

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Rotationally induced magnetic chirality in clusters of single-domain permalloy islands and gapped nanorings¹ SHENG ZHANG, JIE LI, JASON BARTELL, PAUL LAMMERT, VINCENT CRESPI, PETER SCHIFFER, Department of Physics and Materials Research Institute, Pennsylvania State University, University Park, PA 16802 — We have studied magnetic moment configurations of clusters of single-domain ferromagnetic islands in different geometries.² The magnetic moments of these clusters are imaged by MFM after rotational demagnetization, following our previous protocols.³ We observed that two types of the clusters showed a significant imbalance of their two-fold degenerate ground states after demagnetization, and this inequality is correlated to the rotational direction of the demagnetization. A similar imbalance was also found in nano-scale rings with a small gap: the chirality of their magnetic state can be precisely controlled by the rotational direction during demagnetization.

¹We acknowledge the financial support from DOE and Army Research Office. We are grateful to Prof. Chris Leighton and Mike Erickson for assistance with sample preparation.

²J. Li, S. Zhang, J. Bartell, C. Nisoli, X. Ke, Paul E. Lammert, Vincent H. Crespi, and P. Schiffer, *Physical Review B* **82**, 134407 (2010).

³R. F. Wang, C. Nisoli, R. S. Freitas, J. Li, W. McConville, B. J. Cooley, M. S. Lund, N. Samarth, C. Leighton, V. H. Crespi, P. Schiffer, *Nature* **439**, 303 (2006).

Sheng Zhang
Department of Physics and Materials Research Institute,
Pennsylvania State University, University Park, PA 16802

Date submitted: 14 Dec 2010

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