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Competing fluctuations near an unconventional quantum critical point $\mathbf{CeCu_{5.8}Ag_{0.2}}$ L. POUDEL, University of Tennessee, Knoxville, TN and Oak Ridge National Laboratory, Oak Ridge, TN, J. M. LAWRENCE, F. RONNING, Los Alamos National Laboratory, Los Alamos, NM, L.S. WU, G. EHLERS, A. F. MAY, A. A. PODLESNYAK, M. D. LUMSDEN, Oak Ridge National Laboratory, Oak Ridge, TN, Y. QIU, National Institute of Standards and Technology, Gaithersburg, MD , D. MANDRUS, University of Tennessee, Knoxville, TN and Oak Ridge National Laboratory, Oak Ridge, TN, A. D. CHRISTIANSON, Oak Ridge National Laboratory, Oak Ridge, TN and University of Tennessee, Knoxville, TN — $CeCu_{6-x}Au_x$ is a prototype heavy fermion system that hosts a quantum critical point (QCP). The nature of the QCP in $CeCu_{6-x}Au_x$ is unique among similar Ce-based systems and appears to be inconsistent with the conventional approach developed by Hertz-Millis-Moriya (HMM). We study a related system $CeCu_{6-x}Ag_x$ for a more comprehensive understanding of this unconventional behavior. Our inelastic neutron spectroscopy measurement of the QCP composition $CeCu_{5.8}Ag_{0.2}$ shows that the critical behavior of $CeCu_{6-x}Ag_x$ is similar to that of $CeCu_{6-x}Au_x$. The measurement also reveals that there are three competing magnetic fluctuations near the QCP, only one of which goes critical at the QCP. The critical part of the fluctuations is more consistent with the conventional HMM model suggesting that the so called unconventional behavior in these systems is the consequence of strongly competing magnetic fluctuations near the QCP.

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