

High-energy probes of the initial stages in heavy-ion collisions

Wednesday 2 April 2025 14:00 (1 hour)

The matter produced in heavy-ion collisions undergoes a multiphase evolution, providing unique access to a variety of QCD matter properties. Hard probes, which penetrate the medium and carry away imprints of different phases, serve as a key tool for studying this evolution. While their interaction with the medium in the very first moments after a collision was historically assumed to be negligible, recent studies suggest otherwise. In this talk, I will review how hard probes interact with nuclear matter from the earliest stages of a heavy-ion collision onward. Using jets as an example, I will discuss how they lose energy and how their substructure is modified during the pre-equilibrium phases, comparing these effects with their interactions in the later quark-gluon plasma stage. Understanding these early-time interactions provides new insights into the thermalization process and the microscopic structure of the QCD medium.

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