Measurements of underlying-event properties using neutral and charged particles in pp collisions at vs = 900 GeV and vs = 7 TeV with the ATLAS detector at the LHC

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Abstract

We present first measurements of charged and neutral particle-flow correlations in pp collisions using the ATLAS calorimeters. Data were collected in 2009 and 2010 at centre-of-mass energies of 900 GeV and 7 TeV. Events were selected using a minimum-bias trigger which required a charged particle in scintillation counters on either side of the interaction point. Particle flows, sensitive to the underlying event, are measured using clusters of energy in the ATLAS calorimeters, taking advantage of their fine granularity. No Monte Carlo generator used in this analysis can accurately describe the measurements. The results are independent of those based on charged particles measured by the ATLAS tracking systems and can be used to constrain the parameters of Monte Carlo generators..