Energy transport in an infinite chain of harmonic oscillators with a degenerate noise.

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We consider a one dimensional infinite chain of harmonic oscillators whose dynamics is perturbed by a stochastic term conserving energy and momentum. We prove that in the unpinned case the macroscopic evolution of the energy converges to a fractional diffusion governed by $-|\Delta|^{3/4}$. For a pinned system we prove that energy evolves diffusively, generalizing some of the earlier results contained in [1]. This is a joint work with S. Olla (CEREMADE, Univ. Paris-Dauphine) and M. Jara (IMPA, Rio de Janeiro).

References

[1] G. Basile, S. Olla, Energy Diffusion in Harmonic System with Conservative Noise, J. Stat. Phys., 155, no. 6, 1126–1142, 2014,