

Abstract Submitted  
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**Pulsed 3-Axis Vector SERF Magnetometer** MORGAN HEDGES,  
MICHAEL ROMALIS, Princeton University — We demonstrate a 3-axis atomic  
vector magnetometer operating in the SERF regime, using a single beam path, and  
capable of operating in Earth's field using field feedback. It has similar sensitivity  
along all 3 axes that is fundamentally limited by photon and atom shot noise. The  
scheme uses a high intensity pump pulse to polarize Rb atoms in  $\sim 1 \mu\text{s}$  and a  
sequence of magnetic field pulses applied while the atoms are monitored during  
free precession. The sequence used provides minimal sensitivity to pulse errors,  
while also allowing unambiguous discrimination between external magnetic fields  
and misalignment between laser and magnetic coil axes.

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