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Hadronic B decays at BaBar

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Baryonic decays account for about 7% of the B-meson width, but are far less studied than decays into meson-only final states. We present new studies of the processes B- –> Sigma_c++ pbar pi- pi- and B0bar –> Lambda_c+ pbar p pbar. The former decay is a resonant subchannel of the 5-body decay B- –> Lambda_c+ pi+ pbar pi- pi-, which is the known baryonic decay mode with the largest branching fraction, which motivates more detailed studies into its substructure. Similarly, the latter decay has the same quark content as the high-branching-fraction modes B0bar –> Lambda_c+ pbar pi+ pi- and B- –> Lambda_c+ pi+ pbar pi- pi-, shedding further light on baryon production. In addition to measuring the overall branching fractions, we analyze the resonant substructure of these decays.

Decays of B mesons into two charm mesons and a kaon proceed through a number of interfering intermediate states, making them particularly useful for studying charm-strange mesons and ccbar resonances above the open-charm threshold. We present new studies of these decays based on the full BABAR Upsilon(4S) dataset. We measure the total branching fractions and perform a Dalitz-plot analysis, from which we obtain the properties of intermediate resonances.

Using the full BABAR Upsilon(4S) dataset, we perform amplitude analyses of the decays B+ –> K+K-K+ and B+ –> Ks Ks K+ and measure CP-violating asymmetries and partial branching fractions. For B+ –> K+K-K+, we find a direct CP asymmetry in B+ –> phi(1020)K+ of (12.8 +/- 4.4 +/- 1.3)%, which differs from zero by 2.8 sigma. The standard model predicts no appreciable asymmetry for this mode. We also perform an angular-moment analysis of these channels. This high-statistics analysis allows us to determine that the f_X(1500) state, which has been used in previous B–> KKK fits, is not needed, and that the data can be adequately described by the sum of the resonances f_0(1500), f_2'(1525), and f_0(1710).

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