

27th Rencontres ITZYKSON : Fluctuations far from Equilibrium



Contribution ID: 25

Type: **not specified**

Ivan LOBASKIN - Steady states of the matrix product type for driven tracers in a narrow channel: an easy case and a not-so-easy case

Wednesday, May 31, 2023 5:45 PM (45 minutes)

Single-file diffusion with a defect particle is fundamental to the understanding of driven tracers in narrow channels. In this talk, two variations on the simple exclusion process on a ring geometry are considered as minimal models of such a setup. The first variation is a totally asymmetric tracer in a bath of symmetric particles. The second variation is a defect particle with priority in a partially asymmetric process. The matrix product ansatz is used to solve the steady states of these models. Steady-state density profiles and currents are obtained. In particular, the asymptotic analysis of the second model reveals a phase diagram with uniform and shock-type density profiles.

I Lobaskin, M R Evans, J Stat Mech, 2020 (5) 053202

I Lobaskin, M R Evans, K Mallick, J Phys A, 2022 (20) 205002

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