

Baryonic Bd decays at Belle

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Study of $B^+ \rightarrow p\bar{\Lambda}\pi^+\pi^-$ at Belle

We study charmless B^+ decays to $p\bar{\Lambda}\pi^+\pi^-$ final state using a 605 fb^{-1} data sample collected at the $\Upsilon(4S)$ resonance with the Belle detector at the KEKB asymmetric energy e^+e^- collider. There are significant signals found with $p\bar{\Lambda}$ mass peaking near threshold. The branching fraction as well as the differential branching fraction as a function of the mass of the $p\bar{\Lambda}$ system are presented. We also search for intermediate three-body decays using the same final state particles. Observation or evidence of possible intermediate three-body decays are reported.

Observation of $B^0 \rightarrow \Lambda\bar{\Lambda}K^0$ and $B^0 \rightarrow \Lambda\bar{\Lambda}K^{*0}$ at Belle

We study the charmless decays $B \rightarrow \Lambda\bar{\Lambda}h$, where h stands for π^+ , K^+ , K^0 , K^{*+} , or K^{*0} , using a 605 fb^{-1} data sample collected at the $\Upsilon(4S)$ resonance with the Belle detector at the KEKB asymmetric energy e^+e^- collider. We observe $B^0 \rightarrow \Lambda\bar{\Lambda}K^0$ and $B^0 \rightarrow \Lambda\bar{\Lambda}K^{*0}$ with branching fractions of $(4.76_{-0.68}^{+0.84}(\text{stat.}) \pm 0.61(\text{syst.})) \times 10^{-6}$ and $(2.46_{-0.72}^{+0.87} \pm 0.34) \times 10^{-6}$, respectively. The significances of these signals in the threshold-mass enhanced mass region, $M_{\Lambda\bar{\Lambda}} < 2.85 \text{ GeV}/c^2$, are 12.4σ and 9.3σ , respectively. We also update the branching fraction $\mathcal{B}(B^+ \rightarrow \Lambda\bar{\Lambda}K^+) = (3.38_{-0.36}^{+0.41} \pm 0.41) \times 10^{-6}$ with better accuracy, and report the following measurement or 90% confidence level upper limit in the threshold-mass-enhanced region: $\mathcal{B}(B^+ \rightarrow \Lambda\bar{\Lambda}K^{*+}) = (2.19_{-0.88}^{+1.13} \pm 0.33) \times 10^{-6}$ with 3.7σ significance; $\mathcal{B}(B^+ \rightarrow \Lambda\bar{\Lambda}\pi^+) < 0.94 \times 10^{-6}$. A related search for $B^0 \rightarrow \Lambda\bar{\Lambda}\bar{D}^0$ yields a branching fraction $\mathcal{B}(B^0 \rightarrow \Lambda\bar{\Lambda}\bar{D}^0) = (1.05_{-0.44}^{+0.57} \pm 0.14) \times 10^{-5}$. This may be compared with the large, $\sim 10^{-4}$, branching fraction observed for $B^0 \rightarrow p\bar{p}\bar{D}^0$. The $M_{\Lambda\bar{\Lambda}}$ enhancements near threshold and related angular distributions for the observed modes are also reported.

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