Non-linear Dynamics of Magnetic Vortices
Te-Yu Chen and Paul Crowell (PI)
Department of Physics and Astronomy, University of Minnesota

- Time-resolved Kerr microscopy
  - Fabrication of nanostructures by e-beam lithography in NFC
  - High-resolution optical imaging
  - Time-resolution using pulsed lasers and RF phase-locked loop techniques

- Major Observations
  - Vortex orbits with radius ~ 10 nm
  - Onset of non-linearity associated with depinning
  - Implications for current-driven domain wall motion and other proposed memory technologies

Schematic of measurement; Cartoon representation of a vortex core in orbit inside a nanoparticle.

Spectra showing depinning and strong non-linearity of vortex dynamics

Publications