

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Linear and Nonlinear Susceptibility Measurements in URu₂Si₂ and UPt₃¹ BELLAVE SHIVARAM, University of Virginia, PRADEEP KUMAR, University of Florida, DAVID HINKS, Argonne National Labs — We will discuss both DC and AC susceptibility measurements in single crystals of URu₂Si₂ and UPt₃. In URu₂Si₂ we detect a ferromagnetic signature separated only by ~ 1 K from the well established antiferromagnetic signature due to the hidden order at 17.5 K. This ferromagnetic signature appears to be well pronounced only in those samples where a strong ferromagnetic anomaly (also observed by others previously) appears at 35 K. This new ferromagnetic signature is further apparent in AC measurements, with its fingerprint appearing in a pronounced manner in first order, third order and fifth order susceptibility measurements. In contrast at the hidden order transition signatures are seen only in the first order and the fifth order susceptibility with no apparent change in the third order susceptibility. In UPt₃, the DC third order susceptibility measurements reveal a broad peak at ~ 10 K which is at half the temperature where a peak in the linear susceptibility is observed. This proportionality appears thus far to be universal across the f-electron based strongly correlated metals .

¹Supported by NSF DMR

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Date submitted: 11 Nov 2011

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