



Contribution ID: 59

Type: **not specified**

New physics from TOTEM's recent measurements of elastic and total cross sections

By using a Regge-pole model, including pomeron and odderon exchanges as double poles we analyze the recently discovered phenomena in elastic proton-proton scattering at the LHC: the low- $|t|$ “break” (departure from the exponential behavior of the diffraction cone), the accelerating rise with energy of the forward slope $B(s)$, the absence of secondary dips and bumps on the cone and the unexpected decrease of the ratio of the real to imaginary part of the forward amplitude at 13 TeV. The odderon may manifest in filling the dip at 13 TeV.

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Track Classification: Diffraction and photon physics in hadron-hadron and heavy-ion collisions