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Electronic Transport Study of Connected Artificial Kagome Spin Ice D.W. RENCH, Pennsylvania State University, B.L. LE, University of Illinois at Urbana-Champaign, P.E. LAMMERT, R. MISRA, V.H. CRESPI, N. SAMARTH, Pennsylvania State University, P. SCHIFFER, University of Illinois at Urbana-Champaign — We present experimental and computational results of magnetotransport in connected ferromagnetic nanowire arrays (connected artificial spin ice). We probed the artificial kagome spin ice lattice using AC transport techniques as a function of applied magnetic field strength and angle and compared these results to calculated transport properties based on OOMMF computational modeling. We find that many of the transport properties observed experimentally can be described in a simple manner using the Anistropic Magnetoresistance (AMR) model for individual nanowires and then calculating the net resistance using classical circuit analogues. Supported by the US Department of Energy, Office of Basic Energy Sciences, Materials Sciences and Engineering Division under grant number DE-SC0005313.

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