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Factorization in Heavy Ion Collisions

Monday, 26 July 2021 15:00 (15 minutes)

We present our latest findings on the status of factorization in heavy ion collisions. In the first microsecond of the universe, space was filled with deconfined nuclear matter at a temperature of a trillion degrees. These conditions are recreated thousands of times a second at experiments in the US and Europe in which large nuclei such as gold and lead are collided at nearly the speed of light. Very high momentum particles that propagate through the fireballs generated in these heavy ion collisions form one of the essential probes of the properties of the quark-gluon plasma (QGP) that permeated the early universe. In order for these high momentum particles to be a well-calibrated probe, we must ensure that the quantitative predictions for their behavior are well-controlled. The rigorous language for this control is known as factorization, which implies that the production and hadronization processes are independent of the interaction of the probe with the QGP medium. We show how previous energy loss calculations diagrammatically fail at factorization and point to a way forward for future progress.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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