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Leading Pomeron Contributions and the TOTEM Data at 13 TeV

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The recent data by the TOTEM Collaboration on σ_{tot} and ρ at 13 TeV, have shown agreement with a leading Odderon contribution at the highest energies, as demonstrated in the very recent analysis by Martynov and Nicolescu (MN). In order to investigate the same dataset by means of Pomeron dominance, we introduce a general class of forward scattering amplitude, with leading contributions even under crossing, associated with simple, double an triple poles in the complex angular momentum plane. For the lower energy region, we consider the usual non-degenerated Regge trajectories, with even and odd symmetry. The analytic connection between σ_{tot} and ρ is obtained by means of dispersion relations and we carry out fits to pp and $\bar{p}p$ data in the interval $\sqrt{s} = 5$ GeV - 13 TeV; following MN we consider only the TOTEM data at the LHC energy region. From the fits, we conclude that the general analytic model, as well as some particular cases representing standard parameterizations, are not able to describe satisfactorily the σ_{tot} and ρ data at 13 TeV.

Summary

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