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Spin-1 and Perturbative QCD

The annihilation or production process $e^+ + e^- \to \rho^+ + \rho^-$ is studied with respect to the universal perturbative QCD (pQCD) predictions. Sub-leading contributions are considered together with the universal leading pQCD amplitudes such that the matrix elements of the ρ-meson electromagnetic current satisfy the constraint from the light-front angular condition. The data from the BaBar collaboration for the time-like ρ-meson form factors at $\sqrt{s} = 10.58$ GeV puts a stringent test to the onset of asymptotic pQCD behaviour. The $e^+ + e^- \to \rho^+ + \rho^-$ cross-section for s between 60 GeV^2 and 160 GeV^2 is predicted where the sub-leading contributions are still considerable.

References:

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