

New Trends in High-Energy Physics



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Study of the hard double-parton scattering contribution to inclusive four-lepton production in pp collisions at 8 TeV with the ATLAS detector

The inclusive production of four isolated charged leptons in pp collisions is analysed for the presence of hard double-parton scattering, using a dataset corresponding to 20.2 fb⁻¹, recorded with the ATLAS detector at the LHC at centre-of-mass energy of 8 TeV. In the four-lepton invariant-mass range of $80 < M_{4l} < 1000$ GeV, an artificial neural network is used to enhance the separation between single- and double-parton scattering based on the kinematics of the four leptons in the final state. An upper limit on the fraction of events originating from double-parton scattering is determined, together with a lower limit on the effective cross section.

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