

Abstract Submitted
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Detecting atomic rotation via cavity optomechanics¹ MISHKAT BHATTACHARYA, KRISTIAN FELIZ, Rochester Inst of Tech — We theoretically explore detection of atomic rotation using cavity optomechanics. We consider the characterization of single atom rotation using optical beams carrying orbital angular momentum (OAM). The single atom system is relevant to quantum information protocols that rely on OAM, including but not limited to quantum memories. We also investigate the cavity optomechanical sensing of rotation of atomic Bose-Einstein condensates, particularly persistent currents in ring traps. These systems are of importance to atomtronic applications, and the role of angular momentum in the system is of interest with regard to phenomena such as phase slips.

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Mishkat Bhattacharya
Rochester Inst of Tech

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