

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Huge Magnetocrystalline Anisotropy in UMn_2Ge_2 DAVID PARKER, Oak Ridge National Laboratory, NIRMAL GHIMIRE, Los Alamos National Laboratory, RYAN BAUMBACH, National High Magnetic Field Laboratory, Florida State Univ., Tallahassee FL, ERIC BAUER, Los Alamos National Laboratory, LING LI, DAVID MANDRUS, Univ. of Tennessee, Knoxville TN, JOHN SINGLETON, Los Alamos National Laboratory, DAVID SINGH, Oak Ridge National Laboratory — We present an experimental finding, as predicted theoretically by one of the authors, of an extremely high uniaxial magnetic anisotropy energy - approaching 15 MJ/m^3 - in the 122 actinide ferromagnet UMn_2Ge_2 . This large MAE appears to originate in the extremely strong Uranium spin-orbit coupling and the sizable orbital moment (approaching $2 \mu_B$) on this atom. Implications for other 122 compounds are discussed.

David Parker
ORNL

Date submitted: 14 Nov 2014

Electronic form version 1.4