

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**HfFe<sub>1-x</sub>Ru<sub>x</sub>Ga<sub>2</sub>,** **Candidate**  
**for Ferromagnetic Quantum Criticality**<sup>1</sup> CARLOS MARQUES, Brookhaven  
National Laboratory and Stony Brook University, YURI JANSSEN, Brookhaven  
National Laboratory, MEIGAN ARONSON, Brookhaven National Laboratory and  
Stony Brook University — We present a study of the magnetic and thermodynamic  
properties of HfFe<sub>1-x</sub>Ru<sub>x</sub>Ga<sub>2</sub> single crystals grown using flux techniques. Having  
found a low temperature ferromagnetic intermetallic compound HfFeGa<sub>2</sub> we try to  
suppress the Curie Temperature ( $T_c$ ) by doping with Ru as a means to investigate  
the evolution of critical phenomena and perhaps realize a ferromagnetic quantum  
critical point (QCP). Magnetization measurements have shown changes in  $T_c$  of  
HfFe<sub>1-x</sub>Ru<sub>x</sub>Ga<sub>2</sub> from approximately 48K to below 1.8K as a function of Ru con-  
centration (x). We will show recent data as well as discuss the development of the  
spontaneous moment ( $m_0$ ), susceptibility  $\chi$  along with heat capacity upon doping  
and present the resulting magnetic phase diagram.

<sup>1</sup>Work at Brookhaven National Laboratory was supported by the Department of  
Energy (DOE).

Carlos Marques  
Stony Brook University and Brookhaven National Laboratory

Date submitted: 11 Dec 2009

Electronic form version 1.4