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Universal critical dynamics in QCD

Wednesday 25 September 2024 17:40 (20 minutes)

In this talk, I will give an overview of the universal critical dynamics at the chiral phase transition of two-flavor QCD in the chiral limit. I will review the argument by Rajagopal and Wilczek of the associated dynamic universality class being “Model G” from the Halperin-Hohenberg classification. To extract dynamic universal quantities, we use a novel formulation of the functional renormalization group for dynamical systems with “reversible mode couplings”. I will show results for dynamic universal quantities such as the non-trivial value z=d/2 of the dynamic critical exponent at the “strong-scaling” fixed point (where d is the number of spatial dimensions) and for dynamic universal scaling functions. Finally, I will outline how the same method can be used to study the universal dynamics at the QCD critical point, with the dynamic universality class being “Model H” in this case.

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