FIM Nachdiplomvorlesung

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Stochastic Arnold diffusion of deterministic systems

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HG G 43, ETH Zürich, Rämistrasse 101

Abstract

In 1964, V. Arnold constructed an example of a nearly integrable deterministic system exhibiting instabilities. In the 1970s, physicist B. Chirikov coined the term for this phenomenon "Arnold diffusion", where diffusion refers to stochastic nature of instability. One of the most famous examples of stochastic instabilities for nearly integrable systems is dynamics of Asteroids in Kirkwood gaps in the Asteroid belt. They were discovered numerically by astronomer J. Wisdom. During the course we shall discuss various aspects of this phenomenon. In particular, a class of nearly integrable deterministic systems, where stochastic diffusive behaviour was proven, namely, that distributions given by deterministic evolution of certain probability measures weakly converge to a stochastic diffusion process.

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