Abstract Submitted
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Comparing artificial frustrated magnets: geometric effects in nanomagnet arrays[1] JIE LI, XIANGLIN KE, The Penn State Univ, CRISTIANO NISOLI, Los Alamos National Lab, PAUL LAMMERT, VINCENT CRESPI, PETER SCHIFFER, The Penn State Univ — We have studied arrays of single-domain ferromagnetic islands arranged on lattices such that the magnetostatic interactions between the islands are frustrated by the geometry of the arrays. We compare results for three different lattice geometries: the previously studied square "artificial spin ice" lattice[1,2], a hexagonal lattice, and a ladder lattice which is topologically-equivalent to the former one. After the ac demagnetization the magnetic moment configurations are imaged via Magnetic Force Microscopy (MFM). We find that the ladder lattice shows local correlations which are similar to those of the square lattice, suggesting it as a basis for comparison of the energetics of the other two lattices. The normalized magnetostatic energy of all three geometries decreases with decreasing demagnetization step size, but the lattices approach their ground states at different rates. 1. R. F. Wang, C. Nisoli, R. S. Freitas, J. Li, W. McConville, B. J. Cooley, M. S. Lund, N. Samarth, C. Leighton, V. H. Crespi, and P. Schiffer, Nature 439, 303 (2006). 2. X. Ke, J. Li, C. Nisoli, P. E. Lammert, W. McConville, R. F. Wang, V. H. Crespi, and P. Schiffer, Phys. Rev. Lett. 101, 037205 (2008).

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