

## Heavy Flavor Averaging Group August 2012

### Compilation of $B^+$ Baryonic Branching Fractions All branching fractions are in units of $10^{-6}$ ; limits are 90% CL

In PDG2012    New since PDG2012 (preliminary)    New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	BABAR	Belle	LHCb	New Avg.
391	$p\bar{p}\pi^+$	$1.62 \pm 0.20$	$1.69 \pm 0.29 \pm 0.26$ †	$1.57_{-0.15}^{+0.17} \pm 0.12$ §		$1.60_{-0.17}^{+0.18}$
394	$p\bar{p}K^+$	$5.9 \pm 0.5$	$6.7 \pm 0.5 \pm 0.4$ †	$5.00_{-0.22}^{+0.24} \pm 0.32$ §	<span style="color: blue;"><math>4.9 \pm 0.9 \pm 0.6</math> §</span>	$5.43 \pm 0.32$
395	$\Theta^{++}\bar{p}$ <sup>1</sup>	$< 0.091$	$< 0.09$	$< 0.091$		$< 0.09$
396	$f_J(2221)K^+$ <sup>2</sup>	$< 0.41$		$< 0.41$		$< 0.41$
397	$p\bar{\Lambda}(1520)$	$< 1.5$	$< 1.5$			$< 1.5$
399	$p\bar{p}K^{*+}$	$3.6_{-0.7}^{+0.8}$	$5.3 \pm 1.5 \pm 1.3$ †	$3.38_{-0.60}^{+0.73} \pm 0.39$ ‡		$3.64_{-0.70}^{+0.79}$
400	$f_J(2221)K^{*+}$ <sup>2</sup>	$< 0.77$	$< 0.77$			$< 0.77$
401	$p\bar{\Lambda}$	$< 0.32$		$< 0.32$		$< 0.32$
403	$p\bar{\Lambda}\pi^0$	$3.00_{-0.6}^{+0.7}$		$3.00_{-0.53}^{+0.61} \pm 0.33$		$3.00_{-0.62}^{+0.69}$
404	$p\bar{\Sigma}(1385)^0$	$< 0.47$		$< 0.47$		$< 0.47$
405	$\Delta^+\bar{\Lambda}$	$< 0.82$		$< 0.82$		$< 0.82$
407	$p\bar{\Lambda}\pi^+\pi^-$ (NR)	$5.9 \pm 1.1$		$5.92_{-0.84}^{+0.88} \pm 0.69$		$5.92_{-1.09}^{+1.12}$
408	$p\bar{\Lambda}\rho^0$	$4.8 \pm 0.9$		$4.78_{-0.64}^{+0.67} \pm 0.60$		$4.78_{-0.88}^{+0.90}$
409	$p\bar{\Lambda}f_2(1270)$	$2.0 \pm 0.8$		$2.03_{-0.72}^{+0.77} \pm 0.27$		$2.03_{-0.77}^{+0.82}$
410	$\Lambda\bar{\Lambda}\pi^+$	$< 0.94$		$< 0.94$ §		$< 0.94$ §
411	$\Lambda\bar{\Lambda}K^+$	$3.4 \pm 0.6$		$3.38_{-0.36}^{+0.41} \pm 0.41$ ‡		$3.38_{-0.55}^{+0.58}$
412	$\Lambda\bar{\Lambda}K^{*+}$	$2.2_{-0.9}^{+1.2}$		$2.19_{-0.88}^{+1.13} \pm 0.33$ §		$2.19_{-0.94}^{+1.18}$
413	$\bar{\Delta}^0 p$	$< 1.38$		$< 1.38$ §		$< 1.38$ §
414	$\Delta^{++}\bar{p}$	$< 0.14$		$< 0.14$ §		$< 0.14$ §

§Di-baryon mass is less than  $2.85 \text{ GeV}/c^2$ ; † Charmonium decays to  $p\bar{p}$  have been statistically subtracted;

‡ The charmonium mass region has been vetoed; <sup>1</sup>  $\Theta(1540)^{++} \rightarrow K^+p$  (pentaquark candidate);

<sup>2</sup> Product BF — daughter BF taken to be 100%

Heavy Flavor Averaging Group  
August 2012

Compilation of  $B^0$  Baryonic Branching Fractions  
All branching fractions are in units of  $10^{-6}$ ; limits are 90% CL

In PDG2012    New since PDG2012 (preliminary)    New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	BABAR	Belle	LHCb	New Avg.
381	$p\bar{p}$	< 0.11	< 0.27	< 0.11		< 0.11
383	$p\bar{p}K^0$	$2.66 \pm 0.32$	$3.0 \pm 0.5 \pm 0.3$ †	$2.51^{+0.35}_{-0.29} \pm 0.21$ ‡		$2.66^{+0.34}_{-0.32}$
384	$\Theta^+\bar{p}$ <sup>1</sup>	< 0.05	< 0.05	< 0.23		< 0.05
385	$f_J(2221)K^0$ <sup>2</sup>	< 0.45	< 0.45			< 0.45
386	$p\bar{p}K^{*0}$	$1.24^{+0.28}_{-0.25}$	$1.47 \pm 0.45 \pm 0.40$ †	$1.18^{+0.29}_{-0.25} \pm 0.11$ ‡		$1.24^{+0.28}_{-0.25}$
387	$f_J(2221)K^{*0}$ <sup>2</sup>	< 0.15	< 0.15			< 0.15
388	$p\bar{\Lambda}\pi^-$	$3.14 \pm 0.29$	$3.07 \pm 0.31 \pm 0.23$	$3.23^{+0.33}_{-0.29} \pm 0.29$		$3.14^{+0.29}_{-0.28}$
389	$p\bar{\Sigma}(1385)^-$	< 0.26		< 0.26		< 0.26
390	$\Delta^0\bar{\Lambda}$	< 0.93		< 0.93		< 0.93
391	$p\bar{\Lambda}K^-$	< 0.82		< 0.82		< 0.82
392	$p\bar{\Sigma}^0\pi^-$	< 3.8		< 3.8		< 3.8
393	$\bar{\Lambda}\Lambda$	< 0.32		< 0.32		< 0.32
394	$\bar{\Lambda}\Lambda K^0$	$4.8^{+1.0}_{-0.9}$		$4.76^{+0.84}_{-0.68} \pm 0.61$ ‡		$4.76^{+1.04}_{-0.91}$
395	$\Lambda\bar{\Lambda}K^{*0}$	$2.5^{+0.9}_{-0.8}$		$2.46^{+0.87}_{-0.72} \pm 0.34$ ‡		$2.46^{+0.93}_{-0.80}$

† Charmonium decays to  $p\bar{p}$  have been statistically subtracted; ‡ The charmonium mass region has been vetoed; <sup>1</sup>  $\Theta(1540)^+ \rightarrow pK^0$  (pentaquark candidate); <sup>2</sup> Product BF — daughter BF taken to be 100%.

# Charmless Baryonic Decay References

- [1] Belle Collaboration (Y.-T. Tsai, P. Chang *et al.*), Phys. Rev. D **75**, 111101 (2007).
- [2] Belle Collaboration, (J.-H. Chen, M.-Z. Wang *et al.*), Phys. Rev. Lett. **100**, 251801 (2008).
- [3] Belle Collaboration (M.-Z. Wang *et al.*), Phys. Rev. Lett. **90**, 201802 (2003).
- [4] *BABAR* Collaboration, (B. Aubert *et al.*), Phys. Rev. D **79**, 112009 (2009).
- [5] Belle Collaboration (J.-T. Wei, M.-Z. Wang *et al.*), Phys. Lett. B **659**, 80 (2008).
- [6]
- [7]
- [8]
- [9] Belle Collaboration (M.-Z. Wang, Y.-J. Lee *et al.*), Phys. Rev. D **76**, 052004 (2007).
- [10] *BABAR* Collaboration, (B. Aubert *et al.*), Phys. Rev. D **69**, 091503 (2004).
- [11] Belle Collaboration (Y.-W. Chang, M.-Z. Wang *et al.*), Phys. Rev. D **79** 052006 (2009).
- [12] *BABAR* Collaboration (B. Aubert *et al.*), Phys. Rev. D **72** 051101 (2005).
- [13] Belle Collaboration (M.-Z. Wang *et al.*), Phys. Lett. B **617**, 141 (2005).
- [14] *BABAR* Collaboration (B. Aubert *et al.*), Phys. Rev. D **76** 092004 (2007).
- [15] Belle Collaboration, Phys. Rev. D **80** 111103 (2009).
- [16] LHCb Collaboration, LHCb-CONF-2011-058 (2011).