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Fate of critical fluctuations in an interacting hadronic medium

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We study the evolution of critical fluctuations in an expanding system within a hadronic transport approach. The system is initialized with particle number distributions coupled to the critical mode and the hadron gas then evolves in time with realistic hadronic interactions \cite{Hammelmann:2022yso}.
The initialization of the system with critical fluctuations is achieved by coupling the ideal hadron resonance gas cumulants to the ones from the 3d Ising model \cite{Bluhm:2016byc} and generating the net and total particle numbers from the maximum entropy probability distribution.
We systematically investigate the evolution of the critical fluctuations initialized at various temperatures and chemical potentials along a freeze-out line and the dependency of the final state cumulants as a function of $\sqrt{s}$ is presented. Additionally, the sets of particles which are coupled to the critical mode are modified such that the strength of the propagation of correlations through interactions can be assessed.
We find that in the scaling region of the critical point correlations are propagated through the whole collisional history and are still present after the kinetic freeze-out of the matter.

Authors: ELFNER, Hannah; HAMMELMANN, Jan; BLUHM, Marcus; NAHRGANG, Marlene (Subatech)

Presenter: HAMMELMANN, Jan

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