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Nonleptonic B Meson Decay in the Perturbative QCD approach

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Using perturbative QCD approach, charmless $B_{u,d,s} \to VT$ decays are predicted. Their branching ratios, polarization fractions and direct CP violations are calculated. Within this approach the polarization fractions and the branching ratios of $B \to \phi(K_2^{*-}, \bar{K}_2^{*0})$ agree with the observed experimental data. However, the branching ratios of $B \to \omega(K_2^{*-}, \bar{K}_2^{*0})$ cannot be explained, where the polarization fractions can be accommodated. The tree dominated channels with a vector meson emitted have longitudinal polarization fraction of 90%, while the penguin dominating ones have subtle polarization fractions. Fortunately, most branching ratios of $B_{u,d}$ decays are of the order 10^{-6}, which would be straight forward for experimental observations. For the B_s decays, the branching ratios can reach the order of 10^{-6} in a vector emitted tree dominated decays. However, in penguin dominated decays those are of order of 10^{-7} which need more experimental data to be observed.

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