

Heavy FLavor AVeraging group (HFLAV) - November 2016

Compilation of Λ_b^0 Branching Fractions ($\times 10^{-6}$) - UL at 90% CL

In PDG2014 New since PDG2014 (preliminary) New since PDG2014 (published)

RPP#	Mode	PDG2014 Avg.	CDF	LHCb	Our Avg.
19	$p\pi^-$	$3.5 \pm 0.8 \pm 0.6$	$3.5 \pm 0.8 \pm 0.6$ [1]		3.5 ± 1.0
20	pK^-	$5.5 \pm 1.0 \pm 1.0$	$5.5 \pm 1.0 \pm 1.0$ [1]		5.5 ± 1.4
21	$\Lambda\mu^+\mu^-$	$1.73 \pm 0.42 \pm 0.55$	$1.73 \pm 0.42 \pm 0.55$ [2]	$0.96 \pm 0.16 \pm 0.25$ [3]	1.08 ± 0.27
	$\Lambda\eta$			$9.3^{+7.3}_{-5.3}$ ¶ [4]	$9.3^{+7.3}_{-5.3}$
	$\Lambda\eta'$			< 3.1 [4]	< 3.1
	$\Lambda\phi$			$5.18 \pm 1.04 \pm 0.35^{+0.67}_{-0.62}$ ‡ [5]	$5.18^{+1.29}_{-1.26}$
	$\bar{K}^0 p\pi^-$			$1.26 \pm 0.19 \pm 0.09 \pm 0.34 \pm 0.05$ § [6]	1.26 ± 0.40
	$K^0 pK^-$			< 3.5 [6]	< 3.5
	$\Lambda\pi^+\pi^-$			$4.6 \pm 1.2 \pm 1.4 \pm 0.6$ † [7]	4.6 ± 1.9
	$\Lambda K^+\pi^-$			$5.6 \pm 0.8 \pm 0.8 \pm 0.7$ † [7]	5.6 ± 1.3
	ΛK^+K^-			$15.9 \pm 1.2 \pm 1.2 \pm 2.0$ † [7]	15.9 ± 2.6

Results for CDF and LHCb are relative BF's converted to absolute BF's.

† Last quoted uncertainty is due to the precision with which the normalization channel branching fraction is known.

‡ Third uncertainty is related to external inputs.

§ Third uncertainty is from the ratio of fragmentation fractions $f_{\Lambda_b^0}/f_d$, and the fourth is due to the uncertainty on $\mathcal{B}(B^0 \rightarrow K^0\pi^+\pi^-)$.

¶ Result at 68% CL.

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Partial Branching Fractions of $B \rightarrow \Lambda_b^0\mu^+\mu^-$ decays ($\times 10^{-6}$)

In PDG2014 New since PDG2014 (preliminary) New since PDG2014 (published)

RPP#	Mode	q^2 [GeV ² /c ⁴] †	PDG2014 Avg.	CDF	LHCb	Our Avg.
21	$\Lambda\mu^+\mu^-$ ‡	< 2.0	$0.15 \pm 2.01 \pm 0.05$	$0.15 \pm 2.01 \pm 0.05$ [2]	$0.56 \pm 0.76 \pm 0.80$ [3]	0.41 ± 0.87
	$\Lambda\mu^+\mu^-$	[2.0, 4.3]	$1.8 \pm 1.7 \pm 0.6$	$1.8 \pm 1.7 \pm 0.6$	$0.71 \pm 0.60 \pm 0.10$	0.91 ± 0.55
	$\Lambda\mu^+\mu^-$	[4.3, 8.68]	$-0.2 \pm 1.6 \pm 0.1$	$-0.2 \pm 1.6 \pm 0.1$	$0.66 \pm 0.72 \pm 0.16$	0.40 ± 0.62
	$\Lambda\mu^+\mu^-$	[10.09, 12.86]	$3.0 \pm 1.5 \pm 1.0$	$3.0 \pm 1.5 \pm 1.0$	$1.55 \pm 0.58 \pm 0.55$	1.96 ± 0.68
	$\Lambda\mu^+\mu^-$	[14.18, 16.00]	$1.0 \pm 0.7 \pm 0.3$	$1.0 \pm 0.7 \pm 0.3$	$1.44 \pm 0.44 \pm 0.42$	1.19 ± 0.40
	$\Lambda\mu^+\mu^-$	> 16.00	$7.0 \pm 1.9 \pm 2.2$	$7.0 \pm 1.9 \pm 2.2$	$4.7 \pm 0.8 \pm 1.2$	5.5 ± 1.2

Results for CDF and LHCb are relative BF's converted to absolute BF's.

† See the original paper for the exact $m^2(\mu^+\mu^-)$ selection.

‡ The LHCb measurement was superseded with a more accurate result in different $m^2(\mu^+\mu^-)$ bins (see list of not-included results).

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In PDG2014 New since PDG2014 (preliminary) New since PDG2014 (published)

RPP#	Mode	PDG2014 Avg.	LHCb	Our Avg.
	$\Lambda\pi^+\pi^-$		< 1.7 [7]	< 1.7
	$\Lambda K^+\pi^-$		< 0.8 [7]	< 0.8
	ΛK^+K^-		< 0.3 [7]	< 0.3
	$\bar{K}^0 p\pi^-$		< 1.6 [6]	< 1.6
	$\bar{K}^0 pK^-$		< 1.1 [6]	< 1.1

Results for LHCb are relative BF's converted to absolute BF's.

References

- [1] T. Aaltonen *et al.*, (CDF collaboration), Phys. Rev. Lett. **103**, 031801, (2009), [arXiv:0812.4271 \[hep-ex\]](#).
- [2] T. Aaltonen *et al.*, (CDF collaboration), Phys. Rev. Lett. **107**, 201802, (2011), [arXiv:1107.3753 \[hep-ex\]](#).
- [3] R. Aaij *et al.*, (LHCb collaboration), Phys. Lett. **B725**, 25, (2013), [arXiv:1306.2577 \[hep-ex\]](#).
- [4] R. Aaij *et al.*, (LHCb collaboration), JHEP **09**, 006, (2015), [arXiv:1505.03295 \[hep-ex\]](#).
- [5] R. Aaij *et al.*, (LHCb collaboration), Phys. Lett. **B759**, 282, (2016), [arXiv:1603.02870 \[hep-ex\]](#).
- [6] R. Aaij *et al.*, (LHCb collaboration), JHEP **04**, 087, (2014), [arXiv:1402.0770 \[hep-ex\]](#).
- [7] R. Aaij *et al.*, (LHCb collaboration), JHEP **05**, 081, (2016), [arXiv:1603.00413 \[hep-ex\]](#).