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Transport and dynamics in multisite subsystems MALAY BANDYOPADHYAY, Indian Institute of Technology Bhubaneswar, MANAS KULKARNI, Princeton University, DVIRA SEGAL, University of Toronto — We consider a chain of quantum dots coupled to finite-size reservoirs (prepared out-of-equilibrium) in which each dot is susceptible to decoherence effects or inelastic scattering processes. We observe a ballistic to diffusive crossover in the electronic current. We further investigate the manifestation of this ballistic-diffusive crossover on the dynamics and electron reorganization in the fermionic reservoirs. We find regimes which can be described in a classical framework and regimes whose description is rooted in quantum statistics. Our work can be generalized to understand other multi-site systems and their feedback on the bath degrees of freedom.

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