BOTTOM BARYONS
($B = -1$)

$\Lambda_b^0 = u\,d\,b$, $\Xi_b^0 = u\,s\,b$, $\Xi_b^- = d\,s\,b$

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.

Mass $m = 5624 \pm 9$ MeV   (S = 1.8)

Mean life $\tau = (1.230 \pm 0.074) \times 10^{-12}$ s

$c\tau = 369$ μm

These branching fractions are actually an average over weakly decaying b-baryons weighted by their production rates in Z decay (or high-energy $p\overline{p}$), branching ratios, and detection efficiencies. They scale with the LEP b-baryon production fraction B($b \rightarrow$ b-baryon) and are evaluated for our value B($b \rightarrow$ b-baryon) = (10.0 ± 2.0)%.

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

For inclusive branching fractions, *e.g.*, $B \rightarrow D^\pm$ 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		2155
$\Lambda_c^+ \ell^- \overline{\nu}_\ell$ anything	[a]	(9.1 ± 2.3) %		–
$\Lambda_c^+ \ell^- \overline{\nu}_\ell$		$(5.0^{+1.9}_{-1.4})$ %		2347
$\Lambda_c^+ \pi^+ \pi^- \ell^- \overline{\nu}_\ell$		(5.6 ± 3.1) %		2337
$p\,h^-$	[b]	$< 2.3 \times 10^{-5}$	90%	2732
$p\pi^-$		$< 5.0 \times 10^{-5}$	90%	2732
pK^-		$< 5.0 \times 10^{-5}$	90%	2711
$\Lambda\gamma$		$< 1.3 \times 10^{-3}$	90%	2701

b-baryon ADMIXTURE (Λ_b, Ξ_b, Σ_b, Ω_b)

Mean life $\tau = (1.209 \pm 0.049) \times 10^{-12}$ s

These branching fractions are actually an average over weakly decaying b-baryons weighted by their production rates in Z decay (or high-energy $p\overline{p}$), branching ratios, and detection efficiencies. They scale with the LEP b-baryon production fraction B($b \to$ b-baryon) and are evaluated for our value B($b \to$ b-baryon) = (10.0 ± 2.0)%.

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

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

***b*-baryon ADMIXTURE DECAY MODES** (Λ_b,Ξ_b,Σ_b,Ω_b)	Fraction (Γ_i/Γ)	p (MeV/c)
$p \mu^- \overline{\nu}$anything	$(4.9^{+2.1}_{-1.8})$ %	–
$p \ell \overline{\nu}_\ell$anything	(4.7 ± 1.2) %	–
$p$anything	(59 ± 21) %	–
$\Lambda \ell^- \overline{\nu}_\ell$anything	(3.2 ± 0.7) %	–
$\Lambda / \overline{\Lambda}$anything	(33 ± 8) %	–
$\Xi^- \ell^- \overline{\nu}_\ell$anything	$(5.5 \pm 1.6) \times 10^{-3}$	–

NOTES

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

[*b*] Here h^- means π^- or K^-.