

Abstract Submitted
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Magnetization Reversal in Artificial Kagome Ice¹ STEPHEN DAUNHEIMER, YI QI, TODD BRINTLINGER, University of Maryland, PAULA MELLADO, OLEG TCHERNYSHYOV, Johns Hopkins University, JOHN CUMINGS, University of Maryland — Lorentz-force transmission electron microscopy (LTEM) and ferromagnetic resonance (FMR) have been used to examine magnetization reversal of artificial kagome ice in detail. Previously, no ice rule violations have been observed in this novel magnetic metamaterial [1], in contrast to artificial square ice, where ice rule violations appear to be a robust feature [2]. Theoretical considerations support this observation but predict the generation of transient defects violating the ice rules during magnetization reversal. Such defects are expected to self-annihilate upon completion of the reversal process or removal of the applied magnetic field. We will present results on the experimental exploration for ice-rule violations in this system both during field rotation and uniaxial field reversal using both FMR and LTEM. [1] Y. Qi et al., Phys. Rev. B 77, 094418 (2008) [2] X. Ke et al., Phys. Rev. Lett. 101, 037205 (2008)

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