

Charged-particle production in Pb+Pb and Xe+Xe collisions measured with the ATLAS detector

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Measurements of charged-particle production in heavy-ion collisions and their comparison to pp data provide insight into the properties of the quark-gluon plasma. In 2015, the ATLAS detector at the LHC recorded 0.49 nb^{-1} of Pb+Pb collisions and 25 pb^{-1} of pp collisions at a center-of-mass energy of $\sqrt{s_{\text{NN}}} = 5.02 \text{ TeV}$. In addition, around $3 \mu\text{b}^{-1}$ of Xe+Xe collisions at $\sqrt{s_{\text{NN}}} = 5.44 \text{ TeV}$ were recorded in 2017. These samples provide an opportunity to study the system size dependence of parton energy loss. The large acceptance of the ATLAS detector allows measurements of charged-particle spectra in a wide range of both pseudorapidity and transverse momentum, and differential in collision centrality. Charged-particle spectra measured in Pb+Pb and Xe+Xe collisions are compared to the analogous spectra measured in pp collisions, and the resulting nuclear modification factors are scrutinized. In particular, the nuclear modification factors are found to scale approximately with the number of participating nucleons, which may be a key to predicting the behavior of even smaller collision systems.

Summary

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