
Wave turbulence in vibrating plates

Christophe Josserand^{*1}, Thomas Humbert^{*2}, Cyril Touze³, and Olivier Cadot³

¹Institut D'Alembert, CNRS UPMC (IDA) – CNRS : UMR7190 – UPMC, 4 place Jussieu, 75005
Paris, France

²Institut D'Alembert, CNRS UPMC (IDA) – Université Pierre et Marie Curie [UPMC] - Paris VI –
Paris, France

³UME-ENSTA (ENSTA) – ENSTA ParisTech – Palaiseau, France

Abstract

Wave turbulence has been historically introduced for understanding the statistical equilibrium of water waves at the surface of water. The theory of wave turbulence is based on an expansion of the dynamics for weak perturbations where the nonlinearities intervene through resonant interactions. Elastic plates offer a similar context

of dispersive linear wave that interact through nonlinear terms and theoretical predictions of a wave turbulence state in vibrating plates have been made almost ten years

ago. In this presentation, we will first present the wave turbulence theory applied to elastic plates. Then comparisons with recent experiments will be discussed, emphasizing in particular the role of the dissipation in the dynamics.

^{*}Speaker