



$$I(J^P) = 1(\frac{3}{2}^+) \text{ Status: } ***$$

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 ± 0.7 ^{+1.7} / _{-1.8}	² AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV

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

² Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow K^- \pi^+$ 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 ± 0.6 ^{+1.7} / _{-1.8}	² AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV

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

² Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow K^- \pi^+$ 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} ± 0.1	² AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV

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

² Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow K^- \pi^+$ 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 $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow p K^- \pi^+$ 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 $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow p K^- \pi^+$ decays.

Σ_b^* WIDTH

Σ_b^{*+} WIDTH

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

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

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

Σ_b^{*-} WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
10.4 ± 0.8 OUR AVERAGE			
10.68 ± 0.60 ± 0.33	¹ AAIJ	19A	LHCB $p p$ at 7, 8 TeV
7.5 ^{+2.2} _{-1.8} ^{+0.9} _{-1.4}	² AALTONEN	12F	CDF $p \bar{p}$ at 1.96 TeV

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

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

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
21.2 + 2.0 + 0.4 - 1.9 - 0.3	¹ AALTONEN	07K	CDF $p \bar{p}$ at 1.96 TeV

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

Σ_b^* DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \Lambda_b^0 \pi$	dominant

Σ_b^* BRANCHING RATIOS

$\Gamma(\Lambda_b^0 \pi)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	Γ_1/Γ
dominant	AALTONEN	07K	CDF $p \bar{p}$ at 1.96 TeV	

Σ_b^* REFERENCES

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