

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Observation of antiferromagnetic order collapse in the pressurized insulator LaMnPO JING GUO, Institute of Physics, CAS, JACK SIMONSON, Stony Brook University, LILING SUN, QI WU, PEIWEN GUO, CHAO ZHANG, DACHUN GU, Institute of Physics, CAS, GABRIEL KOTLIAR, Rutgers University, MEIGAN ARONSON, Stony Brook University, ZHONGXIAN ZHAO, Institute of Physics, CAS — The emergence of superconductivity in the iron pnictide or cuprate high temperature superconductors usually accompanies the suppression of a long-ranged antiferromagnetic (AFM) order state in a corresponding parent compound by doping or pressurizing. A great deal of effort by doping has been made to find superconductivity in Mn-based compounds, which are thought to bridge the gap between the two families of high temperature superconductors, but the AFM order was not successfully suppressed. Here we report the first observations of the pressure-induced elimination of long-ranged AFM order at ~ 34 GPa and a crossover from an AFM insulating to an AFM metallic state at ~ 20 GPa in LaMnPO single crystals that are iso-structural to the LaFeAsO superconductor by *in-situ* high pressure resistance and *ac* susceptibility measurements. These findings are of importance to explore potential superconductivity in Mn-based compounds and to shed new light on the underlying mechanism of high temperature superconductivity.

Liling Sun
Institute of Physics, CAS

Date submitted: 07 Nov 2013

Electronic form version 1.4