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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 stochastic diffusion dynamics. After determining the characteristic scales  $\tau_{KZ}$  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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