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Anomalies in Hadronic B Decays

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The amplitudes of $B \rightarrow PP$ decays, where P is a pion or a kaon, are related by flavour $SU(3)$ ($SU(3)_F$). This allows us to describe all observables for these decays in terms of $SU(3)_F$ reduced matrix elements parametrized by diagrams. Using these parameters, we performed a fit to the experimental data, and found a discrepancy at the level of 3.6σ . This discrepancy can be resolved by adding $SU(3)_F$ -breaking effects, but these effects are required to be very large, of the order of 1000%. When we add an assumption based on QCD factorization to the fit, the discrepancy jumps to 4.4σ . These are the anomalies in hadronic B decays; they strongly hint at the presence of new physics.

Mini Symposia (Invited Talks Only)

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