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EVOLUTION OF NON-GAUSSIAN HYDRODYNAMIC FLUCTUATIONS

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In the context of the search for the QCD critical point using non-Gaussian fluctuations, we obtain the evolution equations for non-Gaussian cumulants within hydrodynamics to leading order of the systematic expansion in the magnitude of thermal fluctuations. We develop diagrammatic technique in which the leading order contributions are given by tree diagrams. We introduce the concept of Wigner transform for multipoint correlators and derive the evolution equations for the novel three- and four-point Wigner functions. We demonstrate in a simple model simulation how this formalism accounts for the effects of memory and baryon number conservation on critical point signatures in non-Gaussian fluctuations.

References: Phys.Rev.Lett. 127 (2021) 7, 072301 and work in progress.

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