Abstract Submitted
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Stochastic dynamics of vortex cores in a pinning potential observed via torsional magnetometry[1] ALASTAIR FRASER, JACOB BURGESS, JOSEPH LOSBY, FATEMEH FANISANI, University of Alberta, DOUG VICK, WAYNE HIEBERT, National Institute for Nanotechnology, JOHN DAVIS, University of Alberta, MARK FREEMAN, National Institute for Nanotechnology — Measurements of a single 1 micrometer diameter permalloy disk fabricated on a silicon nitride torsional resonator are presented. Sensitivity of this device is sufficiently high to allow study of the vortex core interaction with very weak pinning sites. Low speed stochastic dynamics are revealed and attributed to the vortex core hopping between bistable states around pinning sites. The temperature and field dependence of this noise around the pinning site was investigated. Analysis employing an analytical description of the vortex in a thin disk and an Arrhenius model allows determination of the pinning potential.

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