

Tytuł: **Standard and anomalous diffusion of energy in chains of coupled oscillators**
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Over the last few years, anomalous behaviors have been observed for one-dimensional chains of oscillators. The rigorous derivation of such behaviors from deterministic systems of Newtonian particles is very challenging, due to the existence of conservation laws, which impose very poor ergodic properties to the dynamical system. A possible way out of this lack of ergodicity is to introduce stochastic models, in such a way that the qualitative behaviour of the system is not modified. One starts with a chain of oscillators with a Hamiltonian dynamics, and then adds a stochastic which keeps the fundamental conservation laws (energy, momentum and stretch, usually).

For the unpinned harmonic chain where the velocities of particles can randomly change sign (and therefore the only conserved quantities of the dynamics are the energy and the stretch), it is known that, under a diffusive space-time scaling, the energy profile evolves following a non-linear diffusive equation involving the stretch. Recently it has been shown that in the case of one-dimensional harmonic oscillators with noise that preserves the momentum, the scaling limit of the energy fluctuations is ruled by the fractional heat equation.