

Investigation of wave resonances in wave turbulence of the thunder plate

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Keywords: wave turbulence, elastic plate.

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The thunder plate is a thin elastic metal plate that is used since the 18th century to mimic the thunder noise. The noise radiated by such a plate when shaken is due to the turbulence of flexion waves. The elastic plate is a privileged setup for wave turbulence due to the possibility to perform a measurement of its deformation which is resolved both in time and space. Thus the detailed structure of wave turbulence can be probed in details. Furthermore due to the 2D character of the motion, numerical simulations can be run for long time. With such simulations we were able to show that the observations are compatible with Weak Turbulence theory provided that dissipation is taken into account. Here we will present our latest developments that probe even further this sort of wave turbulence. By computing 4-wave correlations we show that indeed the asymptotic expansion that is at the core of the Weak Turbulence theory is indeed supported by our observations.

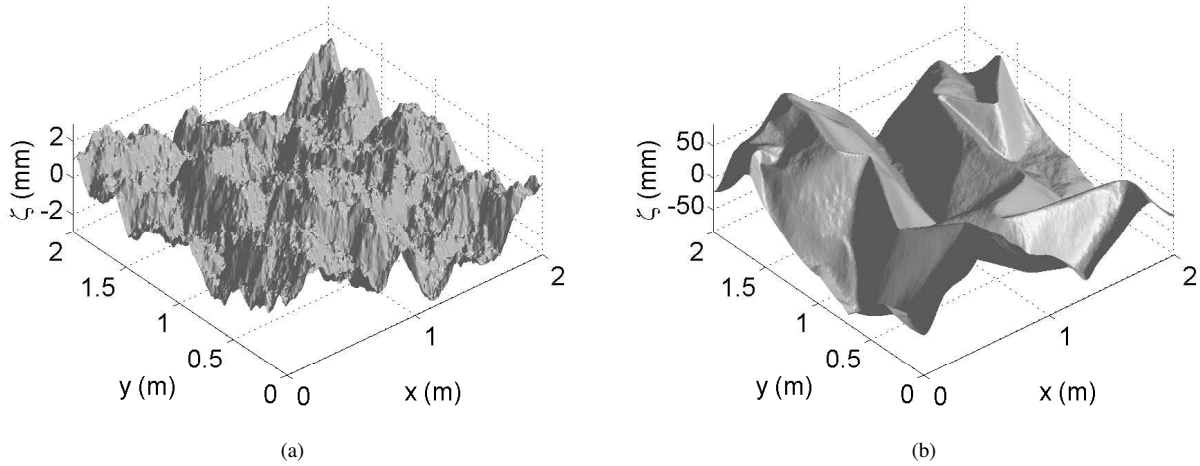


Figure 1: Snapshots of the plate deformation at weak (left) and strong (right) forcing [1]

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