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Typ: Talk

## Investigation of initial state effects in p+Pb collisions at ATLAS via measurement of both top quark and dijet production

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Proton-lead collisions at LHC energies offer unique possibilities to investigate the nuclear modifications of parton distribution functions (PDF) over a wide kinematic range. Several probes can be measured to characterize these effects in different kinematic regimes. The top-quark production is expected to be sensitive to effects at high Bjorken- $x$  values, which are hard to access experimentally using other available probes. Conversely, dijet production can provide constraints on nPDFs over a wide kinematic range that extends down to Bjorken- $x \sim 10^{-4}$ . In 2016 the ATLAS experiment collected  $164 \text{ nb}^{-1}$  of proton-lead collisions at a centre-of-mass energy of 8.16 TeV per nucleon pair. In this talk, we will present two new results obtained from the analysis of this dataset: the first measurement of the inclusive cross-section for top-quark pair production in dilepton and lepton+jets decay modes with electrons and muons, and the measurement of inclusive dijet cross-section. The results are compared to the NLO and NNLO predictions for dijet production and top-quark production using various PDF sets, respectively.

### Experiment/Theory

ATLAS

### Affiliation

ATLAS Collaboration

**Hauptautor:** LONGO, Riccardo

**Vortragende(r):** LONGO, Riccardo

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**Track Klassifizierung:** Early time dynamics and nuclear PDFs