



$I(J^P) = 1(\frac{1}{2}^+)$ 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
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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 $p\bar{p}$ 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
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¹ Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow pK^- \pi^+$ 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 $\Lambda_c^+ \rightarrow pK^- \pi^+$.

Σ_b^- MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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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 $p\bar{p}$ 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
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¹ Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow pK^- \pi^+$ 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 $\Lambda_c^+ \rightarrow pK^- \pi^+$.

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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-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 $p\bar{p}$ at 1.96 TeV

¹ Measured using fully reconstructed $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ and $\Lambda_c^+ \rightarrow pK^- \pi^+$ 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**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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5.0 \pm 0.5 OUR AVERAGE

4.83 \pm 0.31 \pm 0.37	¹ AAIJ	19A	LHCB pp at 7, 8 TeV
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9.7 $\begin{smallmatrix} +3.8 & +1.2 \\ -2.8 & -1.1 \end{smallmatrix}$	² AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV
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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**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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5.3 \pm 0.5 OUR AVERAGE

5.33 \pm 0.42 \pm 0.37	¹ AAIJ	19A	LHCB pp at 7, 8 TeV
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4.9 $\begin{smallmatrix} +3.1 & \pm 1.1 \\ -2.1 & \end{smallmatrix}$	² AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV
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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
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<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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dominant	AALTONEN	07K	CDF $p\bar{p}$ at 1.96 TeV
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 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.)