Σ_b^*

$I(J^P) = 1(\frac{3}{2}^+)$ Status: ***
I, *J*, *P* need confirmation.

I, J, P need confirmation. Quantum numbers shown are quark-model predictions.

Σ_b^* MASS

Σ_b^{*+} MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
5830.32±0.27 OUR AVERAGE				
5830.28±0.14±0.24	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
$5832.1 \pm 0.7\ ^{+1.7}_{-1.8}$	[2] AALTONEN	12F	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.
[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.

Σ_b^{*-} MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
5834.74±0.30 OUR AVERAGE				
5834.73±0.17±0.25	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
$5835.1 \pm 0.6\ ^{+1.7}_{-1.8}$	[2] AALTONEN	12F	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.
[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.

$m_{\Sigma_b^{*+}} - m_{\Sigma_b^{*-}}$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
−4.37±0.33 OUR AVERAGE	Error includes scale factor of 1.6.			
−4.45±0.22±0.01	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
$-3.0\ ^{+1.0}_{-0.9} \pm 0.1$	[2] AALTONEN	12F	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.
[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.

$m_{\Sigma_b^{*+}} - m_{\Sigma_b^+}$

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
19.73±0.18±0.01	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.

$m_{\Sigma_b^{*-}} - m_{\Sigma_b^-}$

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
19.09±0.22±0.02	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.

Σ_b^* WIDTH

Σ_b^{*+} WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
9.4 ±0.5 OUR AVERAGE				
$9.34 \pm 0.47 \pm 0.26$	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
$11.5\ ^{+2.7}_{-2.2}\ ^{+1.0}_{-1.5}$	[2] AALTONEN	12F	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.

Σ_b^{*-} WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
10.4 ±0.8 OUR AVERAGE Error includes scale factor of 1.3.				
$10.68 \pm 0.60 \pm 0.33$	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
$7.5\ ^{+2.2}_{-1.8}\ ^{+0.9}_{-1.4}$	[2] AALTONEN	12F	CDF	$p\overline{p}$ at 1.96 TeV

[1] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to p K^- \pi^+$ decays.

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.

$m_{\Sigma_b^*} - m_{\Sigma_b}$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{21.2^{+2.0+0.4}_{-1.9-0.3}}$	[1] AALTONEN	07K	CDF	$p\overline{p}$ at 1.96 TeV

[1] Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \to \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \to p K^- \pi^+$. Assumes $m_{\Sigma_b^{*+}} - m_{\Sigma_b^+} = m_{\Sigma_b^{*-}} - m_{\Sigma_b^-}$

Σ_b^* DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\Lambda_b^0 \pi$	dominant

Σ_b^* BRANCHING RATIOS

$\Gamma(\Lambda_b^0 \pi)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
dominant	AALTONEN	07K	CDF	$p\overline{p}$ at 1.96 TeV

Σ_b^* REFERENCES

AAIJ	19A	PRL 122 012001	R. Aaij *et al.*	(LHCb Collab.)
AALTONEN	12F	PR D85 092011	T. Aaltonen *et al.*	(CDF Collab.)
AALTONEN	07K	PRL 99 202001	T. Aaltonen *et al.*	(CDF Collab.)