

Abstract Submitted
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Strong interactions between a nanomagnet and a microcavity mode¹ ÖNEY O. SOYKAL, M.E. FLATTÉ, Department of Physics and Astronomy, University of Iowa, Iowa City, IA — We consider the interaction of a nanomagnet with a single mode of a microcavity in a fully quantum treatment. We derive the interaction Hamiltonian from Maxwell's equations by introducing the fully quantized forms of the spherical electromagnetic solutions. For a nanomagnet acting as a macrospin, within a cavity roughly 1 mm^3 in volume, the magnet-microwave mode coupling is $\sim 10^{-7} \text{ eV}$. Strong coupling can therefore be seen if the quality factor of the cavity exceeds 1000.

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