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**Anisotropic properties of superconducting niobium wire-networks** J. HUA, Z.L. XIAO, Department of Physics, Northern Illinois University, DeKalb, Illinois 60115, A. IMRE, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, U. PATEL, Department of Physics, Northern Illinois University, DeKalb, Illinois 60115, L.E. OCOLA, Center for Nanoscale Materials, Argonne National Laboratory, Argonne, Illinois 60439, V. NOVOSAD, U. WELP, W.K. KWOK, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439 — By utilizing focused ion beam (FIB) patterning technique we were able to fabricate hole-arrays with interhole spacing down to 150 nm into superconducting niobium (Nb) films. This enabled us to have a large temperature range to explore the properties of Nb wire networks in which the superconducting strips between neighboring holes are comparable to the superconducting coherence length. We studied the anisotropy of these superconducting networks by measuring the critical temperatures and magnetoresistances at various magnetic field directions respect to the film surface. The effect of film thickness, hole diameter, interhole-spacing and the symmetry of the hole lattice on the anisotropy will be reported.

J. Hua
Department of Physics, Northern Illinois University, DeKalb, Illinois 60115

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