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Two dimensional magnetization mapping in exchange-coupled nanodot chain arrays using the magento-optic Kerr effect SARAH C. HERNANDEZ, JIAN DOU, CHENGTAO YU, MICHAEL J. PECHAN, Department of Physics, Miami University, LIESL FOLKS, JORDAN A. KATINE, MATTHEW J. CAREY, San Jose Research Center, Hitachi Global Storage Technologies — Nanoscale permalloy dot arrays were fabricated with dot diameters of 300 nm, thicknesses of 40 nm, and coupled via permalloy bridges, with bridge widths ranging from zero to 60 nm. Magnetization reversal in this system was previously investigated with the field applied along and perpendicular to the coupling direction. Hysteresis loops reflect reversal by domain wall motion.[1] As a result of rotating the applied magnetic field relative to the sample's coupling direction, unusual hysteresis loops were observed. The magneto-optic response resulted in an asymmetric loop with one notable feature, an increase in coercivity with increasing bridge width. We will show that these curves arise from the second-order magneto-optic Kerr effect, where coherent rotation of magnetization plays an important role. This work is supported by US-Dept.of Energy at MU.

[1]S. C. Hernandez et al, (To be published in J. Appl. Phys.)

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