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Disentangling the origins of jet modification using Monte Carlos

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Jet modification is an essential probe of the quark-gluon plasma produced in heavy-ion collisions. However, current jet modification measurements compare proton-proton and heavy-ion jets that had different properties when they were produced. Extracting the essential modification of jets by the quark-gluon plasma from these measurements requires an in-depth understanding of how jet observables are modified and to what extent they control energy loss. We present an extensive study of how a suite of groomed and ungroomed jet observables are modified and how they impact jet energy loss in Jewel and the hybrid model. We use information available in these models, but not in data, to identify how a jet's properties after quenching are related to those it had when it was produced. This enables us to focus on those observable features of a heavy-ion jet that provide maximal information about the properties it had before quenching and study the extent to which these conclusions are model-independent. The insights obtained through this model study are a crucial step toward a data-driven analysis of the relation between jet observables and energy loss in experimental data.

Collaboration (if applicable)

Track

Jets and High Momentum Hadrons

Contribution type

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