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Fluctuations and Correlations in Heavy-Ion Collisions

Wednesday, 10 October 2018 13:15 (1 hour)

The analysis of event-by-event fluctuations forms a central component of the study of heavy-ion collisions. Such fluctuations - and their associated correlations - emerge in a variety of different experimental observables, including anisotropic flow, mean p_T , and total charged multiplicity, and studying them systematically has yielded valuable insights into the evolution of the collision system.

In general, fluctuations can affect any phase of a heavy-ion collision's evolution. In this presentation, I will explore two kinds of fluctuations: one, which occurs in the initial state of the collision system, and the other, which occurs during the intervening evolution of the system. I will discuss some of the ways that practitioners model these fluctuations phenomenologically, and I will describe some techniques for accessing experimentally their effects on the spatio-temporal geometry of the collision system. I will conclude by commenting on the implications of these results for the field of heavy-ion physics.

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