Apr 8th, 11:00 AM - 12:00 PM

Current Induced Transition from Vortex to Neel Domain Wall

Debo Olaosebikan
Illinois Wesleyan University

Narendra Jaggi, Faculty Advisor
Illinois Wesleyan University

Oral Presentation O14.1

CURRENT INDUCED TRANSITION FROM VORTEX TO NEEL DOMAIN WALL

Debo Olaosebikan and Narendra Jaggi*
Physics Department, Illinois Wesleyan University

Motivated by an experimentally observed current induced transition from a vortex domain wall to a Neel domain wall, I study, theoretically, a model of four magnetic moments on the corners of a square imbedded in an infinite wire with semi-infinite domains of opposite magnetization. I consider only dipole and exchange contributions to the energy of the moments and map out a phase diagram that depicts the regions of stability of the Vortex and Neel states in the absence of current.

The final part of the calculation, still in progress, is to include the current which contributes a "spin-transfer torque" and describe qualitatively the effects on the phase diagram of the model system. It is hoped that with this work, insight into the experimental observation will be gained because of the simplicity of the model.