

BOTTOM BARYONS ($B = -1$)

$$\Lambda_b^0 = udb, \Xi_b^0 = usb, \Xi_b^- = dsb$$

Λ_b^0

$$I(J^P) = 0(\frac{1}{2}^+)$$

$I(J^P)$ not yet measured; $0(\frac{1}{2}^+)$ is the quark model prediction.

$$\text{Mass } m = 5624 \pm 9 \text{ MeV} \quad (S = 1.8)$$

$$\text{Mean life } \tau = (1.229 \pm 0.080) \times 10^{-12} \text{ s}$$

$$c\tau = 368 \text{ } \mu\text{m}$$

These branching fractions are actually an average over weakly decaying b -baryons weighted by their production rates in Z decay (or high-energy $p\bar{p}$), branching ratios, and detection efficiencies. They scale with the LEP b -baryon production fraction $B(b \rightarrow b\text{-baryon})$ and are evaluated for our value $B(b \rightarrow b\text{-baryon}) = (9.9 \pm 1.7)\%$.

The branching fractions $B(b\text{-baryon} \rightarrow \Lambda \ell^- \bar{\nu}_\ell \text{ anything})$ and $B(\Lambda_b^0 \rightarrow \Lambda_c^+ \ell^- \bar{\nu}_\ell \text{ anything})$ are not pure measurements because the underlying measured products of these with $B(b \rightarrow b\text{-baryon})$ were used to determine $B(b \rightarrow b\text{-baryon})$, as described in the note "Production and Decay of b -Flavored Hadrons."

For inclusive branching fractions, e.g., $B \rightarrow D^\pm \text{ anything}$, the values usually are multiplicities, not branching fractions. They can be greater than one.

Λ_b^0 DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$J/\psi(1S)\Lambda$	$(4.7 \pm 2.8) \times 10^{-4}$		1744
$\Lambda_c^+ \pi^-$	seen		2345
$\Lambda_c^+ a_1(1260)^-$	seen		2156
$\Lambda_c^+ \ell^- \bar{\nu}_\ell \text{ anything}$	[a] $(9.2 \pm 2.1) \%$		—
$p\pi^-$	$< 5.0 \times 10^{-5}$	90%	2732
pK^-	$< 5.0 \times 10^{-5}$	90%	2711
$\Lambda\gamma$	$< 1.3 \times 10^{-3}$	90%	2701

b -baryon ADMIXTURE ($\Lambda_b, \Xi_b, \Sigma_b, \Omega_b$)

$$\text{Mean life } \tau = (1.208 \pm 0.051) \times 10^{-12} \text{ s}$$

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The branching fractions $B(b\text{-baryon} \rightarrow \Lambda\ell^-\bar{\nu}_\ell\text{anything})$ and $B(\Lambda_b^0 \rightarrow \Lambda_c^+\ell^-\bar{\nu}_\ell\text{anything})$ are not pure measurements because the underlying measured products of these with $B(b \rightarrow b\text{-baryon})$ were used to determine $B(b \rightarrow b\text{-baryon})$, as described in the note "Production and Decay of b -Flavored Hadrons."

For inclusive branching fractions, *e.g.*, $B \rightarrow D^\pm\text{anything}$, the values usually are multiplicities, not branching fractions. They can be greater than one.

b -baryon ADMIXTURE DECAY MODES

$(\Lambda_b, \Xi_b, \Sigma_b, \Omega_b)$	Fraction (Γ_i/Γ)	p (MeV/c)
$p\mu^-\bar{\nu}$ anything	$(4.9^{+2.1}_{-1.8})\%$	—
$p\ell\bar{\nu}_\ell$ anything	$(4.8 \pm 1.1)\%$	—
p anything	$(60 \pm 20)\%$	—
$\Lambda\ell^-\bar{\nu}_\ell$ anything	$(3.2 \pm 0.6)\%$	—
$\Lambda/\bar{\Lambda}$ anything	$(33 \pm 7)\%$	—
$\Xi^-\ell^-\bar{\nu}_\ell$ anything	$(5.6 \pm 1.5) \times 10^{-3}$	—

NOTES

[a] Not a pure measurement. See note at head of Λ_b^0 Decay Modes.