

Abstract Submitted  
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**URu<sub>2-x</sub>Fe<sub>x</sub>Si<sub>2</sub>: magnetic excitations in hidden order and anti-ferromagnetic phases** NICHOLAS BUTCH, NIST - Natl Inst of Stds & Tech, SHENG RAN, INHO JEON, NORAVEE KANCHANAVATEE, KEVIN HUANG, ALEXANDER BREINDEL, BRIAN MAPLE, University of California - San Diego, RYAN STILLWELL, Lawrence Livermore National Laboratory, YANG ZHAO, LELAND HARRIGER, JEFFREY LYNN, NIST - Natl Inst of Stds & Tech — The substitution of Fe for Ru in the heavy fermion compound URu<sub>2</sub>Si<sub>2</sub> drives a transition from Hidden Order (HO) to long-range antiferromagnetic order (AFM) at roughly 5% Fe. The resulting phase diagram is analogous to that under applied pressure. Using inelastic neutron scattering, we have studied the magnetic excitations in both the HO and AFM phases as a function of Fe concentration. The strong interband scattering that sits at the Brillouin zone edges persists across the HO/AFM boundary, although the energy gap grows. However, the excitations centered on the AFM zone center, which are prominent in the HO phase, disappear in the AFM phase. Implications of these results will be discussed. PRB 94, 201102(R) (2016)

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