Evolution of Power-Law Behavior of Temperature Dependence of Electrical Resistivity in Pr\textsubscript{1-}x Nd\textsubscript{x} Os\textsubscript{4} Sb\textsubscript{12}\textsuperscript{1} P.-C. HO, Physics/California State University, Fresno, R.E. BAUMBACH, A.A. DOORAGHI, M.B. MAPLE, Physics/University of California, San Diego, T. YANAGISAWA, Hokkaido University, Japan — The study of the Pr\textsubscript{1-}x Nd\textsubscript{x} Os\textsubscript{4} Sb\textsubscript{12} series has been carried out in order to investigate the effect of ferromagnetism (FM) on the unconventional superconductivity (SC), the high field ordered phase (HFOP), and quantum critical behavior in PrOs\textsubscript{4} Sb\textsubscript{12} [1, 2, 3]. Two critical concentrations \( x_{cr,1} \sim 0.58 \) and \( x_{cr,2} \sim 0.33 \) were previously identified in this system [2]: SC disappears near \( x_{cr,1} \) and weak FM extends into the SC region for \( x_{cr,2} < x < x_{cr,1} \) [3]. In order to further examine the possible quantum critical behavior, a power-law analysis of the temperature dependence of the electrical resistivity data is performed. Upon suppression of SC, for samples of \( x_{cr,2} < x < x_{cr,1} \), the power-law exponent decreases from \( \sim 1.8 \) toward 1 in the temperature region below 2.5 K, resembling non-Fermi liquid behavior.


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