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Do we understand elastic scattering up to LHC energies?

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Summary

The measurements of high energy $\bar{p}p$ and pp elastic at ISR, SPS, and Tevatron colliders have provided usefull informations on the behavior of the elastic scattering amplitude. A large step in energy domain is accomplished with the LHC collider presently running, giving a unique opportunity to improve our knowledge on the asymptotic regime of the elastic scattering amplitude and to verify the validity of our theoretical approach, to describe the total cross section $\sigma_{tot}(s)$, the total elastic cross section $\sigma_{el}(s)$, the ratio of the real to imaginary parts of the forward amplitude $\rho(s)$ and the differential cross section $d\sigma(s,t)/dt$.

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