



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

In the quark model $\Sigma_b^+, \Sigma_b^0, \Sigma_b^-$ are an isotriplet (uub, udb, ddb) state. The lowest Σ_b ought to have $J^P = 1/2^+$. None of I, J , or P have actually been measured.

Σ_b MASS

Σ_b^+ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5810.56 ± 0.25 OUR AVERAGE			
5810.55 ± 0.11 ± 0.23	¹ AAIJ	19A LHCb	$p\bar{p}$ at 7, 8 TeV
5811.3 $^{+0.9}_{-0.8}$ ± 1.7	² AALTONEN	12F CDF	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
5807.8 $^{+2.0}_{-2.2}$ ± 1.7	³ AALTONEN	07K CDF	Repl. by AALTONEN 12F

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.

³ Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \rightarrow p K^- \pi^+$.

Σ_b^- MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5815.64 ± 0.27 OUR AVERAGE			
5815.64 ± 0.14 ± 0.24	¹ AAIJ	19A LHCb	$p\bar{p}$ at 7, 8 TeV
5815.5 $^{+0.6}_{-0.5}$ ± 1.7	² AALTONEN	12F CDF	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
5815.2 ± 1.0 ± 1.7	³ AALTONEN	07K CDF	Repl. by AALTONEN 12F

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.

³ Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \rightarrow p K^- \pi^+$.

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
−5.06 ± 0.18 OUR AVERAGE			
−5.09 ± 0.18 ± 0.01	¹ AAIJ	19A LHCb	$p\bar{p}$ at 7, 8 TeV
−4.2 $^{+1.1}_{-1.0}$ ± 0.1	² AALTONEN	12F CDF	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
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

Σ_b^+ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5.0 ±0.5 OUR AVERAGE			
4.83±0.31±0.37	¹ AAIJ	19A	LHCB $p\bar{p}$ at 7, 8 TeV
9.7 ^{+3.8} _{-2.8} ^{+1.2} _{-1.1}	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.			

Σ_b^- WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5.3 ±0.5 OUR AVERAGE			
5.33±0.42±0.37	¹ AAIJ	19A	LHCB $p\bar{p}$ at 7, 8 TeV
4.9 ^{+3.1} _{-2.1} ±1.1	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.			

Σ_b DECAY MODES

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

Σ_b BRANCHING RATIOS

$\Gamma(\Lambda_b^0 \pi)/\Gamma_{\text{total}}$				Γ_1/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
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.)