

Heavy FLavor AVeraging group (HFLAV) - May 2018
 Compilation of B^+ Baryonic Branching Fractions ($\times 10^{-6}$) - UL at 90% CL
 Preliminary Updated results not included in PDG Live as of Dec. 31, 2017

RPP#	Mode	PDG2017 Avg.	BABAR	Belle	LHCb	Our Avg.
484	$p\bar{p}\pi^+$	1.62 ± 0.20	$1.69 \pm 0.29 \pm 0.26$ † [1]	$1.60_{-0.19}^{+0.22} \pm 0.12$ [2]		$1.62_{-0.20}^{+0.21}$
484	$p\bar{p}\pi^+ \S$				$1.07 \pm 0.11 \pm 0.11$ [3]	1.07 ± 0.16
487	$p\bar{p}K^+$	5.9 ± 0.5	$6.7 \pm 0.5 \pm 0.4$ † [4]	$5.54_{-0.25}^{+0.27} \pm 0.36$ [2]	$4.46 \pm 0.21 \pm 0.27$ ¶ [5]	5.14 ± 0.25
488	$\Theta^{++}\bar{p}$ ¹	< 0.091	< 0.09 [4]	< 0.091 [6]		< 0.09
489	$f_J(2220)K^+ \text{ }^2$	< 0.41		< 0.41 [6]		< 0.41
490	$p\bar{\Lambda}(1520)$	0.31 ± 0.06	< 1.5 [4]		$0.315 \pm 0.048 \pm 0.027$ [3]	0.315 ± 0.055
492	$p\bar{p}K^{*+}$	$3.6_{-0.7}^{+0.8}$	$5.3 \pm 1.5 \pm 1.3$ † [1]	$3.38_{-0.60}^{+0.73} \pm 0.39$ ‡ [7]		$3.64_{-0.70}^{+0.79}$
493	$f_J(2220)K^{*+} \text{ }^2$	< 0.77	< 0.77 [1]			< 0.77
494	$p\bar{\Lambda}$	< 0.32		< 0.32 [8]	$0.24_{-0.08}^{+0.10} \pm 0.03$ [9]	$0.24_{-0.09}^{+0.10}$
496	$p\bar{\Lambda}\pi^0$	$3.00_{-0.6}^{+0.7}$		$3.00_{-0.53}^{+0.61} \pm 0.33$ [10]		$3.00_{-0.62}^{+0.69}$
497	$p\bar{\Sigma}(1385)^0$	< 0.47		< 0.47 [10]		< 0.47
498	$\Delta^+\bar{\Lambda}$	< 0.82		< 0.82 [10]		< 0.82
500	$p\bar{\Lambda}\pi^+\pi^-$ (NR)	5.9 ± 1.1		$5.92_{-0.84}^{+0.88} \pm 0.69$ [11]		$5.92_{-1.09}^{+1.12}$
501	$p\bar{\Lambda}\rho^0$	4.8 ± 0.9		$4.78_{-0.64}^{+0.67} \pm 0.60$ [11]		$4.78_{-0.88}^{+0.90}$
502	$p\bar{\Lambda}f_2(1270)$	2.0 ± 0.8		$2.03_{-0.72}^{+0.77} \pm 0.27$ [11]		$2.03_{-0.77}^{+0.82}$
503	$\bar{\Lambda}\bar{\Lambda}\pi^+$	< 0.94		< 0.94 § [12]		< 0.94 §
504	$\bar{\Lambda}\bar{\Lambda}K^+$	3.4 ± 0.6		$3.38_{-0.36}^{+0.41} \pm 0.41$ ‡ [12]		$3.38_{-0.55}^{+0.58}$
505	$\bar{\Lambda}\bar{\Lambda}K^{*+}$	$2.2_{-0.9}^{+1.2}$		$2.19_{-0.88}^{+1.13} \pm 0.33$ § [12]		$2.19_{-0.94}^{+1.18}$
506	$\bar{\Delta}^0 p$	< 1.38		< 1.38 § [2]		< 1.38 §
507	$\Delta^{++}\bar{p}$	< 0.14		< 0.14 § [2]		< 0.14 §

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

† Charmonium decays to $p\bar{p}$ have been statistically subtracted.

‡ The charmonium mass region has been vetoed.

§ Di-baryon mass is less than 2.85 GeV/ c^2 .

¶ Includes contribution where $p\bar{p}$ is produced in charmonia decays.

¹ $\Theta(1540)^{++} \rightarrow K^+p$ (pentaquark candidate).

² In this product of BF's, all daughter BF's not shown are set to 100%.

Heavy FLavor AVeraging group (HFLAV) - May 2018
 Compilation of B^0 Baryonic Branching Fractions ($\times 10^{-6}$) - UL at 90% CL
 Preliminary Updated results not included in PDG Live as of Dec. 31, 2017

RPP#	Mode	PDG2017 Avg.	BABAR	Belle	LHCb	Our Avg.
439	$p\bar{p}$	$0.015_{-0.005}^{+0.007}$	< 0.27 [13]	< 0.11 [8]	$0.0125 \pm 0.0027 \pm 0.0018$ [14]	0.0130 ± 0.0030
440	$p\bar{p}\pi^+\pi^-$	< 250			$2.7 \pm 0.1 \pm 0.1 \pm 0.2$ [15]	2.7 ± 0.2
441	$p\bar{p}K^0$	2.66 ± 0.32	$3.0 \pm 0.5 \pm 0.3$ † [1]	$2.51_{-0.29}^{+0.35} \pm 0.21$ ‡ [7]		$2.66_{-0.32}^{+0.34}$
442	$\Theta^+\bar{p}$ §	< 0.05	< 0.05 [1]	< 0.23 [6]		< 0.05
443	$f_J(2220)K^0$ ¶	< 0.45	< 0.45 [1]			< 0.45
444	$p\bar{p}K^{*0}$	$1.24_{-0.25}^{+0.28}$	$1.47 \pm 0.45 \pm 0.40$ † [1]	$1.18_{-0.25}^{+0.29} \pm 0.11$ ‡ [7]		$1.24_{-0.25}^{+0.28}$
445	$f_J(2220)K^{*0}$ ¶	< 0.15	< 0.15 [1]			< 0.15
446	$p\bar{\Lambda}\pi^-$	3.14 ± 0.29	$3.07 \pm 0.31 \pm 0.23$ [16]	$3.23_{-0.29}^{+0.33} \pm 0.29$ [10]		$3.14_{-0.28}^{+0.29}$
448	$p\bar{\Sigma}(1385)^-$	< 0.26		< 0.26 [10]		< 0.26
449	$\Delta^0\bar{\Lambda}$	< 0.93		< 0.93 [10]		< 0.93
450	$p\bar{\Lambda}K^-$	< 0.82		< 0.82 [17]		< 0.82
453	$p\bar{\Sigma}^0\pi^-$	< 3.8		< 3.8 [17]		< 3.8
454	$\bar{\Lambda}\Lambda$	< 0.32		< 0.32 [8]		< 0.32
455	$\bar{\Lambda}\Lambda K^0$	$4.8_{-0.9}^{+1.0}$		$4.76_{-0.68}^{+0.84} \pm 0.61$ ‡ [12]		$4.76_{-0.91}^{+1.04}$
456	$\bar{\Lambda}\bar{\Lambda}K^{*0}$	$2.5_{-0.8}^{+0.9}$		$2.46_{-0.72}^{+0.87} \pm 0.34$ ‡ [12]		$2.46_{-0.80}^{+0.93}$
	$p\bar{p}K^+K^-$				$0.113 \pm 0.028 \pm 0.011 \pm 0.008$ [15]	0.113 ± 0.031
	$p\bar{p}K^+\pi^-$				$5.9 \pm 0.3 \pm 0.3 \pm 0.4$ [15]	5.9 ± 0.6
	$pp\bar{p}$		< 0.20 [18]			< 0.20

Channels with no RPP# are not reported by PDG.

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

† Charmonium decays to $p\bar{p}$ have been statistically subtracted.

‡ The charmonium mass region has been vetoed.

§ $\Theta(1540)^+ \rightarrow pK^0$ (pentaquark candidate).

¶ In this product of BF's, all daughter BF's not shown are set to 100%.

Heavy FLavor AVeraging group (HFLAV) - May 2018
 Compilation of B^+ and B^0 Baryonic Relative Branching Fractions

Preliminary Updated results not included in PDG Live as of Dec. 31, 2017

RPP#	Mode	PDG2017 Avg.	LHCb	Our Avg.
	$\mathcal{B}(B^+ \rightarrow p\bar{p}\pi^+, m_{p\bar{p}} < 2.85 \text{ GeV}/c^2)/\mathcal{B}(B^+ \rightarrow J/\psi(\rightarrow p\bar{p})\pi^+)$		$12.0 \pm 1.2 \pm 0.3$ [3]	12.0 ± 1.2
	$\mathcal{B}(B^+ \rightarrow p\bar{p}K^+)/\mathcal{B}(B^+ \rightarrow J/\psi(\rightarrow p\bar{p})K^+)$		$4.91 \pm 0.19 \pm 0.14$ † [5]	4.91 ± 0.24
487	$\mathcal{B}(B^+ \rightarrow p\bar{p}K^+)/\mathcal{B}(B^+ \rightarrow J/\psi K^+)$	$0.0104 \pm 0.0005 \pm 0.0001$	$0.0104 \pm 0.0005 \pm 0.0001$ †† [5]	0.0100 ± 0.0010
	$\mathcal{B}(B^+ \rightarrow \bar{\Lambda}(1520)(\rightarrow K^+\bar{p})p)/\mathcal{B}(B^+ \rightarrow J/\psi(\rightarrow p\bar{p})\pi^+)$		$0.033 \pm 0.005 \pm 0.007$ [3]	0.033 ± 0.009
	$\mathcal{B}(B^0 \rightarrow p\bar{p}K^+K^-)/\mathcal{B}(B^0 \rightarrow p\bar{p}K^+\pi^-)$		$0.019 \pm 0.005 \pm 0.002$ [15]	0.019 ± 0.005
	$\mathcal{B}(B^0 \rightarrow p\bar{p}\pi^+\pi^-)/\mathcal{B}(B^0 \rightarrow p\bar{p}K^+\pi^-)$		$0.46 \pm 0.02 \pm 0.02$ [15]	0.46 ± 0.03

Channels with no RPP# are not reported by PDG.

† Includes contribution where $p\bar{p}$ is produced in charmonia decays.

†† Original experimental relative BF multiplied by the best values (PDG2014) of certain reference BFs. The first error is experimental, and the second is from the reference BFs.

References

- [1] B. Aubert *et al.*, (*BABAR* collaboration), Phys. Rev. **D76**, 092004, (2007), arXiv:0707.1648 [hep-ex].
- [2] J. T. Wei *et al.*, (*Belle* collaboration), Phys. Lett. **B659**, 80, (2008), arXiv:0706.4167 [hep-ex].
- [3] R. Aaij *et al.*, (*LHCb* collaboration), Phys. Rev. Lett. **113**, 141801, (2014), arXiv:1407.5907 [hep-ex].
- [4] B. Aubert *et al.*, (*BABAR* collaboration), Phys. Rev. **D72**, 051101, (2005), arXiv:hep-ex/0507012 [hep-ex].
- [5] R. Aaij *et al.*, (*LHCb* collaboration), Eur. Phys. J. **C73**, 2462, (2013), arXiv:1303.7133 [hep-ex].
- [6] M. Z. Wang *et al.*, (*Belle* collaboration), Phys. Lett. **B617**, 141, (2005), arXiv:hep-ex/0503047 [hep-ex].
- [7] J. H. Chen *et al.*, (*Belle* collaboration), Phys. Rev. Lett. **100**, 251801, (2008), arXiv:0802.0336 [hep-ex].
- [8] Y. T. Tsai *et al.*, (*Belle* collaboration), Phys. Rev. **D75**, 111101, (2007), arXiv:hep-ex/0703048 [hep-ex].
- [9] R. Aaij *et al.*, (*LHCb* collaboration), JHEP **04**, 162, (2017), arXiv:1611.07805 [hep-ex].
- [10] M. Z. Wang *et al.*, (*Belle* collaboration), Phys. Rev. **D76**, 052004, (2007), arXiv:0704.2672 [hep-ex].
- [11] P. Chen *et al.*, (*Belle* collaboration), Phys. Rev. **D80**, 111103, (2009), arXiv:0910.5817 [hep-ex].
- [12] Y. W. Chang *et al.*, (*Belle* collaboration), Phys. Rev. **D79**, 052006, (2009), arXiv:0811.3826 [hep-ex].
- [13] B. Aubert *et al.*, (*BABAR* collaboration), Phys. Rev. **D69**, 091503, (2004), arXiv:hep-ex/0403003 [hep-ex].
- [14] R. Aaij *et al.*, (*LHCb* collaboration), Phys. Rev. Lett. **119**, no. 23, 232001, (2017), arXiv:1709.01156 [hep-ex].
- [15] R. Aaij *et al.*, (*LHCb* collaboration), Phys. Rev. **D96**, no. 5, 051103, (2017), arXiv:1704.08497 [hep-ex].
- [16] B. Aubert *et al.*, (*BABAR* collaboration), Phys. Rev. **D79**, 112009, (2009), arXiv:0904.4724 [hep-ex].
- [17] M. Z. Wang *et al.*, (*Belle* collaboration), Phys. Rev. Lett. **90**, 201802, (2003), arXiv:hep-ex/0302024 [hep-ex].
- [18] J. P. Lees *et al.*, (*BaBar* collaboration), (2018), arXiv:1803.10378 [hep-ex].