

Abstract Submitted  
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**Local magnetization effects on magnetotransport in networks of connected permalloy nanowires** JOSEPH SKLENAR, BRIAN LE, JUNG SIK PARK, University of Illinois at Urbana-Champaign, GIA-WEI CHERN, University of Virginia, CRISTIANO NISOLI, Los Alamos National Laboratory, JUSTIN WATTS, MICHAEL MANNO, University of Minnesota, DAVID RENCH, NITIN SAMARTH, Pennsylvania State University, CHRIS LEIGHTON, University of Minnesota, PETER SCHIFFER, University of Illinois at Urbana-Champaign — We have performed detailed magnetotransport measurements of connected kagome artificial spin ice. To interpret our results we have performed micromagnetic simulations using MuMax3 to recreate all of the experimental configurations. We find good agreement between experiment and simulations for all in-plane angular orientations of the field. In certain ranges of the applied field angle, the structures vertex regions control the transverse resistance. The wide array of realizable connected systems provides many vertex types, and in turn points toward the utility of artificial spin ice as a platform in which to engineer magnetoresistive effects that are sensitive to local environments. This project was funded by the US DOE under grant no. DE-SC0010778. This work was carried out in part in the Frederick Seitz Materials Research Laboratory at the University of Illinois at Urbana-Champaign. Work at the University of Minnesota was supported by the NSF MRSEC under award DMR-1420013, and DMR-1507048. CN's work is carried out under the auspices of the NNSA of the U.S. DoE at LANL under Contract No. DE-AC

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