

BOTTOM BARYONS

($B = -1$)

$$\Lambda_b^0 = udb, \Sigma_b^0 = udb, \Sigma_b^+ = uub, \Sigma_b^- = ddb$$

$$\Xi_b^0 = usb, \Xi_b^- = dsb, \Omega_b^- = ssb$$

 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.

$$\text{Mass } m = 5619.60 \pm 0.17 \text{ MeV}$$

$$m_{\Lambda_b^0} - m_{B^0} = 339.2 \pm 1.4 \text{ MeV}$$

$$m_{\Lambda_b^0} - m_{B^+} = 339.72 \pm 0.28 \text{ MeV}$$

$$\text{Mean life } \tau = (1.471 \pm 0.009) \times 10^{-12} \text{ s}$$

$$c\tau = 441.0 \text{ } \mu\text{m}$$

$$A_{CP}(\Lambda_b \rightarrow p\pi^-) = -0.025 \pm 0.029 \quad (S = 1.2)$$

$$A_{CP}(\Lambda_b \rightarrow pK^-) = -0.025 \pm 0.022$$

$$A_{CP}(\Lambda_b \rightarrow DpK^-) = 0.12 \pm 0.09$$

$$\Delta A_{CP}(pK^-/\pi^-) = 0.014 \pm 0.024$$

$$A_{CP}(\Lambda_b \rightarrow p\bar{K}^0\pi^-) = 0.22 \pm 0.13$$

$$\Delta A_{CP}(J/\psi p\pi^-/K^-) = (5.7 \pm 2.7) \times 10^{-2}$$

$$A_{CP}(\Lambda_b \rightarrow \Lambda K^+\pi^-) = -0.53 \pm 0.25$$

$$A_{CP}(\Lambda_b \rightarrow \Lambda K^+K^-) = -0.28 \pm 0.12$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow pK^-\mu^+\mu^-) = (-4 \pm 5) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow p\pi^-\pi^+\pi^-) = (1.1 \pm 2.6) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow (p\pi^-\pi^+\pi^-)_{LBM}) = (4 \pm 4) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow p a_1(1260)^-) = (-1 \pm 4) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow N(1520)^0 \rho(770)^0) = (2 \pm 5) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Delta(1232)^{++}\pi^-\pi^-) = (0.1 \pm 3.3) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow pK^-\pi^+\pi^-) = (3.2 \pm 1.3) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow (pK^-\pi^+\pi^-)_{LBM}) = (3.5 \pm 1.6) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow N(1520)^0 K^*(892)^0) = (5.5 \pm 2.5) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Lambda(1520)\rho(770)^0) = (1 \pm 6) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Delta(1232)^{++}K^-\pi^-) = (4.4 \pm 2.7) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow pK_1(1410)^-) = (5 \pm 4) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow pK^-K^+\pi^-) = (-7 \pm 5) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow pK^-K^+K^-) = (0.2 \pm 1.9) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Lambda(1520)\phi(1020)) = (4 \pm 6) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow (pK^-)_{highmass}\phi(1020)) = (-0.7 \pm 3.4) \times 10^{-2}$$

$$\Delta A_{CP}(\Lambda_b^0 \rightarrow (pK^-K^+K^-)_{LBM}) = (2.7 \pm 2.4) \times 10^{-2}$$

$$\begin{aligned}
A_{FB}^{\ell}(\mu\mu) \text{ in } \Lambda_b \rightarrow \Lambda\mu^+\mu^- &= -0.39 \pm 0.04 \\
\Delta(A_{FB}^{\ell}(\mu\mu)) \text{ in } \Lambda_b \rightarrow \Lambda\mu^+\mu^- &= -0.05 \pm 0.09 \\
A_{FB}^h(p\pi) \text{ in } \Lambda_b \rightarrow \Lambda(p\pi)\mu^+\mu^- &= -0.30 \pm 0.05 \\
A_{FB}^{\ell h} \text{ in } \Lambda_b \rightarrow \Lambda\mu^+\mu^- &= 0.25 \pm 0.04
\end{aligned}$$

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., $\Lambda_b \rightarrow \bar{\Lambda}_c\text{anything}$, the values usually are multiplicities, not branching fractions. They can be greater than one.

Λ_b^0 DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
$J/\psi(1S)\Lambda \times B(b \rightarrow \Lambda_b^0)$	$(5.8 \pm 0.8) \times 10^{-5}$		1740
$\rho D^0\pi^-$	$(6.2 \pm 0.6) \times 10^{-4}$		2370
$\rho D^+\pi^-\pi^-$	$(2.7 \pm 0.4) \times 10^{-4}$		2332
$\rho D^*(2010)^+\pi^-\pi^-$	$(5.2 \pm 1.0) \times 10^{-4}$		2277
ρD^0K^-	$(4.5 \pm 0.8) \times 10^{-5}$		2269
$\rho J/\psi\pi^-$	$(2.6^{+0.5}_{-0.4}) \times 10^{-5}$		1755
$\rho\pi^- J/\psi, J/\psi \rightarrow \mu^+\mu^-$	$(1.6 \pm 0.8) \times 10^{-6}$		–
$\rho J/\psi K^-$	$(3.2^{+0.6}_{-0.5}) \times 10^{-4}$		1589
$\rho\eta_c(1S)K^-$	$(1.06 \pm 0.26) \times 10^{-4}$		1670
$P_{c\bar{c}}(4312)^+K^-, P_{c\bar{c}}^+ \rightarrow$ $\rho\eta_c(1S)$	$< 2.5 \times 10^{-5}$	CL=95%	–
$P_{c\bar{c}}(4380)^+K^-, P_{c\bar{c}}^+ \rightarrow$ $\rho J/\psi$	[a] $(2.7 \pm 1.4) \times 10^{-5}$		–
$P_c(4450)^+K^-, P_c \rightarrow$ $\rho J/\psi$	[a] $(1.3 \pm 0.4) \times 10^{-5}$		–
$\chi_{c1}(1P)\rho K^-$	$(7.6^{+1.5}_{-1.3}) \times 10^{-5}$		1242
$\chi_{c1}(1P)\rho\pi^-$	$(5.0^{+1.3}_{-1.1}) \times 10^{-6}$		1462
$\chi_{c2}(1P)\rho K^-$	$(7.7^{+1.6}_{-1.4}) \times 10^{-5}$		1198
$\chi_{c2}(1P)\rho\pi^-$	$(4.8 \pm 1.9) \times 10^{-6}$		1427
$\rho J/\psi(1S)\pi^+\pi^-K^-$	$(6.6^{+1.3}_{-1.1}) \times 10^{-5}$		1410
$\rho\psi(2S)K^-$	$(6.6^{+1.2}_{-1.0}) \times 10^{-5}$		1063
$\chi_{c1}(3872)\rho K^-$	$(3.5 \pm 1.3) \times 10^{-5}$		837
$\chi_{c1}(3872)\Lambda(1520)$	$(2.0 \pm 0.9) \times 10^{-5}$		721
$\psi(2S)\rho\pi^-$	$(7.5^{+1.6}_{-1.4}) \times 10^{-6}$		1320

$\rho\bar{K}^0\pi^-$	$(1.3 \pm 0.4) \times 10^{-5}$		2693
$\rho K^0 K^-$	$< 3.5 \times 10^{-6}$	CL=90%	2639
$\Lambda_c^+ \pi^-$	$(4.9 \pm 0.4) \times 10^{-3}$	S=1.2	2342
$\Lambda_c^+ K^-$	$(3.56 \pm 0.28) \times 10^{-4}$	S=1.2	2314
$\Lambda_c^+ a_1(1260)^-$	seen		2153
$\Lambda_c^+ D^-$	$(4.6 \pm 0.6) \times 10^{-4}$		1886
$\Lambda_c^+ D_s^-$	$(1.10 \pm 0.10) \%$		1833
$\Lambda_c^+ \pi^+ \pi^- \pi^-$	$(7.6 \pm 1.1) \times 10^{-3}$	S=1.1	2323
$\Lambda_c(2595)^+ \pi^-$,	$(3.4 \pm 1.4) \times 10^{-4}$		2210
$\Lambda_c(2595)^+ \rightarrow \Lambda_c^+ \pi^+ \pi^-$			
$\Lambda_c(2625)^+ \pi^-$,	$(3.3 \pm 1.3) \times 10^{-4}$		2193
$\Lambda_c(2625)^+ \rightarrow \Lambda_c^+ \pi^+ \pi^-$			
$\Sigma_c(2455)^0 \pi^+ \pi^-$, $\Sigma_c^0 \rightarrow$	$(5.7 \pm 2.2) \times 10^{-4}$		2265
$\Lambda_c^+ \pi^-$			
$\Sigma_c(2455)^{++} \pi^- \pi^-$, $\Sigma_c^{++} \rightarrow$	$(3.2 \pm 1.5) \times 10^{-4}$		2265
$\Lambda_c^+ \pi^+$			
$\Lambda_c^+ K^+ K^- \pi^-$	$(1.02 \pm 0.11) \times 10^{-3}$		2184
$\Lambda_c^+ p\bar{p}\pi^-$	$(2.63 \pm 0.27) \times 10^{-4}$		1805
$\Sigma_c(2455)^0 p\bar{p}$, $\Sigma_c^0 \rightarrow$	$(2.3 \pm 0.5) \times 10^{-5}$		—
$\Lambda_c^+ \pi^-$			
$\Sigma_c(2520)^0 p\bar{p}$, $\Sigma_c(2520)^0 \rightarrow$	$(3.1 \pm 0.7) \times 10^{-5}$		—
$\Lambda_c^+ \pi^-$			
$\Lambda_c^+ \ell^- \bar{\nu}_\ell$ anything	[b] $(10.9 \pm 2.2) \%$		—
$\Lambda_c^+ \ell^- \bar{\nu}_\ell$	$(6.2 \begin{smallmatrix} +1.4 \\ -1.3 \end{smallmatrix}) \%$		2345
$\Lambda_c^+ \tau^- \bar{\nu}_\tau$	$(1.9 \pm 0.5) \%$		1933
$\Lambda_c^+ \pi^+ \pi^- \ell^- \bar{\nu}_\ell$	$(5.6 \pm 3.1) \%$		2335
$\Lambda_c(2595)^+ \ell^- \bar{\nu}_\ell$	$(7.9 \begin{smallmatrix} +4.0 \\ -3.5 \end{smallmatrix}) \times 10^{-3}$		2212
$\Lambda_c(2625)^+ \ell^- \bar{\nu}_\ell$	$(1.3 \begin{smallmatrix} +0.6 \\ -0.5 \end{smallmatrix}) \%$		2195
ρh^-	[c] $< 2.3 \times 10^{-5}$	CL=90%	2730
$\rho\pi^-$	$(4.6 \pm 0.8) \times 10^{-6}$		2730
ρK^-	$(5.5 \pm 1.0) \times 10^{-6}$		2709
ρD_s^-	$(1.25 \pm 0.13) \times 10^{-5}$		2364
$\rho\mu^- \bar{\nu}_\mu$	$(4.1 \pm 1.0) \times 10^{-4}$		2730
$\Lambda\mu^+ \mu^-$	$(1.08 \pm 0.28) \times 10^{-6}$		2695
$\rho\pi^- \mu^+ \mu^-$	$(6.9 \pm 2.5) \times 10^{-8}$		2720
$\rho K^- e^+ e^-$	$(3.1 \pm 0.6) \times 10^{-7}$		2708
$\rho K^- \mu^+ \mu^-$	$(2.6 \begin{smallmatrix} +0.5 \\ -0.4 \end{smallmatrix}) \times 10^{-7}$		2685
$\Lambda\gamma$	$(7.1 \pm 1.7) \times 10^{-6}$		2699

$\Lambda\eta$	$(9 \begin{smallmatrix} +7 \\ -5 \end{smallmatrix}) \times 10^{-6}$	2670
$\Lambda\eta'(958)$	$< 3.1 \times 10^{-6}$	CL=90% 2611
$\Lambda\pi^+\pi^-$	$(4.6 \pm 1.9) \times 10^{-6}$	2692
$\Lambda K^+\pi^-$	$(5.6 \pm 1.2) \times 10^{-6}$	2660
ΛK^+K^-	$(1.60 \pm 0.21) \times 10^{-5}$	2605
$\Lambda\phi$	$(9.8 \pm 2.6) \times 10^{-6}$	2599
$p\pi^-\pi^+\pi^-$	$(2.08 \pm 0.21) \times 10^{-5}$	2715
$pK^-K^+\pi^-$	$(4.0 \pm 0.6) \times 10^{-6}$	2612
$pK^-\pi^+\pi^-$	$(5.0 \pm 0.5) \times 10^{-5}$	2675
$pK^-K^+K^-$	$(1.25 \pm 0.13) \times 10^{-5}$	2524

$\Lambda_b(5912)^0$

$J^P = \frac{1}{2}^-$

Mass $m = 5912.19 \pm 0.17$ MeV
 Full width $\Gamma < 0.25$ MeV, CL = 90%

$\Lambda_b(5912)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0\pi^+\pi^-$	seen	86

$\Lambda_b(5920)^0$

$J^P = \frac{3}{2}^-$

Mass $m = 5920.09 \pm 0.17$ MeV
 Full width $\Gamma < 0.19$ MeV, CL = 90%

$\Lambda_b(5920)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0\pi^+\pi^-$	seen	108

$\Lambda_b(6070)^0$

$J^P = \frac{1}{2}^+$

Quantum numbers based on quark model expectations.

Mass $m = 6072.3 \pm 2.9$ MeV
 Full width $\Gamma = 72 \pm 11$ MeV

$\Lambda_b(6070)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0\pi^+\pi^-$	seen	343

$\Lambda_b(6146)^0$

$$J^P = \frac{3}{2}^+$$

Mass $m = 6146.2 \pm 0.4$ MeV

$$m_{\Lambda_b(6146)^0} - m_{\Lambda_b^0} = 526.55 \pm 0.34$$
 MeV

Full width $\Gamma = 2.9 \pm 1.3$ MeV **$\Lambda_b(6146)^0$ DECAY MODES**

	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 \pi^+ \pi^-$	seen	427

 $\Lambda_b(6152)^0$

$$J^P = \frac{5}{2}^+$$

Mass $m = 6152.5 \pm 0.4$ MeV

$$m_{\Lambda_b(6152)^0} - m_{\Lambda_b^0} = 532.89 \pm 0.28$$
 MeV

$$m_{\Lambda_b(6152)^0} - m_{\Lambda_b(6146)^0} = 6.34 \pm 0.32$$
 MeV

Full width $\Gamma = 2.1 \pm 0.9$ MeV **$\Lambda_b(6152)^0$ DECAY MODES**

	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 \pi^+ \pi^-$	seen	434

 Σ_b

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

 I, J, P need confirmation.Mass $m(\Sigma_b^+) = 5810.56 \pm 0.25$ MeVMass $m(\Sigma_b^-) = 5815.64 \pm 0.27$ MeV

$$m_{\Sigma_b^+} - m_{\Sigma_b^-} = -5.06 \pm 0.18$$
 MeV

 $\Gamma(\Sigma_b^+) = 5.0 \pm 0.5$ MeV $\Gamma(\Sigma_b^-) = 5.3 \pm 0.5$ MeV **Σ_b DECAY MODES**

	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 \pi$	dominant	133

 Σ_b^*

$$I(J^P) = 1(\frac{3}{2}^+)$$

 I, J, P need confirmation.Mass $m(\Sigma_b^{*+}) = 5830.32 \pm 0.27$ MeVMass $m(\Sigma_b^{*-}) = 5834.74 \pm 0.30$ MeV

$$m_{\Sigma_b^{*+}} - m_{\Sigma_b^{*-}} = -4.37 \pm 0.33$$
 MeV ($S = 1.6$)

$$\begin{aligned}
 m_{\Sigma_b^{*+}} - m_{\Sigma_b^+} &= 19.73 \pm 0.18 \\
 m_{\Sigma_b^{*-}} - m_{\Sigma_b^-} &= 19.09 \pm 0.22 \\
 \Gamma(\Sigma_b^{*+}) &= 9.4 \pm 0.5 \text{ MeV} \\
 \Gamma(\Sigma_b^{*-}) &= 10.4 \pm 0.8 \text{ MeV} \quad (S = 1.3) \\
 m_{\Sigma_b^*} - m_{\Sigma_b} &= 21.2 \pm 2.0 \text{ MeV}
 \end{aligned}$$

Σ_b^* DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 \pi$	dominant	159

$\Sigma_b(6097)^+$

$$J^P = ??$$

$$\begin{aligned}
 \text{Mass } m &= 6095.8 \pm 1.7 \text{ MeV} \\
 \text{Full width } \Gamma &= 31 \pm 6 \text{ MeV}
 \end{aligned}$$

$\Sigma_b(6097)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b \pi^+ \times B(b \rightarrow \Sigma_b(6097)^+)$	seen	–

$\Sigma_b(6097)^-$

$$J^P = ??$$

$$\begin{aligned}
 \text{Mass } m &= 6098.0 \pm 1.8 \text{ MeV} \\
 \text{Full width } \Gamma &= 29 \pm 4 \text{ MeV}
 \end{aligned}$$

$\Sigma_b(6097)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b \pi^- \times B(b \rightarrow \Sigma_b(6097)^-)$	seen	–

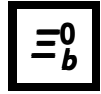
Ξ_b^-

$$\begin{aligned}
 I(J^P) &= \frac{1}{2}(\frac{1}{2}^+) \\
 I, J, P &\text{ need confirmation.}
 \end{aligned}$$

$$\begin{aligned}
 m(\Xi_b^-) &= 5797.0 \pm 0.6 \text{ MeV} \quad (S = 1.7) \\
 m_{\Xi_b^-} - m_{\Lambda_b^0} &= 177.46 \pm 0.31 \text{ MeV} \quad (S = 1.3) \\
 m_{\Xi_b^-} - m_{\Xi_b^0} &= 5.9 \pm 0.6 \text{ MeV} \\
 \text{Mean life } \tau_{\Xi_b^-} &= (1.572 \pm 0.040) \times 10^{-12} \text{ s}
 \end{aligned}$$

Ξ_b^- DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$J/\psi \Xi^- \times B(b \rightarrow \Xi_b^-)$	$(1.02^{+0.26}_{-0.21}) \times 10^{-5}$		1782
$J/\psi \Lambda K^- \times B(b \rightarrow \Xi_b^-)$	$(2.5 \pm 0.4) \times 10^{-6}$		1631
$p K^- K^- \times B(b \rightarrow \Xi_b^-)$	$(3.7 \pm 0.8) \times 10^{-8}$		2731

pK^-K^-	seen	2731
$pK^-\pi^-$	seen	2783
$\Lambda_b^0\pi^- \times B(b \rightarrow \Xi_b^-)/B(b \rightarrow \Lambda_b^0)$	$(7.0 \pm 0.9) \times 10^{-4}$	99
$\Xi_c^0\pi^-$	seen	2367
$\Sigma(1385)K^-$	$(2.6 \pm 2.3) \times 10^{-7}$	2707
$\Lambda(1405)K^-$	$(1.9 \pm 1.2) \times 10^{-7}$	2702
$\Lambda(1520)K^-$	$(7.6 \pm 3.2) \times 10^{-7}$	2673
$\Lambda(1670)K^-$	$(4.5 \pm 2.3) \times 10^{-7}$	2629
$\Sigma(1775)K^-$	$(2.2 \pm 1.5) \times 10^{-7}$	2599
$\Sigma(1915)K^-$	$(2.6 \pm 2.5) \times 10^{-7}$	2553
$\Xi^- \gamma$	$< 1.3 \times 10^{-4}$	95% -



$I(J^P) = \frac{1}{2}(\frac{1}{2}^+)$
 I, J, P need confirmation.

$$m(\Xi_b^0) = 5791.9 \pm 0.5 \text{ MeV}$$

$$m_{\Xi_b^0} - m_{\Lambda_b^0} = 172.5 \pm 0.4 \text{ MeV}$$

$$\text{Mean life } \tau_{\Xi_b^0} = (1.480 \pm 0.030) \times 10^{-12} \text{ s}$$

Ξ_b^0 DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	P (MeV/c)
$pD^0K^- \times B(b \rightarrow \Xi_b^0)$	$(1.7 \pm 0.5) \times 10^{-6}$		2374
$p\bar{K}^0\pi^- \times B(b \rightarrow \Xi_b^0)/B(\bar{b} \rightarrow B^0)$	$< 1.6 \times 10^{-6}$	90%	2783
$pK^0K^- \times B(b \rightarrow \Xi_b^0)/B(\bar{b} \rightarrow B^0)$	$< 1.1 \times 10^{-6}$	90%	2730
$\Lambda\pi^+\pi^- \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$< 1.7 \times 10^{-6}$	90%	2781
$\Lambda K^-\pi^+ \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$< 8 \times 10^{-7}$	90%	2751
$\Lambda K^+K^- \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$< 3 \times 10^{-7}$	90%	2698
$J/\psi\Lambda$	seen		1868
$J/\psi\Xi^0$	seen		1785
$\Lambda_c^+K^- \times B(b \rightarrow \Xi_b^0)$	$(6 \pm 4) \times 10^{-7}$		2416
$pK^-\pi^+\pi^- \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$(1.9 \pm 0.4) \times 10^{-6}$		2766
$pK^-K^-\pi^+ \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$(1.70 \pm 0.30) \times 10^{-6}$		2704
$pK^-K^+K^- \times B(b \rightarrow \Xi_b^0)/B(b \rightarrow \Lambda_b^0)$	$(1.7 \pm 0.9) \times 10^{-7}$		2620

$\Xi'_b(5935)^-$

$$J^P = \frac{1}{2}^+$$

Mass $m = 5935.1 \pm 0.5$ MeVFull width $\Gamma = 0.03 \pm 0.032$ MeV

$\Xi'_b(5935)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 \pi^- \times B(\bar{b} \rightarrow \Xi'_b(5935)^-)/B(\bar{b} \rightarrow \Xi_b^0)$	$(11.8 \pm 1.8) \%$	31

 $\Xi_b(5945)^0$

$$J^P = \frac{3}{2}^+$$

Mass $m = 5952.3 \pm 0.6$ MeVFull width $\Gamma = 0.87 \pm 0.08$ MeV

$\Xi_b(5945)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^- \pi^+$	seen	78

 $\Xi_b(5955)^-$

$$J^P = \frac{3}{2}^+$$

Mass $m = 5955.7 \pm 0.5$ MeVFull width $\Gamma = 1.43 \pm 0.11$ MeV

$\Xi_b(5955)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 \pi^- \times B(\bar{b} \rightarrow \Xi_b^*(5955)^-)/B(\bar{b} \rightarrow \Xi_b^0)$	$(20.7 \pm 3.5) \%$	84

 $\Xi_b(6087)^0$

$$I(J^P) = \frac{1}{2}(\frac{3}{2}^-)$$

 J, P need confirmation.

Mass $m = 6087.2 \pm 0.5$ MeVFull width $\Gamma = 2.4 \pm 0.5$ MeV

$\Xi_b(6087)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 \pi^+ \pi^-$	seen	–

 $\Xi_b(6095)^0$

$$I(J^P) = \frac{1}{2}(\frac{3}{2}^-)$$

 J, P need confirmation.

Mass $m = 6095.3 \pm 0.5$ MeVFull width $\Gamma = 0.50 \pm 0.35$ MeV

$\Xi_b(6095)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 \pi^+ \pi^-$	seen	—

$\Xi_b(6100)^-$ $J^P = \frac{3}{2}^-$
 J, P need confirmation.
 Mass $m = 6099.8 \pm 0.6$ MeV
 Full width $\Gamma = 0.94 \pm 0.31$ MeV

$\Xi_b(6100)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^- \pi^+ \pi^-$	seen	128

$\Xi_b(6227)^-$ $J^P = ??$
 Mass $m = 6227.9 \pm 0.9$ MeV
 Full width $\Gamma = 19.9 \pm 2.6$ MeV

$\Xi_b(6227)^-$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)
$\Lambda_b^0 K^- \times B(b \rightarrow \Xi_b(6227))/B(b \rightarrow \Lambda_b^0)$	$(3.20 \pm 0.35) \times 10^{-3}$		336
$\Xi_b^0 \pi^- \times B(b \rightarrow \Xi_b(6227))/B(b \rightarrow \Xi_b^0)$	$(2.8 \pm 1.1) \%$	1.8	398

$\Xi_b(6227)^0$ $J^P = ??$
 Mass $m = 6226.8 \pm 1.6$ MeV
 Full width $\Gamma = 19_{-4}^{+5}$ MeV

$\Xi_b(6227)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^- \pi^+ \times B(b \rightarrow \Xi_b(6227)^0)/B(b \rightarrow \Xi_b^-)$	$(4.5 \pm 0.9) \%$	398

$\Xi_b(6327)^0$ $J^P = ??$
 Mass $m = 6327.28 \pm 0.35$ MeV
 Full width $\Gamma < 2.56$ MeV, CL = 95%

$\Xi_b(6327)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 K^- \pi^+$	seen	298

 $\Xi_b(6333)^0$

$$J^P = ??$$

Mass $m = 6332.69 \pm 0.28$ MeVFull width $\Gamma < 1.92$ MeV, CL = 95%

$\Xi_b(6333)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_b^0 K^- \pi^+$	seen	309

 Ω_b^-

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

 I, J, P need confirmation.Mass $m = 6045.8 \pm 0.8$ MeV

$$m_{\Omega_b^-} - m_{\Lambda_b^0} = 426.4 \pm 2.2$$
 MeV

$$m_{\Omega_b^-} - m_{\Xi_b^-} = 248.5 \pm 0.6$$
 MeV

$$\text{Mean life } \tau = (1.64^{+0.18}_{-0.17}) \times 10^{-12}$$
 s

$$\tau(\Omega_b^-)/\tau(\Xi_b^-) \text{ mean life ratio} = 1.11 \pm 0.16$$

Ω_b^- DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
$J/\psi \Omega^- \times B(b \rightarrow \Omega_b)$	$(1.4^{+0.5}_{-0.4}) \times 10^{-6}$	S=1.6	1805
$p K^- K^- \times B(\bar{b} \rightarrow \Omega_b)$	$< 2.3 \times 10^{-9}$	CL=90%	2865
$p \pi^- \pi^- \times B(\bar{b} \rightarrow \Omega_b)$	$< 1.5 \times 10^{-8}$	CL=90%	2943
$p K^- \pi^- \times B(\bar{b} \rightarrow \Omega_b)$	$< 7 \times 10^{-9}$	CL=90%	2915
$\Omega_c^0 \pi^-$	seen		2420
$\Omega_c^0 \pi^-, \Omega_c^0 \rightarrow p K^- K^- \pi^+$	seen		—
$\Xi_c^+ K^- \pi^-$	seen		2473

 $\Omega_b(6316)^-$

$$I(J^P) = ??(?)$$

 I, J, P need confirmation.Mass $m = 6315.6 \pm 0.6$ MeVFull width $\Gamma < 4.2$ MeV, CL = 95%

$\Omega_b(6316)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 K^-$	seen	168

$\Omega_b(6330)^-$

$$I(J^P) = ?(??)$$

 I, J, P need confirmation.

Mass $m = 6330.3 \pm 0.6$ MeV

Full width $\Gamma < 4.7$ MeV, CL = 95%

$\Omega_b(6330)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 K^-$	seen	206

 $\Omega_b(6340)^-$

$$I(J^P) = ?(??)$$

 I, J, P need confirmation.

Mass $m = 6339.7 \pm 0.6$ MeV

Full width $\Gamma < 1.8$ MeV, CL = 95%

$\Omega_b(6340)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 K^-$	seen	227

 $\Omega_b(6350)^-$

$$I(J^P) = ?(??)$$

 I, J, P need confirmation.

Mass $m = 6349.8 \pm 0.6$ MeV

Full width $\Gamma < 3.2$ MeV, CL = 95%

$\Omega_b(6350)^-$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_b^0 K^-$	seen	248

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

These branching fractions are actually an average over weakly decaying b -baryons weighted by their production rates at the LHC, LEP, and Tevatron, branching ratios, and detection efficiencies. They scale with the b -baryon production fraction $B(b \rightarrow b\text{-baryon})$.

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 ($\Lambda_b, \Xi_b, \Omega_b$)	Fraction (Γ_i/Γ)	Scale factor	ρ (MeV/c)
$p\mu^-\bar{\nu}$ anything	(5.8 ⁺ ₋ 2.3) %		—
$p\ell\bar{\nu}_\ell$ anything	(5.6 \pm 1.2) %		—
p anything	(70 \pm 22) %		—
$\Lambda\ell^-\bar{\nu}_\ell$ anything	(3.8 \pm 0.6) %		—
$\Lambda\ell^+\nu_\ell$ anything	(3.2 \pm 0.8) %		—
Λ anything	(39 \pm 7) %		—
$\Xi^-\ell^-\bar{\nu}_\ell$ anything	(4.6 \pm 1.4) $\times 10^{-3}$	1.2	—

NOTES

[a] P_c^+ is a pentaquark-charmonium state.

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

[c] Here h^- means π^- or K^- .