

METAMAGNETISM AND QUANTUM CRITICALITY – UNIVERSAL ASPECTS.

Bellave Shivaram^a

Department of Physics, University of Virginia, Charlottesville, VA. 22901, USA

The emergent universality in the nonlinear magnetic response of itinerant metamagnets will be reviewed[1,2,3]. Recent experimental work on heavy fermions, Hund's metals, and single molecule magnets will be presented with the backdrop of legacy measurements on d-electron systems[4]. The appeal of the 'single energy scale model' developed in the context of these new measurements will be critically examined. A possible roadmap for future high field measurements ensuing both from the recent experiments and the accompanying theoretical models will be presented.

- [1] "Universality in the Nonlinear Magnetic Response of Strongly Correlated Metals", B.S. Shivaram, D.G. Hinks, M.B. Maple and P. Kumar, Phys. Rev., B89, 241107(Rapid Communication), 2014.
- [2] "Metamagnetism and the Fifth Order Susceptibility in UPt3", B.S. Shivaram, Brian Dorsey, D.G. Hinks and Pradeep Kumar, Phys. Rev., B89, 161108(Rapid Communication), (2014).
- [3] "High Field Ultrasound Measurements in UPt3 and the Single Energy Scale Model of Metamagnetism", B.S. Shivaram, V.W. Ulrich, P. Kumar and V. Celli, Phys. Rev.B, 91, 115110, 2015.
- [4] "Metamagnetism", E. Stryjewski and N. Giordano, Advances in Physics, 26,487, (1977).

^a Work done in collaboration with Pradeep Kumar (U.Florida), Vittorio Celli and Gia-Wei Chern (U.Virginia), the Maple group at UCSD, A. Thamizhavel and S. Ramakrishnan (TIFR, India), and D. Phelan and U. Welp (Argonne National Labs).

Category: QC

Email: bss2d@virginia.edu