

Measurement of inelastic, diffractive and exclusive processes in pp collisions with CMS

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A measurement of the total, inelastic pp cross section at 7 TeV, based on the observation of pile-up events, is presented.

Measurements of soft and hard diffractive processes obtained with the CMS detector at various centre-of-mass energies are presented and compared with the PYTHIA6, PHOJET and PYTHIA8 Monte Carlo generators. The ratio of diffractive to inclusive jet production is obtained and the rapidity gap survival probability is estimated from the comparison of data to predictions of the POMPYT generator.

A measurement of exclusive production of muons pairs in pp collisions at $\sqrt{s} = 7$ TeV is also presented. Single differential cross sections are obtained as function of the dimuon transverse momentum, invariant mass and acoplanarity for dimuon pairs with an invariant mass above 11 GeV. Data are compared to predictions of the LPAIR Monte Carlo model.

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