

Abstract Submitted
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Characterization of a simple RF magnetometer for the GNOME network SAMI KHAMIS, PAUL HAMILTON, University of California, Los Angeles, GNOME COLLABORATION — The Global Network of Optical Magnetometers to search for Exotic physics (GNOME) is a network of geographically separated, time-synchronized, optically pumped atomic magnetometers searching for correlated transient signals that might herald exotic physics [1]. We present a characterization of a phase-locked loop (PLL)-locked pump-probe RF-driven magnetometer that probes the ^{85}Rb F=2 hyperfine transition [2]. Our station is simple and low-cost, using a single 780 nm DBR laser and homemade electronics, instead of a lock-in amplifier, to measure the circular dichroism of the probe light. The magnetometer can run unattended for days at a time and reaches a sensitivity of 400 fT at 0.2 s with a bandwidth of ~ 100 Hz. [1] S. Afach, D. Budker et al., *Physics of the Dark Universe*, 22, 162-180 (2018) [2] Groeger, S., Bison, G., Schenker, J.L. et al. *Eur. Phys. J. D*, 38, 239-247 (2006)

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