Contribution ID: **72** Type: **not specified**

The inviscid fixed point of the multi-dimensional Burgers-KPZ equation

Wednesday 25 September 2024 17:40 (20 minutes)

A new scaling regime characterized by a $z = 1$ dynamical critical exponent has been reported in several numerical simulations of the one-dimensional Kardar-Parisi-Zhang and noisy Burgers equations [1]. This scaling was found to emerge in the tensionless limit for the interface and in the inviscid limit for the fluid. Based on functional renormalization group, the origin of this scaling has been elucidated [2]. It was shown to be controlled by a yet unpredicted fixed point of the one-dimensional Burgers-KPZ equation, termed inviscid Burgers fixed point. The associated universal properties, including the scaling function, were calculated. In the present work, we generalize this analysis to the multi-dimensional Burgers-KPZ equation [3]. We show that the inviscid-Burgers fixed point exists in all dimensions d, and that it controls the large momentum behavior of the correlation functions in the inviscid limit. It turns out that it yields in all d the same super-universal value $z = 1$ for the dynamical exponent. [1] C. Cartes, E. Tirapegui, R. Pandit, M. Brachet, Phil. Trans. Roy. Soc. A 380, 20210090 (2022); E. Rodriguez-Fernandez, S. N. Santalla, M. Castro, R. Cuerno, Phys. Rev. E 106, 024802 (2022); K. Fujimoto, R. Hamazaki, Y. Kawaguchi, Phys. Rev. Lett. 124, 210604 (2020). [2] C. Fontaine, F. Vercesi, M. Brachet, L. Canet, Phys. Rev. Lett. 131, 247101 (2023). [3] L. Gosteva, M. Tarpin, N. Wschebor, L. Canet, submitted, arxiv.org/abs/2406.14030.

Presenter: GOSTEVA, Liubov

Session Classification: Parallel B