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The study of jet properties in pp collisions at 7 TeV and pPb collisions at 5.02 TeV using POWHEG-Box

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Recent experimental results on jet production at LHC show that next-to-leading order (NLO) calculations are required to achieve good description of data.
In this contribution, the study of NLO simulations of jet production in proton-proton collisions with centre of mass energy of 7 TeV and proton-lead collisions at 5.02 TeV is presented.
These simulations were carried out using POWHEG-Box, implementation of positive weight hardest emission NLO generator, with parton showering provided by PYTHIA.
In pPb collisions the nuclear modification of parton distribution functions was implemented by EPS09 nuclear parton distribution modification factors.

Jet reconstruction was done using standard anti-k$_T$ algorithm, included in the FastJet package. Several values of resolution parameter R were used to cover range of experimental results. For parton distribution functions, CTEQ6.6 datasets were used for unmodified values, and NLO modification factors to simulate modification by lead nucleus.

We present the calculations and systematic studies of jet production cross sections and comparison of modified and unmodified jet yields, R_{pPb}. These observables provide information about effect of expected cold nuclear matter on observed jets and the results are compared to available data from LHC experiments.

On behalf of collaboration:

None

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