

Proton elastic impact factors for 2,3 and 4 gluons

Tuesday, 8 April 2008 11:30 (20 minutes)

The scattering of a baryon consisting of three massive quarks is investigated in the high energy limit of perturbative QCD. We derive the elastic impact factors for 2, 3 and 4 gluons, and study the energy evolution of the corresponding elastic scattering amplitudes. We find that the baryon couples to the BFKL Pomeron, the BKP odderon and a new BKP Pomeron state composed of three Reggeons. This new state is found to decay into two BFKL Pomerons via a new $3 \rightarrow 4$ Reggeon transition vertex. Implications of these findings for the unitarization of high energy baryon scattering amplitudes are discussed.

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Session Classification: Diffraction and Vector Mesons Working Group

Track Classification: Diffraction and Vector Mesons