

Abstract Submitted
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Random fluctuations and resonances in near-integrable flows

DMITRI VAINCHTEIN, Temple University — Resonance phenomena, such as capture into resonance and scattering on resonance, are known to be major contributors to transport and mixing in near-integrable multi-scale flows. The long-time transport properties in such systems are described in terms of the evolution of the certain quantity, called adiabatic invariant. In the present talk we investigate the impact of different random fluctuations on adiabatic transport. This impact manifests itself in two ways: the statistical properties of the diffusion of the adiabatic invariant due to scattering are altered, and the fine properties of capture, such as the probability of capture and the input-output function, may change significantly. Using the Ekman pumping-driven flow in circular cells as example, we investigate the role these phenomena and obtain modifications to long-term diffusion equations derived before.

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