

Emergence of collectivity near a critical point

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The Relativistic Heavy Ion Collider (RHIC) dedicates significant experimental resources for the search of a critical point (CP) - the endpoint of a first order phase transition at high baryonic densities - in the QCD phase diagram. Hence dynamical simulations of the emergence of collectivity near a CP are of particular interest. With my collaborators I discover that in holographic theories with certain QCD-like features a long-lived quasi-static state may be formed near a critical point (Phys.Rev.Lett. 121 (2018), no.26, 261601). In particular, we show that the standard hydrodynamical relativistic formulation, is incorrect as it fails to describe the pressures of the created plasma. We demonstrate that large second-order spatial derivatives need to be accounted for the fluid description. These will be crucial in the data analysis of the RHIC CP search.

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