STOCHASTIC ENERGY EXCHANGE MODELS WITH DEGENERATE RATE FUNCTIONS

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In recent years, stochastic energy exchange systems of locally confined particles in interaction have been studied intensively, as accessible models for the rigorous study of the derivation of Fourier's law from microscopic dynamics of mechanical origin. As a generalization of them, Alexander Grigo, Konstantin Khanin and Domokos Szász introduced a class of Markov jump processes of energies in [1]. In this talk, I will consider a special class of these processes where the rate function of the energy exchange does not have a uniform lower bound. As pointed out in [1], such a rate function naturally appears in the models that originate from mechanical models, but it leads to serious technical complications in the analysis of the spectral gap. I will give a lower bound estimate of the spectral gap and examples belonging to the class. Their macroscopic properties will be also discussed.

[1] A. GRIGO, K. KHANIN, D. SZÁSZ, *Mixing rates of particle systems with energy exchange*, arXiv:1109.2356