## Abstract Submitted for the MAR15 Meeting of The American Physical Society

Metamagnetism in CeCoIn<sub>5</sub> and the Single Energy Scale Model A. THAMIZHAVEL, N. SANGEETA, S. RAMAKRISHNAN, Tata Institute of Fundamental Research, B. WHITE, BRIAN MAPLE, University of California, San Diego, ULRICH WELP, Argonne National Labs, PRADEEP KUMAR, University of Florida, V. CELLI, BELLAVE SHIVARAM, University of Virginia — The anisotropic linear and nonlinear magnetic response of the non-ordering heavy electron compound CeCoIn<sub>5</sub> will be presented. Many heavy electron materials exhibit a a peak in the linear susceptibility at a temperature  $T_1$  which correlates with the metamagnetic critical field, H<sub>c</sub>. There is also a peak in the nonlinear susceptibility  $\chi_3$ , at  $T_3 = 0.5T_1$  in many materials and this feature has been explained recently with a single energy scale model. In CeCoIn<sub>5</sub> however, a plateau rather than a peak is observed in the linear susceptibility which evolves into a paramagnetic type divergence upon further cooling. This apparent violation of the "ideal" metamagnetic behavior is resolved here. The single energy scale model augmented with a paramagnetic contribution successfully accounts for the observed linear and nonlinear anisotropic magnetic response in CeCoIn<sub>5</sub>.

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