

Abstract Submitted  
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**Memory effect in magnetic nanowire arrays**<sup>1</sup> XIAOMING KOU, XIN FAN, Department of Physics and Astronomy, University of Delaware, RANDY DUMAS, Department of Physics, University of California, Davis, QI LU, Department of Physics and Astronomy, University of Delaware, YAPING ZHANG, Department of Physics, University of Science and Technology Beijing, HAO ZHU, XIAOKAI ZHANG, Spectrum Magnetics, LLC, KAI LIU, Department of Physics, University of California, Davis, JOHN XIAO, Department of Physics and Astronomy, University of Delaware — A memory effect has been demonstrated in magnetic nanowire arrays. The magnetic nanowire array has the ability to record the maximum magnetic field that the array has been exposed to after the field has been turned off. The origin of the memory effect is the strong magnetic dipole interaction among the nanowires. Switching field distributions among nanowires was studied with a first order reversal curve technique to elucidate the discrepancy between the experimental result and the theoretical explanation. Based on the memory effect, a novel and extremely low cost EMP detection scheme is proposed. It has the potential to measure magnetic field pulses as high as a few hundred Oe without breaking down.

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