Abstract Submitted
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The importance of the dipolar interaction strength in magnetization hysteresis curves of two-dimensional nanomagnet arrays[1] RICHARD KLEMM, MARISOL ALCANTARA ORTIGOZA, Kansas State University, TALAT RAHMAN, University of Central Florida — Recently, Takagaki and Ploog [Phys. Rev. B **71**, 184439 (2005)] used a fourth-order Runge-Kutta technique to integrate the Landau-Lifschitz-Gilbert equations for square lattices of $N \times N$ magnetic nanodots with dipolar interdot interactions. Some of their results appeared to differ qualitatively from the second-order Runge-Kutta results obtained for the same systems by Kayali and Saslow [Phys. Rev. B **70**, 174404 (2004)], both in the hysteresis area A_N and in the number of steps of the magnetization hysteresis loops. We [Phys. Rev. B **74** (22), xxxxxx (2006), in press] show that these differences are not due to inaccuracies in either calculation or to the potentially different magnetic induction sweep rates used, but can be attributed entirely to different choices of the dipolar interaction strength $h_{\rm dip} \propto a^{-3}$, where a is the two-dimensional lattice constant.

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