

OTHER MESONS

$T_{c\bar{c}1}(3900)$

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

was $Z_c(3900)$, $X(3900)$

$$\text{Mass } m = 3887.1 \pm 2.6 \text{ MeV} \quad (S = 1.7)$$

$$\text{Full width } \Gamma = 28.4 \pm 2.6 \text{ MeV}$$

$T_{c\bar{c}1}(3900)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$J/\psi \pi$	seen	699
$h_c \pi^\pm$	not seen	318
$\eta_c \pi^+ \pi^-$	not seen	758
$\eta_c(1S) \rho(770)^\pm$	seen	—
$(D \bar{D}^*)^\pm$	seen	—
$D^0 D^{*-} + \text{c.c.}$	seen	152
$D^- D^{*0} + \text{c.c.}$	seen	143
$\omega \pi^\pm$	not seen	1862
$J/\psi \eta$	not seen	510
$D^+ D^{*-} + \text{c.c.}$	seen	—
$D^0 \bar{D}^{*0} + \text{c.c.}$	seen	—

$T_{c\bar{c}}(4020)$

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

was $X(4020)$

$$\text{Mass } m = 4024.1 \pm 1.9 \text{ MeV}$$

$$\text{Full width } \Gamma = 13 \pm 5 \text{ MeV} \quad (S = 1.7)$$

$T_{c\bar{c}}(4020)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$h_c(1P) \pi$	seen	450
$D^* \bar{D}^*$	seen	85
$D \bar{D}^* + \text{c.c.}$	not seen	542
$\eta_c \pi^+ \pi^-$	not seen	872
$J/\psi(1S) \pi^\pm$	not seen	811

$T_{c\bar{c}1}(4430)^+$

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

G, C need confirmation.

was $Z_c(4430), X(4430)^\pm$

Quantum numbers not established.

$$\text{Mass } m = 4478_{-18}^{+15} \text{ MeV}$$

$$\text{Full width } \Gamma = 181 \pm 31 \text{ MeV}$$

$T_{c\bar{c}1}(4430)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\pi^+ \psi(2S)$	seen	711
$\pi^+ J/\psi$	seen	1162

$T_{b\bar{b}1}(10610)$

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

was $Z_b(10610), X(10610)$

$$\text{Mass } m = 10607.2 \pm 2.0 \text{ MeV}$$

$$\text{Mass } m = 10609 \pm 6 \text{ MeV}$$

$$\text{Full width } \Gamma = 18.4 \pm 2.4 \text{ MeV}$$

$T_{b\bar{b}1}(10610)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Upsilon(1S)\pi^+$	$(5.4_{-1.5}^{+1.9}) \times 10^{-3}$	1077
$\Upsilon(1S)\pi^0$	not seen	1077
$\Upsilon(2S)\pi^+$	$(3.6_{-0.8}^{+1.1}) \%$	551
$\Upsilon(2S)\pi^0$	seen	552
$\Upsilon(3S)\pi^+$	$(2.1_{-0.6}^{+0.8}) \%$	207
$\Upsilon(3S)\pi^0$	seen	210
$h_b(1P)\pi^+$	$(3.5_{-0.9}^{+1.2}) \%$	671
$h_b(2P)\pi^+$	$(4.7_{-1.3}^{+1.7}) \%$	313
$B^+ \bar{B}^0$	not seen	504
$B^+ \bar{B}^{*0} + B^{*+} \bar{B}^0$	$(85.6_{-2.9}^{+2.1}) \%$	—

$T_{b\bar{b}1}(10650)^+$

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

was $Z_b(10650), X(10650)^\pm$

Mass $m = 10652.2 \pm 1.5$ MeV

Full width $\Gamma = 11.5 \pm 2.2$ MeV

$T_{b\bar{b}1}(10650)^-$ decay modes are charge conjugates of the modes below.

$T_{b\bar{b}1}(10650)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Upsilon(1S)\pi^+$	$(1.7^{+0.8}_{-0.6}) \times 10^{-3}$	1117
$\Upsilon(2S)\pi^+$	$(1.4^{+0.6}_{-0.4}) \%$	595
$\Upsilon(3S)\pi^+$	$(1.6^{+0.7}_{-0.5}) \%$	259
$h_b(1P)\pi^+$	$(8.4^{+2.9}_{-2.4}) \%$	714
$h_b(2P)\pi^+$	$(15 \pm 4) \%$	360
$B^+\bar{B}^0$	not seen	703
$B^+\bar{B}^{*0} + B^{*+}\bar{B}^0$	not seen	—
$B^{*+}\bar{B}^{*0}$	$(74^{+4}_{-6}) \%$	120