

Directed Transport of Interacting Particle Systems: Recent Progress

ZHENG Zhi-Gang^{1,2}

¹ Department of Physics, Beijing Normal University, Beijing 100875, China

² Center for Nonlinear Studies, HongKong Baptist University, Hong Kong, China
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Abstract: Recent developments in studies of directed transport processes in interacting particle systems are retrospected. Due to the interactions among elements, the directed transport process exhibits complicated and novel cooperative dynamics. We considered various possibilities in achieving ratchet motion by breaking different symmetries of many-body systems. It is shown that the directional transport can even be induced by breaking the coupling symmetry and the spatiotemporal symmetries.

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Key words: directed transport, Frenkel-Kontorova model, symmetry breaking

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