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Centrality dependence of charged particle production at large transverse momentum in Pb–Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV $\hat{\sim} \dagger$

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Abstract

The inclusive transverse momentum (p_T) distributions of primary charged particles are measured in the pseudo-rapidity range $|\hat{\eta}| < 0.8$ as a function of event centrality in Pb–Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV with ALICE at the LHC. The data are presented in the p_T range $0.15 < p_T < 50$ GeV/c for nine centrality intervals from 70–80% to 0–5%. The results in Pb–Pb are presented in terms of the nuclear modification factor

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the spectrum measured at the same collision energy. We observe

that the suppression of high

that the suppression of high- p_T particles strongly depends on event centrality. The yield is most suppressed in central collisions (0–5%) with $R_{AA} \approx 0.13$ at $p_T = 6–7$ GeV/c. Above $p_T = 7$ GeV/c, there is a significant rise in the nuclear modification factor, which reaches $R_{AA} \approx 0.4$ for $p_T > 30$ GeV/c. In peripheral collisions (70–80%), only moderate suppression ($R_{AA} = 0.6–0.7$) and a weak p_T dependence is observed. The measured nuclear modification factors are compared to other measurements and model calculations.



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