Contribution ID: **81** Type: **oral**

Fluctuating hydrodynamics of one-dimensional nonlinear chains

Monday, September 4, 2017 5:30 PM (30 minutes)

One-dimensional particle systems are known to be anomalous with respect to the dynamics of their hydrodynamic conserved fields and their related currents. We review some of the predictions of mode-mode coupling theory combined with exact results by Prähofer and Spohn [J. Stat. Phys., vol. 115, 255 (2004)] to derive asymptotic expressions for the time-correlation functions of the hydrodynamic modes and their currents. These results are compared to extensive computer simulations for two simple fluids with non-linear short-range interactions.

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Session Classification: Session 3