Measurement of N-Point Energy Correlators in Heavy-Ion Collisions at STAR

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In proton-proton collisions, hard-scattered partons will undergo perturbative fragmentation and hadronization, resulting in a collimated collection of hadrons that can be measured as a jet. Two- and three-point energy correlators have been shown experimentally in proton-proton collisions to describe both the perturbative and non-perturbative evolution of a jet, with a transition between the two at a fixed energy scale. In heavy-ion collisions, the medium has been seen to quench jets and modify their substructure. Energy correlators can potentially isolate these modifications to identifiable angular scales, including the onset of effects such as color coherence and the medium wake.

In this talk, the first measurement of N-point energy correlators in isobar collisions (Ru+Ru, Zr+Zr) at RHIC at $\sqrt{s_{\mathrm{NN}}} = 200$ GeV will be shown. Additionally, measurements of charge-weighted energy correlators in proton-proton collisions by STAR have revealed that the behavior governing two-point charge conservation across hadronization is not well described by current Monte-Carlo models at angles below the hadronization regime. In this talk, we also present the first measurement of charge-weighted energy correlators in isobar collisions, which helps to identify modifications to the hadronization process in the presence of the medium.