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Pressure and magnetic field effects in heavy-fermion $UCu_{3.5}Al_{1.5}$
FARZANA NASREEN, KARUNAKAR KOTHAPALLI, HEINZ NAKOTTE, New Mexico State University, ABDEL ALSMADI, The Hashemite University, VIVIEN ZAPF, FREDERIK FABRIS, ALEX LACERDA, NHMFL, Los Alamos National Laboratory, JIRI KAMARAD, Institute of Physics, Academy of Sciences of the Czech Republic, NEW MEXICO STATE UNIVERSITY TEAM[1], THE HASHEMITE UNIVERSITY TEAM[2], NHMFL, LANL COLLABORATION, IOP, ASCR COLLABORATION — $UCu_{3.5}Al_{1.5}$ is a heavy-fermion compound which crystallizes in the hexagonal $CaCu_5$ structure, and it was reported to exhibit non-Fermi-liquid scaling at low temperatures. We report on the measurements of the electrical resistivity and magnetoresistance as a function of temperature (2-150 K), pressure (0-10kbar) and applied magnetic field (0-18T). The results provide evidence that, for $UCu_{3.5}Al_{1.5}$, application of pressure and/or magnetic field tends to suppress non-Fermi-liquid scaling and a tendency toward long-range magnetic correlations is observed for temperatures below 20 K, although there is no clear evidence of long-range order in the available pressure and field range.

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