

Spring
2014

MATHEMATICAL SCIENCES COLLOQUIUM

“Dynamics of ferromagnets: averaging methods, bifurcation diagrams, and thermal noise effects.”

Abstract: Driving nanomagnets by spin-polarized currents offers exciting prospects in magnetoelectronics, but the response of the magnet to such currents remains poorly understood. For a single domain ferromagnet, I will show that an averaged equation describing the diffusion of energy on a graph captures the low-damping dynamics of these systems. In particular, I compute the mean times of thermally assisted magnetization reversals in the finite temperature system, giving explicit expressions for the effective energy barrier conjectured to exist. I will then discuss the problem of extending the analysis to spatially non-uniform magnets, leading to a transition state theory for infinite dimensional Hamiltonian systems.

Speaker: Katie Newhall
(New York University)

Thursday, April 17, 2014

Time: 4:00 – 5:00 PM

Location: Sage 5101

Refreshments: 3:30 – 4:00 PM, AE 4th Floor Lounge



