
Small noise limit of a randomly perturbed Hamiltonian system - a variational approach

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Abstract

Coarse-graining or dimension reduction is the procedure of approximating a system by a simpler or lower dimensional one. This is typically achieved by passage to the limit of some parameter in the original system. Variational-evolution structures have been successfully used in recent years to pass to the limit in case of dissipative (gradient-flow) systems. However these structures do not straightforwardly apply to systems which additionally have inertial effects. In this talk, I will present a variational technique arising from large-deviations theory which applies to a class of systems where both dissipative and inertial effects are present. I will present the technique by means of an example, the small noise limit of a randomly perturbed Hamiltonian system.

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