Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Dirac State in Giant Magnetoresistive Materials[1] Y. WU, N.H. JO, Ames Laboratory & Iowa State University, M. OCHI, RIKEN Center for Emergent Matter Science & Tohoku University, L. HUANG, D. MOU, T. KONG, E. MUN, L. WANG, Y. LEE, S. L. BUD'KO, P. C. CANFIELD, Ames Laboratory & Iowa State University, N. TRIVEDI, Ohio State University, R. ARITO, RIKEN Center for Emergent Matter Science & Tohoku University, A. KAMINSKI, Ames Laboratory & Iowa State University — We use ultrahigh resolution, tunable, vacuum ultraviolet laser-based angle-resolved photoemission spectroscopy (ARPES) to study the electronic properties of materials that recently were discovered to display titanic magnetoresistance. We find that that several of these materials have Dirac-like features in their band structure. In some materials those features are "ordinary" Dirac cones, while in others the linear Dirac dispersion of two crossing bands forms a linear object in 3D momentum space. Our observation poses an important question about the role of Dirac dispersion in the unusually high, non-saturating magnetoresistance of these materials.

[1]Research was supported by the US DOE, Office of Basic Energy Sciences under Contract No. DE-AC02-07CH11358; Gordon and Betty Moore Foundation EPiQS Initiative (Grant No. GBMF4411); CEM, a NSF MRSEC, under Grant No. DMR-1420451.

Yun Wu
Ames Laboratory & Iowa State University

Date submitted: 05 Nov 2015 Electronic form version 1.4