

Abstract Submitted  
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**Critical phenomena in itinerant-electron ferromagnet HfFeGa<sub>2</sub>**<sup>1</sup>

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Aiming to study quantum critical behavior in itinerant-electron transition-metal ferromagnets, we have recently been first to characterize the intermetallic compound HfFeGa<sub>2</sub>. We have found that HfFeGa<sub>2</sub> is a ferromagnet with a low ordering temperature and a small ordered magnetic moment. We present extensive magnetization and neutron diffraction studies of single crystals of pristine HfFeGa<sub>2</sub>. ac-magnetization data indicates the Curie temperature  $T_C \sim 49$  K, and above  $T_C$  we find Curie-Weiss behavior with an effective moment of  $\sim 2.2 \mu_B/\text{Fe}$ . HfFeGa<sub>2</sub> is ferromagnetic with the ordered magnetic moments parallel to the easy  $c$ -axis of the orthorhombic crystal structure, and with a zero-temperature spontaneous magnetization of  $\sim 0.6 \mu_B/\text{Fe}$ . By a scaling analysis of magnetization and neutron diffraction data we have determined  $T_C = 48.3$  K as well as the critical exponents  $\beta = 0.494$  and  $\gamma = 1.21$ . Our results indicate HfFeGa<sub>2</sub> is comparable to the well-known itinerant ferromagnet ZrZn<sub>2</sub>.

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