

Abstract Submitted
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High field magnetoresistance peak near the superconductor insulator transition in amorphous Bi films patterned with a nanohoneycomb array of holes¹ S.M. HOLLEN, H.Q. NGUYEN, M.D. STEWART, JR., J.M. SHAINLINE, AIJUN YIN, J.M. XU, J.M. VALLES, JR., Brown University — The spectacular magnetoresistance (MR) peak that appears on the insulating side of the Superconductor-Insulator Transition (SIT) in In Oxide films [1] has received much attention. It has been taken as a sign that Cooper pairs persist into their insulating phase. We have observed a similar MR peak in ultrathin amorphous Bi films patterned with a disordered nanohoneycomb array of holes. This peak increases in magnitude with decreasing thickness and moves to lower field with decreasing temperature. Most importantly, it coexists with MR oscillations at lower fields that reveal the presence of Cooper pairs [2]. We will present our latest investigations of this peak and contrast our results with the behavior of unpatterned amorphous film systems.

[1] G. Sambandamurthy, *et al.*, *Phys. Rev. Lett.* **92**, 107005 (2004).

[2] M. D. Stewart, Jr., *et al.*, *Science* **318**, 1273 (2007).

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