

Full jet reconstruction in 200 GeV p+p, d+Au and Au+Au collisions by STAR

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Full jet reconstruction in heavy-ion collisions is a promising tool for the quantitative study of properties of the dense medium produced at RHIC. Measurements of d+Au collisions are important to disentangle initial state nuclear effects from medium-induced k_T broadening and jet quenching. Study of jet production and properties in d+Au in combination with similar studies in p+p is an important baseline measurement needed to better understand heavy-ion results [1,2].

The large acceptance of the Time Projection Chamber (TPC) and the Barrel Electromagnetic Calorimeter (BEMC) detectors makes the STAR experiment well suited for full jet reconstruction. Utilizing the high luminosity delivered by RHIC in run 8, a large data sample of 200 GeV d+Au collisions was collected. In addition to the minimally biased trigger, several fast online BEMC triggers were used to enrich the rate of recorded jets.

We report measurements of the inclusive jet spectrum and di-jet correlations in d+Au that are sensitive to initial state nuclear effects and compare to similar measurements in p+p collisions. To control detector and trigger related systematic uncertainties we use p+p reference data taken with the same BEMC triggers and the same detector geometry (run 8). In order to estimate the systematic uncertainties in jet reconstruction we apply several modern jet reconstruction algorithms [3,4].

[1] S. Salur (for the STAR Collaboration), arXiv:0809.1609.

[2] J. Putschke (for the STAR Collaboration), arXiv:0809.1419.

[3] M. Cacciari and G. Salam, Phys. Lett. B 641, (2006) 57-61.

[4] M. Cacciari, G. Salam and G. Soyez, JHEP 0804, (2008) 063.

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