Abstract Submitted
for the 4CF13 Meeting of
The American Physical Society

The role of shape anisotropy in the stabilization of magnetic antivortices in pound-key like structures MARTIN ASMAT, LIN LI, BRIAN SHAW, ARABINDA HALDAR, KRISTEN BUCHANAN, Department of Physics Colorado State University — The magnetic vortex state has received increasing attention during recent years however its topological counterpart, the magnetic antivortex (AV), has not been explored with the same intensity. The antivortex spin configuration may have some advantages over vortices, especially for channeling spin waves emitted from the dynamic core reversal. In order to study the properties of antivortices it is necessary to have geometries and procedures that reliable stabilize antivortices, however this task is more challenging than forming a vortex. In this work, we use micromagnetic simulations to show that pound-key-like structures can be used to form stable AV's and to explore the role of shape anisotropy in the AV formation. Our results are compared to Magneto Optical Kerr Effect (MOKE) hysteresis measurements and magnetic force microscopy images. The simulations show that the AV nucleation field depends on the sample global and relative dimensions and these results are in good agreement with the experiments. Acknowledgement: This work was supported by the NSF.

Martin Asmat
Department of Physics Colorado State University

Date submitted: 20 Sep 2013 Electronic form version 1.4