
The experimental search for 3D Anderson localization of ultrasound in a resonant suspension made of soft metallic micro-beads

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Abstract

We study a model resonant system composed of monodisperse soft metallic micro-beads randomly dispersed in a fluid-like matrix. Through time- and position-resolved ultrasonic experiments, we are able to probe the diffusivity of the wave intensity inside the medium as a function of frequency. This transport parameter exhibits strong variations that are due to the sharp shape resonances of the micro-beads. At the resonance frequencies of these soft particles, the diffusivity becomes very low and is accompanied by a deviation from conventional diffusive transport that looks like Anderson localization.

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