

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Exploration of Quartz Tuning Forks as Potential Magnetometers for Nanomagnets¹ B. SCOTT NICKS, MATTHEW W. CALKINS, PEDRO A. QUINTERO, MARK W. MEISEL, Department of Physics, University of Florida — A change in the resonance frequency, $f_0 \approx 32$ kHz, of quartz tuning forks is expected when nano-sized magnetic particles or films are applied to a fork that is then exposed to a variable magnetic field. This work explores the feasibility of using these forks, once removed from their protective canisters, as potentially inexpensive magnetometers operating at room temperature in fields up to 2 T, and eventually up to 9 T, by analyzing the responses of loaded forks in such a field. However, the forks are also dependent on subtle variations of the ambient temperature, and the magnetic leads may present a background signal that must be subtracted. Preliminary results are encouraging, but better understanding of the noise sources must be made for these forks to be used as envisioned.

¹Supported, in part, by the NSF via DMR-1156737 (UF Physics REU Program) and DMR-1202033 (MWM). We acknowledge early contributions to this work by Philip D. Javernick (UF Physics REU 2011).

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Date submitted: 12 Nov 2012

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