Contribution ID: **115**   Type: **not specified**

Some applications of the Eikonal model with Coulomb and curvature corrections in pp and $\bar{p}p$ scattering

Monday 8 May 2023 16:45 (15 minutes)

Using a simple eikonal approach to the treatment of Coulomb-nuclear interference and form-factors effects and taking into account the curvature effects in high-energy pp and $\bar{p}p$ scattering, we determine the basic parameters B, ρ, and σ_{tot} from fits to experiment at $W = \sqrt{s} = 53$ GeV, 62.3 GeV, 8 TeV, and 13 TeV. We then investigate the differential cross sections in the dip region for pp and $\bar{p}p$ elastic scattering at $W = 53$ GeV and 1.96 TeV. We find that i) the results of the basic parameters calculated using the simple eikonal approach agree well with the values determined in other analyses and ii) Coulomb effects are significant in the dip region at 53 GeV and 1.96 TeV, and must be taken into account in searches for odderon effects through cross section differences in that energy region.

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Session Classification: SM II