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Jet RAA and vn for PbPb 5.02 TeV with JEWEL+v-USPhydro

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The Quark-Gluon Plasma, a new state of matter characterized by its extreme energy density and temperature generated in heavy-ion collision experiments, is expected to modify hard-scattered partons traveling through it and, consequently, the jets they produce. Analyses regarding jets may recover information about the medium and its partonic energy-loss mechanism. This work applies the Monte Carlo event generators JEWEL and PYTHIA for the simulation of observables comparable to current experimental research, focusing on the impact of a realistic description of the medium, provided by the state-of-the-art (2+1)D v-USPhydro code, in the azimuthal distribution and energy modification of jets.

We present the jet nuclear modification factor RAA and anisotropic flow coefficients vn=2,3,4 for multiple models, centralities and jet radii R. The RAA simulated presents good agreement with experimental data for central collisions only. The evolution of the results in terms of centrality and R indicates a possibility of better understanding of medium response in the JEWEL framework. The realistic hydrodynamics models behave differently to JEWEL's longitudinal-only expansion, mainly in the circumstances where less quenching is expected. The correlation between the jet azimuthal distribution and those generated by soft particles resulted from the realistic medium profiles enables the event-by-event calculation of higher-order jet anisotropic flow coefficients that can be compared to experimental measurements. The simulations show a transverse momentum-dependent elliptic flow v2 and, for the first time, a positive triangular flow v3 .

Authors: CANEDO, Fabio (Universidade de Sao Paulo (BR)); NORONHA-HOSTLER, Jacquelyn (University of Illinois Urbana Champaign); NORONHA, Jorge (University of Illinois at Urbana-Champaign); BARRETO DE OLIVEIRA CAMPOS, Leonardo (Universidade de Sao Paulo (BR)); GAMEIRO MUNHOZ, Marcelo (Universidade de Sao Paulo (BR))

Presenter: CANEDO, Fabio (Universidade de Sao Paulo (BR))

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