

Correlated Resetting Gas

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I will first discuss the equilibrium properties of a gas of N interacting particles on a line. I will then introduce a simple model of N independent Brownian particles that are subjected to simultaneous stochastic resetting with rate r . The simultaneous resetting generates an effective dynamical all-to-all attractions between particles that persist even at long times in its nonequilibrium stationary state (NESS). Despite the presence of strong correlations, many physical observables such as the average density, extreme statistics, order and gap/spacing statistics, full counting statistics etc. can be computed exactly in the NESS and they exhibit rich and interesting behaviors. The physical mechanism built in this simple model allows it to generalise and invent a whole class of solvable strongly correlated gases, some of which are experimentally realisable in optical trap systems.