

## Cold nuclear matter at the LHC

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The properties of strongly interacting matter at extreme conditions of temperature and energy densities are studied with heavy ion collisions at LHC. While the comparison of measurements performed in Pb-Pb collisions with the same measurements in proton-proton collisions had been quite successful, proton-nucleus collisions provide a reference to disentangle signatures of the formation of a deconfined hot medium, from those already present in cold nuclear matter, due to the complex structure of the colliding nuclei.

While most of the benchmarks from the control experiment indicate that initial state effects do not play a role in the observed suppression of hadron production observed in heavy ion collisions, several measurements of particle production in the low and intermediate momentum region indicate the presence of coherent and collective effects.

This presentation reviews the experimental results in ultra-relativistic p-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV obtained recently at the CERN LHC, with special emphasis on the discovered collective phenomena.