T_{cc\overline{c}\overline{c}}(6900)^0$ REFERENCES

HAYRAPETY...	25AG	NAT 648 58	A. Hayrapetyan *et al.*	(CMS Collab.) JPC
HAYRAPETY...	24	PRL 132 111901	A. Hayrapetyan *et al.*	(CMS Collab.)
AAD	23BL	PRL 131 151902	G. Aad *et al.*	(ATLAS Collab.)
AAIJ	20AY	SCIB 65 1983	R. Aaij *et al.*	(LHCb Collab.)