Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Measurement and Applications of Radiation Pressure[1] DAKANG MA, JOSEPH GARRETT, JOSEPH MURRAY, JEREMY MUNDAY, University of Maryland, College Park, MUNDAY LAB TEAM — Light reflected off a material or absorbed within it exerts radiation pressure through the transfer of momentum. Measuring and utilizing radiation pressure have aroused growing interest in a wide spectrum of research fields. Micromechanical transducers and oscillators are good candidates for measuring radiation pressure, but accompanying photothermal effects often obscure the measurement. In this work, we investigate the accurate measurement of the radiation force on microcantilevers in ambient conditions and ways to separate radiation pressure and photothermal effects. Further, we investigate an optically broadband switchable device based on polymer dispersed liquid crystal which has potential applications in solar sails and maneuvering spacecraft without moving parts.

[1]The authors would like to thank NASA Early Career Faculty Award and NASA Smallsat Technology Partnership Award for their funding support.

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Date submitted: 06 Nov 2015 Electronic form version 1.4