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Status and Prospects of measurements of exclusive and diffractive processes with the ATLAS detector

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In the absence of forward proton tagging, exclusive processes can be distinguished in the central part of the ATLAS detector exploiting the large rapidity gap in the central region and the absence of charged particles reconstructed in the inner tracking detector. This strategy has been exploited to study the exclusive production of dilepton pairs in the data taken at centre-of-mass energies of 7 TeV and the exclusive production of W pairs in the 8 TeV data. We also present the latest results on exclusive dimuon production at 13 TeV. Moreover, the ATLAS collaboration has carried out a study of diffractive dijet production. The data distributions are compared with Monte Carlo models and the rapidity gap survival probability has been estimated in the kinematic region with high diffractive contribution. The talk will conclude with prospects of the upcoming physics program with the Atlas Forward Proton detector. Recent results demonstrate its capabilities to distinguish single diffractive events via forward proton tagging.

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