Energy transport through rare collisions

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We study a one-dimensional hamiltonian chain of masses perturbed by an energy conserving noise. The dynamics is such that, according to its hamiltonian part, particles move freely in cells and interact with their neighbors through collisions, made possible by a small overlap of size $\epsilon > 0$ between near cells. The noise only randomly flips the velocity of the particles. If $\epsilon \rightarrow 0$, and if time is rescaled by a factor $1/{\epsilon}$, we show that energy evolves autonomously according to a stochastic equation, which hydrodynamic limit is known in some cases. In particular, if only two different energies are present, the limiting process coincides with the simple symmetric exclusion process.

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