High Energy Physics - Experiment

Transverse momentum and pseudorapidity distributions of charged hadrons in pp collisions at sqrt(s) = 0.9 and 2.36 TeV

The CMS Collaboration

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Measurements of inclusive charged-hadron transverse-momentum and pseudorapidity distributions are presented for proton-proton collisions at sqrt(s) = 0.9 and 2.36 TeV. The data were collected with the CMS detector during the LHC commissioning in December 2009. For non-single-diffractive interactions, the average charged-hadron transverse momentum is measured to be 0.46 +/- 0.01 (stat.) +/- 0.01 (syst.) GeV/c at 0.9 TeV and 0.50 +/- 0.01 (stat.) +/- 0.01 (syst.) GeV/c at 2.36 TeV, for pseudorapidities between -2.4 and +2.4. At these energies, the measured pseudorapidity densities in the central region, dN(charged)/d(eta) for |eta| < 0.5, are 3.48 +/- 0.02 (stat.) +/- 0.13 (syst.) and 4.47 +/- 0.04 (stat.) +/- 0.16 (syst.), respectively. The results at 0.9 TeV are in agreement with previous measurements and confirm the expectation of near equal hadron production in p-pbar and pp collisions. The results at 2.36 TeV represent the highest-energy measurements at a particle collider to date.

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