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Underlying event studies at CMS (15'+5')

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A measurement of the underlying activity in scattering processes with a p_T scale in the several GeV region is performed in proton-proton collisions at $\sqrt{s} = 7$ TeV, using data collected by the CMS experiment at the LHC. The production of charged particles with pseudorapidity $\eta < 2$ and $p_T > 0.5$ GeV/c is studied in the azimuthal region transverse to that of the leading set of charged particles forming a “track-jet”. A significant growth of the average multiplicity and scalar p_T sum of those particles is observed with increasing p_T of the leading track-jet, followed by saturation above a few GeV/c. A hardening of the multiplicity distribution, of the scalar p_T sum distribution, and of the charged particle p_T spectrum is also observed. For track-jet p_T larger than a few GeV/c, the activity in the transverse region is approximately doubled with a centre-of-mass energy increase from 0.9 to 7 TeV. Predictions of several QCD-inspired models as implemented in PYTHIA are compared to the data.

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