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Magnetic cluster glass formation in Ni-V close to the disordered ferromagnetic quantum phase transition[1] RUIZHE WANG, SARA UBAID-KASSIS, ALMUT SCHROEDER, Kent State University, P.J. BAKER, F.L. PRATT, ISIS, S.J. BLUNDELL, T. LANCASTER, I. FRANKE, J.S. MOELLER, Oxford University, THOMAS VOJTA, Missouri University of Science and Technology — The d-metal alloy $Ni_{1-x}V_x$ undergoes a quantum phase transition from a ferromagnetic ground state to a paramagnetic ground state as the vanadium concentration x is increased. We present magnetization, ac-susceptibility and muon-spin relaxation data at several vanadium concentrations below and above the critical concentration $x_c \approx 11\%$ where the onset of ferromagnetic order is suppressed. Below x_c, $Ni_{1-x}V_x$ is characterized as a strongly disordered ferromagnet since the muon data reveal a broad magnetic field distribution. Above x_c, the temperature dependence of the magnetic susceptibility is best described in terms of a magnetic quantum Griffiths phase. At the lowest temperatures, we identify a magnetic cluster glass phase which masks the actual ferromagnetic quantum critical point. We study how this cluster glass is formed (i) by lowering the temperature from the quantum Griffiths phase and (ii) by increasing the vanadium concentration starting from the disordered ferromagnet. The onset of the cluster glass phase is recognized by a change of the magnetic dynamics revealed through susceptibility and muon-spin relaxation measurements.

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