

# Quark Matter 2019 - the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions



Contribution ID: 588

Type: **Poster Presentation**

## Kibble-Zurek scaling near the QCD critical point

*Monday, 4 November 2019 17:40 (20 minutes)*

The dynamical models near the critical point are important tools to study the critical phenomena for RHIC BES program. However, the related model calculations depends on various parameters and inputs. In this talk, I will focus on the universal behavior of the dynamical evolving systems near the critical point, which is insensitive to various parameters and input in the model calculations.

In [1,2], we have investigated the Kibble-Zurek scaling within the framework Langevin dynamics of the order parameter field and net-protons, and within the framework of stochastic diffusion dynamics of conserved charges. We constructed universal functions which are insensitive to various parameters through rescaling the traditional correlation function and cumulant with the properly determined characteristic scales  $\tau_{kz}$ ,  $\theta_{kz}$  and  $l_{kz}$ .

In more details, for the dynamic of non-conserved order parameter, the constructed universal functions are insensitive to the magnitude of relaxation time and the evolving trajectory on phase diagram. And coupling with the net-proton, the oscillating behavior is suppressed for the constructed universal function, comparing with the original cumulants which strongly oscillate in terms of relaxation time and trajectory. For the dynamics of conserved charge, we also construct the universal functions, which are insensitive to the different initial temperature and a parameter in the equation of state.

[1] S. Wu, Z. Wu and H. Song, Universal scaling of the sigma field and net-protons from Langevin dynamics of model A, Phys. Rev. C 99, 064902(2019)

[2] S. Wu and H. Song, Universal scaling of conserved charge in the stochastic diffusion dynamics, arXiv:1903.06075 [nucl-th]

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**Session Classification:** Poster Session

**Track Classification:** Search for the critical end point