Abstract Submitted
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Polarization Dependent Switching of Asymmetric Nanorings with a Circular field[1] NIHAR PRADHAN, Mount Holyoke College and UMass Amherst, MARK TUOMINEN, UMass Amherst, MA 01003, KATHERINE AIDALA, Mount Holyoke College, South Hadley, MA 01075 — We present experimental switching from the onion to vortex states in asymmetric cobalt nanorings in an applied circular field. We initialize the onion state in two polarizations, along the symmetric or asymmetric axes. We apply a circular field by passing current through a solid metal AFM tip positioned at the center of the ring [1]. The asymmetry of the ring leads to different switching fields depending on the location of the domain walls (DWs) and direction of applied field. For polarization along the asymmetric axis, the field required to move the DWs to the narrow side of the ring is smaller than moving the DWs to the larger side of the ring. The direction of the DW motion is controlled by the circular field. When polarizing the ring along the symmetric axis, establishing one DW in the narrow side and one on the wide side, the field required to switch to the vortex state is an intermediate value. We will be presenting detail of the switching field of cobalt nanoring by circular field with two different direction of polarization.

(1) T. Yang, N. R. Pradhan, A. Goldman, A. Licht, Y. Li, M. T. Tuominen and K. E. Aidala, *Applied Physics Letter*, 98, 242505, (2011)

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