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The results of the TOTEM experiment

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The TOTEM experiment at the LHC has measured proton-proton elastic scattering in dedicated runs at $\sqrt{s}=7$ and 8 TeV centre-of-mass LHC energies. The proton-proton total cross-section σ_{tot} has been derived for both energies using a luminosity independent method. TOTEM has excluded a purely exponential differential cross-section for elastic proton-proton scattering with significance greater than 7σ in the $|t|$ range from 0.027 to 0.2 GeV^2 at $\sqrt{s}=8$ TeV. The TOTEM experiment measured elastic scattering at $\sqrt{s}=8$ TeV in the Coulomb-Nuclear Interference Region. TOTEM has also measured diffractive scattering at $\sqrt{s}=7$ and 8 TeV in different event topologies.

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