Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The Hall coefficient of quantum-critical Cr JIYANG WANG, THOMAS ROSENBAUM, U. of Chicago, RAFAEL JARAMILLO, Harvard U., YEJUN FENG, Argonne National Lab — Chromium is an itinerant antiferromagnet that exhibits a pressure-tuned continuous quantum phase transition [1]. The Hall coefficient is particularly sensitive to critical behavior in itinerant systems and magnetotransport measurements of single crystal Cr in a diamond anvil cell at low temperature reveal deviations from weak-coupling for P $\sim$ 10 GPa, We find a pseudogap-like regime of carrier deficiency for pressures just above the critical point. This behavior stands at odds with the behavior at the doping-driven quantum phase transition and helps elucidate the effects of quantum fluctuations without disorder.

[1] R. Jaramillo et al., Nature 459, 405 (2009).

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Date submitted: 18 Nov 2009 Electronic form version 1.4