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Flavor-specific behavior of conserved charge fluctuations at the QCD confinement transition

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Great experimental and theoretical effort is being put into the detailed study of the confinement/deconfinement transition in QCD matter. Susceptibilities of conserved quantities, which are related to the statistical moments of particle multiplicity distributions measured in heavy-ion collisions, provide important insight, in particular, into the composition of the produced matter. Based on a study of the higher moments of quark-flavor quantum number distributions, I will argue in this talk about a potential hierarchy in the hadronization sequence of different quark flavors during the course of an ultra-relativistic heavy-ion collision. Such a flavor-dependence would, in particular, influence the production of strange versus non-strange (light-quark) hadrons in comparison with standard approaches which assume a flavor-independent hadronization. The presented study will rest upon an interplay between recent lattice QCD results for the quark-number susceptibilities of different quark flavors, recent measurements of particle multiplicity distributions from the ALICE collaboration and phenomenological models that aim to relate the thermal properties of the QCD matter at the confinement/deconfinement transition to final state hadron measurements.

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