Contribution ID: **159** Type: **Parallel Talk**

Exploring jet interactions in the quark-gluon plasma using jet substructure measurements in Pb-Pb collisions with ALICE

Friday, 8 July 2022 14:45 (15 minutes)

Jets are generated in hard interactions in high energy nuclear collisions, propagating through the quark-gluon plasma (QGP) as the jet shower evolves. The interaction of jet shower components with the QGP, known as jet quenching, generates several observable phenomena that provide incisive probes of the structure and dynamics of the QGP. In particular, measurements of the medium-induced modification of jet substructure observables may be sensitive to effects such as color coherence or differences in quark and gluon energy loss due to their different Casimir factors. By utilizing jet grooming techniques to select particular regions of phase space, we can further focus on the most pertinent hard splittings. ALICE is particularly well suited for such substructure measurements due to its precise charged-particle tracking, which enables high-efficiency measurements of jets down to low p_{T} and of narrow splittings. In this talk, we report several recent jet substructure measurements in Pb-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV, both ungroomed and groomed with the Soft Drop and Dynamical Grooming algorithms. We report measurements of the groomed jet radius, $\Theta_g \equiv R_g/R$, the groomed jet momentum fraction, z_g, and the transverse momentum of the groomed splitting, $k_{\mathrm{T,g}}$. These measurements show direct evidence of the modification of the angular structure of jets in the QGP, and provide new constraints on the search for large-angle scattering of jets off of quasi-particles in the QGP. New measurements of sub-jet fragmentation, generalized jet angularities, and variation in jet-axis on the basis of jet definition, will also be presented, providing insight into the angular and momentum structure of modified jets. Comparisons with model calculations will also be discussed.

In-person participation

Yes

Primary author: CC CHAIRS, ALICE

Presenter: EHLERS, Raymond (Lawrence Berkeley National Laboratory)

Session Classification: Heavy Ions

Track Classification: Heavy Ions