

Abstract Submitted
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Suppression of Macrospin Tunneling by Nanomechanical Interference LORIEN HAYDEN, Department of Physics and Astronomy, University of Missouri, Columbia, ALEXEY KOVALEV, Department of Physics and Astronomy, University of California, Los Angeles, GERRIT BAUER, Kavli Institute of NanoScience, Delft University of Technology, YAROSLAV TSERKOVNYAK, Department of Physics and Astronomy, University of California, Los Angeles — This research considers the quantum dynamics of a nanomechanical resonator coupled to a macrospin of a magnetic nanoparticle. Suppression of macrospin tunneling by nanomechanical interference is demonstrated. By approximating the macrospin molecule as a two level system, the results are extended to the magnetopolariton splitting between resonantly coupled Fock states in which are observed similar interference patterns. The mentioned interference effects should be observable in a single molecule magnet bridged between two leads.

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