NODE=S062

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.

NODE=S062

Σ_b^* MASS

NODE=S062205

Σ_b^{*+} MASS

NODE=S062M+
NODE=S062M+

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	$p\overline{p}$ at 1.96 TeV

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

NODE=S062M+;LINKAGE=A
NODE=S062M+;LINKAGE=AL

Σ_b^{*-} MASS

NODE=S062M-
NODE=S062M-

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	$p\overline{p}$ at 1.96 TeV

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

NODE=S062M-;LINKAGE=A
NODE=S062M-;LINKAGE=AL

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

NODE=S062DMI
NODE=S062DMI

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	$p\overline{p}$ at 1.96 TeV

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

NODE=S062DMI;LINKAGE=A
NODE=S062DMI;LINKAGE=AL

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

NODE=S062DMP
NODE=S062DMP

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 $\Lambda_c^+ \to pK^-\pi^+$ decays.

NODE=S062DMP;LINKAGE=A

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

NODE=S062DMM
NODE=S062DMM

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 $\Lambda_c^+ \to pK^-\pi^+$ decays.

NODE=S062DMM;LINKAGE=A

Σ_b^* WIDTH

NODE=S062230

Σ_b^{*+} WIDTH

NODE=S062W+
NODE=S062W+

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
9.4 ±0.5 OUR AVERAGE				
9.34±0.47±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 $\Lambda_c^+ \to pK^-\pi^+$ decays.
[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^-\pi^+$ decays.

NODE=S062W+;LINKAGE=A
NODE=S062W+;LINKAGE=AL

Σ_b^{*-} WIDTH

NODE=S062W-
NODE=S062W-

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. NODE=S062W-;LINKAGE=A

[2] Measured using fully reconstructed $\Lambda_b^0 \to \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \to K^- \pi^+$ decays. NODE=S062W-;LINKAGE=AL

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

NODE=S062DM

NODE=S062DM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
$\mathbf{21.2^{+2.0}_{-1.9}{}^{+0.4}_{-0.3}}$	[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 $m_{\Sigma_b^{*+}} - m_{\Sigma_b^+} = m_{\Sigma_b^{*-}} - m_{\Sigma_b^-}$ NODE=S062DM;LINKAGE=AA

Σ_b^* DECAY MODES

NODE=S062215;NODE=S062

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

DESIG=1

Σ_b^* BRANCHING RATIOS

NODE=S062225

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

NODE=S062R01
NODE=S062R01

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

Σ_b^* REFERENCES

NODE=S062

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