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Possible Pressure Driven Quantum Critical Point in $CaCo_2P_2$ RYAN E. BAUMBACH, XIN LU, Los Alamos National Laboratory, VLADIMIR SIDOROV, Vereschagin Institute for High Pressure Physics, Russia, Los Alamos National Laboratory, FILIP RONNING, ERIC D. BAUER, JOE D. THOMP-SON, Los Alamos National Laboratory — We performed electrical resistivity measurements under pressures up to a maximum of ≈ 5 GPa for the d-electron antiferromagnet $CaCo_2P_2$, where we find that the Néel temperature (T_N) = 106 Kis rapidly suppressed towards zero near 1.4 GPa. In the vicinity of the suppressed magnetic state, the Fermi liquid coefficient of the electrical resistivity A increases abruptly, suggesting a divergence in the effective mass of the charge carrier quasiparticles. In addition, we find that the residual resistivity ρ_0 increases abruptly at 1.4 GPa. For P >1.4 GPa, we also observe a broad hump in $\partial \rho / \partial T$ at a temperature T^{*}, which increases with increasing P. We will compare these measurements to expectations for prototypical f-electron quantum critical point (QCP) systems (e.g., $CeRhIn_5$ and $CeRh_2Si_2$) and the iron arsenide high temperature superconductors (e.g., $CaFe_2As_2$, $SrFe_2As_2$, and $BaFe_2As_2$) and discuss implications for studying a possible d-electron QCP in the absence of superconductivity.

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