NODE=S026

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.

NODE=S026

Σ_b MASS

NODE=S026205

Σ_b^+ MASS

NODE=S026M+
NODE=S026M+

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5810.56±0.25 OUR 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.
NODE=S026M+;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.
NODE=S026M+;LINKAGE=AL

[3] Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \to \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \to p K^- \pi^+$.
NODE=S026M+;LINKAGE=AA

Σ_b^- MASS

NODE=S026M-
NODE=S026M-

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5815.64±0.27 OUR 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.
NODE=S026M-;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.
NODE=S026M-;LINKAGE=AL

[3] Observed four $\Lambda_b^0 \pi^\pm$ resonances in the fully reconstructed decay mode $\Lambda_b^0 \to \Lambda_c^+ \pi^-$, where $\Lambda_c^+ \to p K^- \pi^+$.
NODE=S026M-;LINKAGE=AA

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

NODE=S026DMI
NODE=S026DMI

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
−5.06±0.18 OUR 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.
NODE=S026DMI;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.
NODE=S026DMI;LINKAGE=AL

Σ_b WIDTH

NODE=S026210

Σ_b^+ WIDTH

NODE=S026W+
NODE=S026W+

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5.0 ±0.5 OUR AVERAGE				
4.83±0.31±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.
NODE=S026W+;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.
NODE=S026W+;LINKAGE=AL

Σ_b^- WIDTH

NODE=S026W-
NODE=S026W-

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5.3 ±0.5 OUR AVERAGE				
5.33±0.42±0.37	[1] AAIJ	19A	LHCB	pp at 7, 8 TeV
4.9 $^{+3.1}_{-2.1}$ ±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.
NODE=S026W-;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays.
NODE=S026W-;LINKAGE=AL

Σ_b DECAY MODES

NODE=S026215;NODE=S026

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\Lambda_b^0\pi$	dominant	DESIG=1

Σ_b BRANCHING RATIOS

NODE=S026225

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

NODE=S026R01

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*	
dominant	AALTONEN	07K	CDF	$p\overline{p}$ at 1.96 TeV	NODE=S026R01

Σ_b REFERENCES

NODE=S026

AAIJ	19A	PRL 122 012001	R. Aaij *et al.*	(LHCb Collab.)	REFID=59550
AALTONEN	12F	PR D85 092011	T. Aaltonen *et al.*	(CDF Collab.)	REFID=54118
AALTONEN	07K	PRL 99 202001	T. Aaltonen *et al.*	(CDF Collab.)	REFID=52023