

Measurements of inclusive and semi-inclusive jet production in heavy-ion collisions at STAR

Yang He¹, Michal Svoboda²,
(for the STAR Collaboration)

¹Shandong University,

²Nuclear Physics Institute, Czech Academy of Sciences

A comprehensive understanding of jet quenching in heavy-ion collisions requires measurements of multiple observables over a wide range in jet transverse momentum (p_T) and jet resolution parameter (R) to resolve the dynamics of parton energy loss using reconstructed jets. In this talk, the STAR Collaboration reports the first measurements of fully-reconstructed inclusive jets in Au+Au collisions and semi-inclusive hadron-jet (h+jet) correlations using charged-particle jets in isobar (Zr+Zr and Ru+Ru) collisions at the top RHIC energy of $\sqrt{s_{NN}} = 200$ GeV.

Jets are reconstructed using the anti- k_T algorithm from charged-particle tracks in the Time Projection Chamber and in case of full jets also from neutral energy measured by the electromagnetic calorimeter. The high statistics Au+Au dataset significantly extends the kinematic reach, compared to the previous measurements with charged-particle jets, allowing to reconstruct the full jet spectra and study their medium modification, with low constituent $p_T > 0.2$ GeV/ c , up to jet $p_T \sim 50$ GeV/ c and resolution parameters $R = 0.2 - 0.4$. In addition, the suppression of recoil charged-particle jet yield in isobar collisions is presented for the charged-hadron trigger $p_T = 7-25$ GeV/ c and the jet resolution parameter $R = 0.2 - 0.5$.

The medium-induced modification to the inclusive jet yield and h+jet correlations is discussed and compared with state-of-the-art models of jet quenching and measurements at the LHC.