

Transverse momentum distributions of charged particles in pp and nuclear collisions with ALICE at the LHC

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The charged-particle transverse momentum spectrum in pp collisions is an important observable for testing perturbative QCD calculations and serves as a reference for heavy-ion collisions to study the properties of deconfined matter created in nucleus-nucleus (AA) collisions. The study of inclusive charged particle spectra gives information on parton energy loss in the medium created in AA collisions, leading to a suppression of hadron production at high transverse momentum (p_T). This effect can be investigated by calculating the nuclear modification factor, defined as the ratio between the p_T spectrum measured in nucleus-nucleus collisions and a reference spectrum in pp collisions scaled by the number of binary collisions. ALICE has measured pp collisions over a large energy range $\sqrt{s} = 13, 7, 5.02$ and 2.76 TeV, p-Pb at $\sqrt{s_{NN}} = 5.02$ TeV, Xe-Xe at $\sqrt{s_{NN}} = 5.44$ TeV and Pb-Pb $\sqrt{s_{NN}} = 5.02$ TeV and 2.76 TeV. We show the p_T spectra in pp and nuclear collisions as well as the nuclear modification factors with an exceptional precision as compared to previous results. Comparisons to theoretical models and event generators will be shown.

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