

ALICE Run 3 实验中 5.36 TeV 下 Pb-Pb 碰撞中带电喷注的喷注谱及其修正效应的测量与喷注 v_2 的测量

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This study presents the first measurement of inclusive charged-particle jet spectra in different centrality classes of Pb-Pb collisions, utilizing the high-statistics Run 3 data collected by ALICE. We analyze the nuclear modification factor (R_{cp}) and the azimuthal anisotropy (v_2) of jets. Jets, originating from the fragmentation of high-energy partons, traverse the quark-gluon plasma (QGP) in heavy-ion collisions, losing energy primarily through medium-induced gluon radiation and elastic scattering. These processes lead to modifications in jet yields and structure. Due to the geometric shape of the collision, partons emitted at different angles experience different path lengths within the QGP, resulting in an azimuthal anisotropy in jet energy loss, which is quantified by the second-order flow coefficient (v_2).

To quantify jet quenching effects, we measure jet R_{cp} , defined as the ratio of jet p_T spectra in central Pb-Pb collisions to those in peripheral Pb-Pb collisions and pp baselines. Additionally, we perform the first analysis of inclusive charged-particle jet v_2 in Pb-Pb collisions, leveraging ALICE's upgraded detectors to extend the measurement to lower p_T . The study of low- p_T jets is particularly crucial for constraining theoretical models and understanding the mechanisms responsible for jet v_2 generation. Finally, our results will be compared with existing jet v_2 measurements, further probing the properties of the QGP and the path-length dependence of jet energy loss.

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