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Underlying Event studies and Monte Carlo tunes for inelastic pp events with the ATLAS detector

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Studies of the momentum flow in inelastic collisions at 900 GeV and 7 TeV recorded with a minimum bias trigger strategy are reported. A single high pT track is selected, and the distribution of other tracks in the event is evaluated relative to this reference track. The evolution of the charged momentum flow in the rest of the event, as a function of the pT of the reference track, gives important information about the transition from minimum bias event structure to the full underlying event observed in high-pT collision events. Results are presented after correction and unfolding of detector effects to allow simpler comparison to Monte Carlo models. In addition, the PYTHIA Monte Carlo generator has been tuned to ATLAS measurements at 900 GeV and 7 TeV. Standard distributions from Minimum Bias events, as well as the Underlying Event studies are included in the first tunes to ATLAS measurements at the LHC. The tunes aim for one consistent description of the new measurements as well as data from the Tevatron and LEP.

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