

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

T-P phase diagram for the new local moment 4f ferromagnet CeRu₂Ga₂B ERIC D. BAUER, R.E. BAUMBACH, X. LU, T. SHANG, F. RONNING, J.D. THOMPSON, Los Alamos National Laboratory, C.H. WANG, V.O. GARLEA, A.D. CHRISTIANSON, Oak Ridge National Laboratory — We will report results for single crystals of a new Ce-based local moment ferromagnet, CeRu₂Ga₂B. Electrical resistivity, magnetization, and magnetic susceptibility measurements reveal ferromagnetism and hysteresis around $T_C = 16.1$ K, while specific heat measurements uncover a huge anomaly at the phase transition, which results in a large discontinuity in the magnetic entropy ($\Delta S_{mag} = 1.7$ J/mol-K). Taken together, these data show that CeRu₂Ga₂B undergoes a first order ferromagnetic phase transition at a surprisingly high temperature. Since this type of behavior is unusual for Ce-based compounds, we additionally undertook an effort to tune the magnetic state using pressure. We will present electrical resistivity measurements under applied pressures and the resulting temperature-pressure phase diagram, with an emphasis on implications for possible nearness to a ferromagnetic quantum critical point.

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Date submitted: 19 Dec 2011

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