

What Determines Exact Concentration of Stationary Measures

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Abstract. This talk will focus on that asymptotic measure of stationary measures for SODEs and its concentration are determined by the global minima set of so called QUASIPOTENTIAL. There are two methods in history to deal with the problems: uniform large deviation principle (ULAP) and the Laplace method. We will first provide the conditions on ULAP, which roughly says SODEs admit ULAP if their solutions do not blow up. Under them Freidlin and Wentzell's results on concentration of asymptotic measure still hold. Using it we show how to compute the transiting difficult matrix for quasi-potential system, which precisely gives asymptotic measure and the leading terms of transiting probability and time between limit sets. Besides, for quasi-potential system with small additive noise, we prove that the asymptotic measure will concentrated on the global minima of the quasipotential function, which gives exact asymptotic measure and its support, including stable equilibria, stable periodic orbits, saddles, and chaotic motions et al., of a large number of quasi-potential systems.

This is a joint work with Dr. Wang Jian and Prof. Zhang Tusheng.

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