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Dissipation effects in a microwave cavity-magnet hybrid system

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Abstract
A hybrid system consisting of a magnet and a microwave cavity has been investigated. The strong coupling between the magnet and the microwave cavity, where the coupling strength significantly exceeds the losses of both subsystems, creates an extrinsic dissipation channel for the magnet that depends on the temperature, intrinsic damping, and excitation energy of the cavity. The results indicate that, in the resonant case, the excitation of the microwave cavity leads to anti-damping for the magnet via this dissipation channel.

Keywords: magnetic system, coupling of microwave cavity-magnet, damping of magnet

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