Σ_b

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

In the quark model Σ_b^+, Σ_b^0, Σ_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 OR AVERAGE				
5810.55±0.11±0.23	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
5811.3 $^{+0.9}_{-0.8}$ ±1.7	[2] AALTONEN	12F	CDF	$p\overline{p}$ 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 $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ 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.
[3] Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \to \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \to p K^- \pi^+$.

Σ_b^- MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5815.64±0.27 OR AVERAGE				
5815.64±0.14±0.24	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
5815.5 $^{+0.6}_{-0.5}$ ±1.7	[2] AALTONEN	12F	CDF	$p\overline{p}$ 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 $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ 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.
[3] Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \to \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \to p K^- \pi^+$.

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

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
−5.06±0.18 OR AVERAGE				
−5.09±0.18±0.01	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
−4.2 $^{+1.1}_{-1.0}$ ±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.

Σ_b WIDTH

Σ_b^+ WIDTH

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

Σ_b^- WIDTH

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

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.)