

Abstract Submitted
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Optomechanical cooling and trapping in a three-mirror cavity M. BHATTACHARYA, H. UYS, P. MEYSTRE, B2 Institute, Department of Physics and College of Optical Sciences, The University of Arizona, Tucson, AZ 85721, USA — We present a theoretical analysis of optomechanical cooling and trapping of a moving mirror located inside a cavity with two fixed end mirrors, substantiating recent experiment and theory [1]. This three-mirror configuration turns out to have technological as well as physical advantages over the usual two-mirror set-up. We consider fully as well as partially reflective middle mirrors [2,3]. In the latter case we find two regimes, one dissipative and the other dispersive, depending on the placement of the middle mirror. This allows us to propose a two-color cooling and trapping scheme that improves on current configurations.

- [1] J. D. Thompson et. al, arXiv:0707.1724v2[quant-ph](2007).
- [2] M. Bhattacharya and P. Meystre, Phys. Rev. Lett. **99**,073601 (2007).
- [3] M. Bhattacharya, H. Uys and P. Meystre, arXiv:0708.4078v1 [quant-ph] (2007).

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