



Contribution ID: 139

Type: **not specified**

## Measurement of the Total Cross-Section and the rho-Parameter at 13 TeV by TOTEM

*Wednesday 18 April 2018 17:18 (24 minutes)*

The TOTEM experiment at the interaction point 5 of the LHC has measured the total, elastic and inelastic proton-proton cross sections in a centre-of-mass energy range from 2.76 to 13 TeV, in dedicated fills with special beam optics.

Most recently, TOTEM has performed the first measurement of the rho; parameter at  $\sqrt{s} = 13$  TeV, where rho is the ratio between the real and the imaginary part of the nuclear elastic scattering amplitude at  $t = 0$ . The unprecedented precision of the measurement, combined with the TOTEM total cross-section measurements, led to the exclusion of all the models classified and published by COMPETE. The rho; and  $\sigma_{\text{tot}}$  results obtained by TOTEM are compatible with predictions – from alternative theoretical models both in the Regge-like framework and in the modern QCD framework – of a colourless 3-gluon bound state exchange in the t-channel of the proton-proton elastic scattering.

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**Session Classification:** WG2: Small-x and Diffraction

**Track Classification:** WG2: Small-x and Diffraction