

Abstract Submitted
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Construction and Operation of a Differential Hall Element Magnetometer¹ MATTHEW W. CALKINS, Dept. Physics, Univ. Florida, PHILIP D. JAVERNICK, Dept. Chem. and Physics, Augusta State Univ. , PEDRO A. QUINTERO, YITZI M. CALM, MARK W. MEISEL, Dept. Physics, Univ. Florida and NHMFL — A Differential Hall Element Magnetometer (DHEM) was constructed to measure the magnetic saturation and coercive fields of small samples consisting of magnetic nanoparticles that may have biomedical applications. The device consists of two matched Hall elements that can be moved through the room temperature bore of a 9 Tesla superconducting magnet. The Hall elements are wired in opposition such that a null response, to within a small offset, is measured in the absence of a sample that may be located on top of one unit. A LabVIEW program controls the current through the Hall elements and measures the net Hall voltage while simultaneously moving the probe through the magnetic field by regulating a linear stepper motor. Ultimately, the system will be tested to obtain a figure of merit using successively smaller samples. Details of the apparatus will be provided along with preliminary data.

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