

Abstract Submitted  
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**Magnetometric Probe of an Ultra-cold Spinor Gas** JAMES HIGBIE, Bucknell University — Ultracold atoms have been shown to permit highly sensitive micron-scale magnetometric measurements. Here, we propose that a cold-atom magnetometer offers a new and sensitive method of probing the magnetic state of a second nearby ultracold spinor gas. We analyze the measurement back-action from such a magnetometric probe for polar-state and ferromagnetic-state probes, and compare to the Heisenberg limit.

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