



$$I(J^P) = 1(\frac{1}{2}^+) \text{ Status: } ***$$

$I, J, P$  need confirmation.

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

## $\Sigma_b$ MASS

### $\Sigma_b^+$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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#### 5810.56 ± 0.25 OUR AVERAGE

5810.55 ± 0.11 ± 0.23	<sup>1</sup> AAIJ	19A	LHCB $pp$ at 7, 8 TeV
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5811.3 $^{+0.9}_{-0.8}$ ± 1.7	<sup>2</sup> AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV
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• • • We do not use the following data for averages, fits, limits, etc. • • •

5807.8 $^{+2.0}_{-2.2}$ ± 1.7	<sup>3</sup> AALTONEN	07K	CDF Repl. by AALTONEN 12F
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<sup>1</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow pK^- \pi^+$  decays.

<sup>2</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow K^- \pi^+$  decays.

<sup>3</sup> Observed four  $\Lambda_b^0 \pi^\pm$  resonances in the fully reconstructed decay mode  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ , where  $\Lambda_c^+ \rightarrow pK^- \pi^+$ .

### $\Sigma_b^-$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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#### 5815.64 ± 0.27 OUR AVERAGE

5815.64 ± 0.14 ± 0.24	<sup>1</sup> AAIJ	19A	LHCB $pp$ at 7, 8 TeV
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5815.5 $^{+0.6}_{-0.5}$ ± 1.7	<sup>2</sup> AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV
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• • • We do not use the following data for averages, fits, limits, etc. • • •

5815.2 ± 1.0 ± 1.7	<sup>3</sup> AALTONEN	07K	CDF Repl. by AALTONEN 12F
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<sup>1</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow pK^- \pi^+$  decays.

<sup>2</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow K^- \pi^+$  decays.

<sup>3</sup> 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	<sup>1</sup> AAIJ	19A	LHCB $pp$ at 7, 8 TeV
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-4.2 $^{+1.1}_{-1.0}$ ± 0.1	<sup>2</sup> AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV
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<sup>1</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow pK^- \pi^+$  decays.

<sup>2</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow K^- \pi^+$  decays.

## $\Sigma_b$ WIDTH

### $\Sigma_b^+$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>5.0 ± 0.5 OUR AVERAGE</b>			
4.83 ± 0.31 ± 0.37	<sup>1</sup> AAIJ	19A	LHCB $pp$ at 7, 8 TeV
9.7 $\begin{smallmatrix} +3.8 & +1.2 \\ -2.8 & -1.1 \end{smallmatrix}$	<sup>2</sup> AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV

<sup>1</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow p K^- \pi^+$  decays.

<sup>2</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow K^- \pi^+$  decays.

### $\Sigma_b^-$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>5.3 ± 0.5 OUR AVERAGE</b>			
5.33 ± 0.42 ± 0.37	<sup>1</sup> AAIJ	19A	LHCB $pp$ at 7, 8 TeV
4.9 $\begin{smallmatrix} +3.1 & \pm 1.1 \\ -2.1 & \end{smallmatrix}$	<sup>2</sup> AALTONEN	12F	CDF $p\bar{p}$ at 1.96 TeV

<sup>1</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow p K^- \pi^+$  decays.

<sup>2</sup> Measured using fully reconstructed  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_c^+ \rightarrow K^- \pi^+$  decays.

## $\Sigma_b$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \Lambda_b^0 \pi$	dominant

## $\Sigma_b$ BRANCHING RATIOS

$\Gamma(\Lambda_b^0 \pi)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	$\Gamma_1/\Gamma$
<b>dominant</b>	AALTONEN	07K	CDF	$p\bar{p}$ at 1.96 TeV

## $\Sigma_b$ 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.)