

Abstract Submitted
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Coupling a small torsional oscillator to large optical angular momentum¹ HAO SHI, MISHKATUL BHATTACHARYA, School of Physics and Astronomy, Rochester Institute of Technology, Rochester, NY, 14623 — We propose a new optomechanical system to achieve torsional optomechanics. Our system is composed of a windmill-shaped dielectric optically trapped within a cavity interacting with Laguerre-Gaussian cavity modes with both angular and radial nodes. Compared to existing configurations, our proposal enables small mechanical oscillators to interact with the in-principle unlimited orbital angular momentum that can be carried by a single photon, and therefore allows the generation of scalable optomechanical coupling.

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