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Tackling selection bias in heavy-ion jets with energy correlators

The first measurement of the two-point energy correlator (EEC) in Pb-Pb collisions has revealed its sizeable modifications with respect to the p-p baseline. Nevertheless, challenges arise in comparing these measurements due to selection bias caused by energy loss, which leads to a shift in the Pb-Pb EEC spectrum toward smaller angles as compared to the p-p measurement. In this talk, we will show that jets retain a memory of their original distribution before losing energy, allowing us to define a new EEC-based observable that corrects for the leading-order effects of this selection bias while keeping sensitivity to other medium effects. This represents the first-ever jet substructure observable whose medium modifications cannot be explained solely by selection bias and/or changes in quark/gluon fractions. Finally, we will extend this procedure to charged energy correlators, which correlate the energy flux carried by hadrons of different quantum numbers

Category

Theory

Collaboration (if applicable)

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