# $\Sigma_b$

$I(J^P) = 1(\frac{1}{2}^+)$ 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 $\Sigma_b$ 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* |
|---|---|---|---|---|
| **5807.8±2.7 OUR FIT** | | | | |
| **5807.8$^{+2.0}_{-2.2}$±1.7** | [1] AALTONEN | 07K | CDF | $p\overline{p}$ at 1.96 TeV |

### $\Sigma_b^-$ MASS

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|
| **5815.2±2.0 OUR FIT** | | | | |
| **5815.2±1.0±1.7** | [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 $\Lambda_c^+ \to pK^-\pi^+$.

## $\Sigma_b$ DECAY MODES

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

## $\Sigma_b$ BRANCHING RATIOS

### $\Gamma(\Lambda_b^0\pi)/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma$

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

## $\Sigma_b$ REFERENCES

AALTONEN 07K PRL 99 202001 T. Aaltonen *et al.* (CDF Collab.)