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Quantum criticality at a Mott-Hubbard Metal-Insulator Transition ARNAB BANERJEE, DANIEL SILEVITCH, ALEXANDER PALMER, The University of Chicago, YEJUN FENG, The Argonne National Laboratory, THOMAS ROSENBAUM, The University of Chicago — The Mott insulator nickel disulfide undergoes an insulator to metal transition that can be driven by either hydrostatic pressure or doping-induced chemical pressure. Previously,NiS2 doped with selenium to just below the quantum critical point showed anomalous critical exponents as a function of pressure. Doping, however, introduces positional disorder and charge transfer effects from the selenium orbitals, potentially altering the critical behavior. We report here on a set of transport experiments on pure NiS2, where the pressure and temperature scales for the critical regime require the use of a diamond anvil cell integrated with a helium dilution refrigerator, allowing us to compare the critical behavior of the pure and doped materials.

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