Thin elastic plates turbulence

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The statistical properties of thin elastic plates under an external forcing exhibit several similarities with Hydrodynamic turbulence. In the last decade, experiments and numerical simulations have reported an energy flux along scales with Kolmogorov-like energy spectrum, together with regimes where large fluctuations lead to intermittency. In this talk I will first review the statistical properties of thin elastic plates in the limit of weak nonlinearity in the context of Föppl - von Kármán equations. I will discuss the result obtained within the wave turbulence theory, its validity and comparison with numerical simulations and experiments. In the second part of this talk I will discuss the strong turbulence regime. I will show a new analytical result for a third order structure function (third-order moment of field space difference). Our result is the equivalent to the well known Kolmogorov's 4/5-law in hydrodynamic turbulence.

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