

Abstract Submitted  
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**The effect of surface interaction on the performance of submillimeter atomic magnetometers**<sup>1</sup> K.F. ZHAO, M. SCHADEN, Z. WU, Department of Physics, Rutgers University — We have studied the effect of surface interaction on the performance of submillimeter atomic magnetometers. We use an evanescent wave magnetometer with a coated cell of adjustable length. The cell length varies from a few millimeters to less than 100  $\mu m$ . Two kinds of antirelaxation coatings are used: octadecyltrichlorosilane (OTS) and dichlorooctamethyltetrasiloxane (Surfasil). Sub-kHz linewidth can be achieved for a 100 micron thick OTS-coated cell. Magnetometers with coated ultra thin cells have superior performance in inhomogeneous magnetic fields, and can achieve a spatial resolution of better than 25  $\mu m$ .

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Zhen Wu  
Rutgers University

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