

Heavy Flavor Averaging Group
Aug. 2006

Compilation of B_s Rare Branching Fractions
All branching fractions are in units of 10^{-6}

In PDG2006 New since PDG2006 (preliminary) New since PDG2006 (published)

RPP#	Mode	PDG2006 Avg.	Belle	CDF	D0	New Avg.
9	$\pi^+\pi^-$	< 170		< 1.7		< 1.7
15	$\phi\phi$	14 ± 8		$14_{-5}^{+6} \pm 6$ †		14_{-7}^{+8}
16	π^+K^-	< 210		< 5.6		< 5.6
17	K^+K^-	< 59	< 340	34 ± 9		34 ± 9
22	$\gamma\gamma$	< 148	< 56			< 56
23	$\phi\gamma$	< 120	< 410			< 410
24	$\mu^+\mu^-$	< 0.15		< 0.080	< 0.30	< 0.080
26	$e^\pm\mu^\mp$	< 6.1		< 6.1		< 6.1
27	$\mu^+\mu^-\phi$	< 47		< 47	< 3.2 †	< 3.2 †

†Relative BF converted to absolute BF

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Compilation of B_s^0 Rare Relative Branching Fractions (UL 90% CL)

In PDG2006 New since PDG2006 (preliminary) New since PDG2006 (published)

RPP#	Mode	PDG2006 Avg.	CDF	D0	New Avg.
9	$\mathcal{B}(B_s^0 \rightarrow \pi^+\pi^-)/\mathcal{B}(B_s^0 \rightarrow K^+K^-)$		< 0.05		< 0.05
15	$\mathcal{B}(B_s^0 \rightarrow \phi\phi)/\mathcal{B}(B_s^0 \rightarrow J/\psi\phi)$		$(10_{-4}^{+5} \pm 1) \times 10^{-3}$		10_{-6}^{+7}
16	$f_s\mathcal{B}(B_s^0 \rightarrow K^+\pi^-)/f_d\mathcal{B}(B_d^0 \rightarrow K^+\pi^-)$		< 0.08		< 0.08
17	$f_s\mathcal{B}(B_s^0 \rightarrow K^+K^-)/f_d\mathcal{B}(B_d^0 \rightarrow K^+\pi^-)$		$0.46 \pm 0.08 \pm 0.07$		0.46 ± 0.11
27	$\mathcal{B}(B_s^0 \rightarrow \mu^+\mu^-\phi)/\mathcal{B}(B_s^0 \rightarrow J/\psi\phi)$			$< 3.5 \times 10^{-3}$	$< 3.5 \times 10^{-3}$

CDF References

B_s References

- [1] Diego Tonelli for the CDF Collaboration, hep-ex/0605038 (2006).
- [2] CDF Collaboration (F. Abe *et al.*), Phys. Rev. Lett. **81**, 5742 (1998).
- [3] CDF Collaboration (D. Acosta *et al.*), Phys. Rev. D **65**, 111101 (2002).
- [4] CDF Collaboration (D. Acosta *et al.*), Phys. Rev. Lett. **95**, 031801 (2005).
- [5] CDF Collaboration (A. Abulencia *et al.*), hep-ex/0607021 (submitted to PRL).

D0 References

- [6] S. Dugad for the D0 Collaboration, HCP 2005.
- [7] D0 Collaboration (V. Abazov *et al.*), hep-ex/0604015 (2006).

Belle References

- [8] A. Drutskoy for the Belle Collaboration, talk presented at Moriond EW 2006.