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Nuclear modification factor in Pb+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV using Boltzmann's transport Equation with Tsallis statistics

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In this work the transverse momentum spectra and nuclear modification factor for heavy ion collisions are derived using Tsallis non-extensive statistics in relaxation time approximation. The Boltzmann-Gibbs Blast Wave (BGBW) function is used as the equilibrium function and Tsallis function is used as the initial distribution function while solving the Boltzmann transport equation in the relaxation time approximation. The framework is used to analyse the experimental data for particles like pions, kaons, protons, D^0 meson and J/ψ produced in Pb+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV at the LHC, CERN. We find that our proposed equation of state describes the experimental data successfully.

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