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Estimating QCD-factorization amplitudes through $SU(3)$ symmetry in $B \rightarrow PP$ decays

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In this talk we estimate the potential size of the weak annihilation amplitudes in QCD factorization as allowed by experimental data by establishing a connection between the amplitudes in the QCD factorization and the so-called topological and $SU(3)$ -invariant descriptions. Our approach is based purely on the analysis of the tensor structure of the decay amplitudes. By focusing on the decay processes to two pseudoscalar mesons $B \rightarrow PP$, and by considering data from CP asymmetries and branching fractions, we perform a global fit to the $SU(3)$ -irreducible quantities. Then, we translate the outcome to the QCD factorization decomposition, and find that the most constrained weak annihilation amplitudes are below 4%. But, in view of the large uncertainties in several of the experimental input parameters, values up to 30% are allowed in certain cases.

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