

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 $B(b \rightarrow b\text{-baryon}) = (11.8 \pm 2.0)\%$.

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."

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
$\Lambda_c^+ \ell^- \bar{\nu}_\ell \text{ anything}$	[s] $(7.7 \pm 1.8) \%$		—
$p\pi^-$	$< 5.0 \times 10^{-5}$	90%	2732
pK^-	$< 5.0 \times 10^{-5}$	90%	2711

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

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

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b-baryon ADMIXTURE ($\Lambda_b, \Xi_b, \Sigma_b, \Omega_b$)	Fraction (Γ_i/Γ)	p (MeV/c)
$p\mu^- \bar{\nu}$ anything	(4.2 ⁺ ₋ 1.7) %	—
$p\ell \bar{\nu}_\ell$ anything	(4.0 ± 1.0) %	—
p anything	(50 ± 17) %	—
$\Lambda \ell^- \bar{\nu}_\ell$ anything	(2.7 ± 0.5) %	—
$\Lambda/\bar{\Lambda}$ anything	(28 ± 6) %	—
$\Xi^- \ell^- \bar{\nu}_\ell$ anything	(4.7 ± 1.3) × 10 ⁻³	—