
Gallavotti-Cohen fluctuation relation in infinite dimension

Armen Shirikyan^{*1}, Vojkan Jaksic², Vahagn Nersesyan³, and Claude-Alain Pillet⁴

¹Laboratoire d'Analyse, Géométrie et Modélisation (AGM) – CNRS : UMR8088, Université de Cergy Pontoise – France

²McGill University – Canada

³Laboratoire de Mathématiques de Versailles (LM-Versailles) – CNRS : UMR8100, Université de Versailles Saint-Quentin-en-Yvelines (UVSQ) – France

⁴Centre de Physique Théorique (CPT) – Université de Toulon, Aix Marseille Université, CNRS : UMR7332 – France

Abstract

The Gallavotti-Cohen fluctuation relation is a general asymptotic result about the probability of rare events under a given deterministic or stochastic dynamics. Roughly speaking, it says that, in the stationary regime, the probability of observing a negative value for the time average of the entropy production is exponentially small compared to that for the opposite value. Due to contributions of Kurchan, Lebowitz-Spohn, Maes and many others, Gallavotti-Cohen fluctuation relation is rather well understood for many finite-dimensional stochastic systems. In this talk, we shall describe some recent results concerning the fluctuation relation in the infinite-dimensional case and discuss an example of its failure.

^{*}Speaker