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

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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  $\sigma_{tot}$  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.

**Primary author:** ROBUTTI, Enrico (INFN e Universita Genova (IT))

**Co-author:** TOTEM COLLABORATION

**Presenter:** ROBUTTI, Enrico (INFN e Universita Genova (IT))

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