

Abstract Submitted  
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**Integrating Sphere Alkali-Metal Vapor Cells<sup>1</sup>** BART MCGUYER, Princeton University, AMIT BEN-KISH, Technion-Israel Institute of Technology, YUAN-YU JAU<sup>2</sup>, WILLIAM HAPPER, Princeton University — An integrating sphere is an optical multi-pass cavity that uses diffuse reflection to increase the optical path length. Typically applied in photometry and radiometry, integrating spheres have previously been used to detect trace gases and to cool and trap alkali-metal atoms. Here, we investigate the potential for integrating spheres to enhance optical absorption in optically thin alkali-metal vapor cells. In particular, we consider the importance of dielectric effects due to a glass container for the alkali-metal vapor. Potential applications include miniature atomic clocks and magnetometers, where multi-passing could reduce the operating temperature and power consumption.

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