

## High Energy Physics - Phenomenology

# $K^*$ resonance effects on direct CP violation in $B \rightarrow \pi \pi K$

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Charged and neutral B decays into two charged pions and a charged or a neutral kaon are analyzed within the QCD factorization scheme where final state interactions before and after hadronization are included. The  $K^*(892)$  and  $K^*(1430)$  resonance effects are taken into account using the presently known pion-Kaon strange vector and scalar form factors. The weak decay amplitudes, which are calculated at leading power in  $\Lambda_{\text{QCD}}/m_b$  and at the next-to-leading order in the strong coupling constant, include the hard scattering and annihilation contributions. The end point divergences of these weak final state interactions are controlled by two complex parameters determined through a fit to the available effective mass and helicity angle distribution, CP asymmetry and  $K^*(892)$  branching ratio data. The predicted  $K^*(1430)$  branching ratios and the calculated direct CP violation asymmetries are compared to the Belle and BABAR Collaboration data.

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