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Universal scaling of conserved charge in the stochastic diffusion dynamics

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In this work, we explore the Kibble-Zurek scaling of the conserved charge, using the stachastic diffusion dynamics. After determining the characteristic scales τ_{KZ} and l_{KZ} and properly rescaling the traditional correlation function and cumulant, we construct universal functions for both the two-point correlation function $C(y_1 - y_2; \tau)$ and second-order cumulant $K(\Delta y, \tau)$ of the conserved charge in the critical regime, which are insensitive to the initial temperature and a parameter in the mapping between 3D Ising model and the hot QCD system near the critical point.

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