

Unitarization of the Proton-Proton Scattering Amplitude via a Non-Perturbative Two-Gluon Exchange Model at TeV Energies

Monday, 1 December 2025 10:20 (0:20)

Content

This research project proposes to unitarize the scattering amplitude of a phenomenological model where the proton-proton interaction is mediated by the exchange of two massive Reggeized gluons. These gluons acquire a dynamical mass generated by the non-perturbative regime of QCD. The core objective is to apply a unitarization procedure to this amplitude to enable a consistent calculation of the total proton-proton cross section at high energies. This work will provide a more robust theoretical framework for investigating the hadronic processes in the low momentum transfer regime, directly contributing to the understanding of strong interactions in the non-perturbative domain. The methodology involves a detailed study of the theoretical formalism, the implementation of the unitarization technique, and the subsequent numerical analysis of the resulting cross-section.

Primary author(s) : Mr. LI, Victor (UFRGS)

Co-author(s) : Dr. LUNA, Emerson (UFRGS)

Presenter(s) : Mr. LI, Victor (UFRGS)