

Abstract Submitted
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AC Circuit Measurements with a Differential Hall Element Magnetometer¹ MATTHEW W. CALKINS, B. SCOTT NICKS, PEDRO A. QUINTERO, MARK W. MEISEL, Department of Physics, University of Florida — As the biomedical field grows, there is an increasing need to quickly and efficiently characterize more samples at room temperature. An automated magnetometer was commissioned to do these room temperature magnetic characterizations. This magnetometer, which is inspired by a Differential Hall Element Magnetometer,² uses two commercially available Hall elements wired in series. One Hall element measures the external magnetic field of a 9 T superconducting magnet and the other measures the same external field plus the field due to the magnetization of the sample that sits on top of the Hall element. The difference between these two Hall elements is taken while a linear stepper motor sweeps through the external magnetic field. The linear motor and data acquisition are controlled by a LabVIEW program. Recently, the system was outfitted for AC circuit measurements and these data will be compared to DC circuit data. In addition, the lowest signal to noise ratio will be found in order to deduce the smallest amount of sample needed to register an accurate coercive field.

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²Yongqing Li *et al.*, Appl. Phys. Lett. **80** (2002) 4644.

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