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Measurements of diffractive and exclusive processes with ATLAS

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The ATLAS collaboration has carried out a study of diffractive dijet production at 7 TeV pp collisions at the LHC, i.e. events with a hadronic system containing at least two jets in addition to a large region of pseudorapidity devoid of hadronic activity. 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.

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 and 8 TeV. The 7 TeV study concentrates on a precision measurement of the dielectron and dimuon

process, while the 8 TeV measurement explores the exclusive production of WW pairs in the electronmuon channel.

Prospects for exclusive jet production studies with the forward proton tagging capability of the AFP subdetector

of ATLAS will be discussed. A first look at data taken jointly with the ATLAS and LHCf detectors in a p+Pb run will also be shown.

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