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Low Temperature Heat Capacity of Superconducting Zn Nanowires JAMES KURTZ, BOB JOHNSON[1], MINGLIANG TIAN, NITESH KUMAR, ZHIGANG MA, MOSES H.W. CHAN, The Center for Nanoscale Science and Department of Physics, Pennsylvania State University — Thermodynamic measurements on superconducting nanostructures are notoriously difficult. Nanowires electrodeposited in porous alumina offer unusually high wire density and length compared to other systems, yielding samples massive enough to measure. In this work, low temperature heat capacity measurements have been carried out on ensembles of parallel Zn nanowires in porous alumina. Samples with wire diameters ranging from 28nm to 150nm were measured. The temperature and field dependence of the heat capacity will be presented and compared to bulk data and to transport measurements in similar wire ensembles. Key features to be discussed are the height and width of the heat capacity peak at the transition for increasingly smaller wire diameters.
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