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【713】Topological Effects of a Vorticity Filament on the Coherent Backscattering Cone

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Coherent backscattering (CB) of waves by a random medium provides convincing evidence of interference effects despite disorder and multiple scattering. The CB is manifested as an enhancement in the angular distribution of the backscattered intensity. In this presentation, I will present results on the effects of a vorticity filament on the CBC. Using ultrasonic waves in a reverberating cavity, we experimentally show that the discrete number of loops of acoustic paths around a pointlike vortex located in the cavity drives the cancellation and the rebirth of the CB. The vorticity filament behaves, then, as a topological anomaly for wave propagation that provides new insight between reciprocity and weak localization.

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