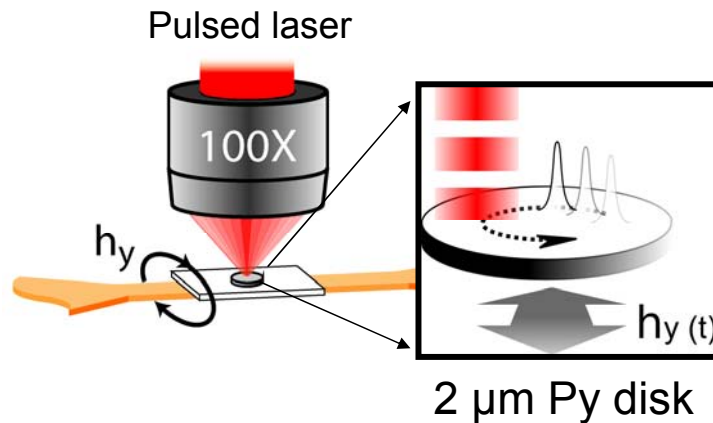


Non-linear Dynamics of Magnetic Vortices

Te-Yu Chen and Paul Crowell (PI)

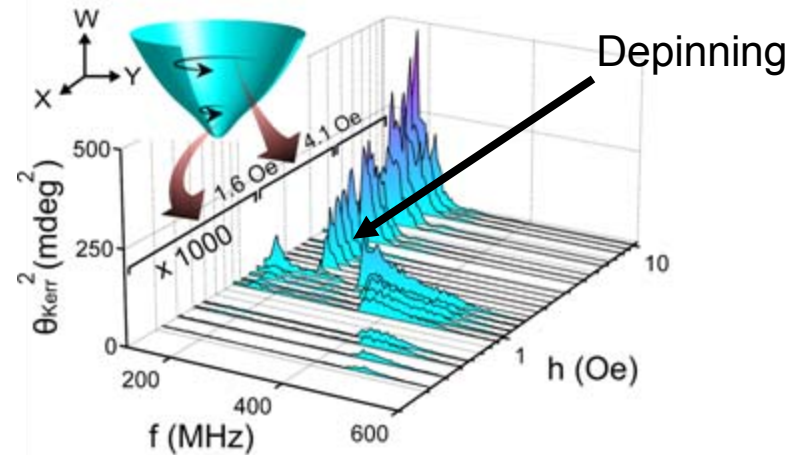
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- Time-resolved Kerr microscopy
 - ◆ Fabrication of nanostructures by e-beam lithography in NFC
 - ◆ High-resolution optical imaging
 - ◆ Time-resolution using pulsed lasers and RF phase-locked loop techniques



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

- 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



Spectra showing depinning and strong non-linearity of vortex dynamics

- Publications
 - ◆ T. Y. Chen and P. A. Crowell, IEEE Trans. Mag, in press (2010)
 - ◆ R. L. Compton, T. Y. Chen, and P. A. Crowell, Phys. Rev. B, in press (2010)