Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Studying the morphology of the magnetic C_4 phase in the 122 superconductors. KEITH TADDEI, Northern Illinois University, JARED ALLRED, University of Alabama, DANIEL BUGARIS, Argonne National Laboratory, MATTHEW KROGSTAD, Northern Illinois University, SAUL LAPIDUS, Advanced Photon Source ANL, RYAN STADEL, Northern Illinois University, DUCK CHUNG, HELMUT CLAUS, Argonne National Laboratory, MERCOURI KANATZIDIS, Northwestern Illinois University, DENNIS BROWN, Northern Illinois University, STEPHAN ROSENKRANZ, RAYMOND OSBORN, Argonne National Laboratory, OMAR CHMAISSEM, Northern Illinois University — The iron based superconductors continue to prove an exciting system for the study of superconductivity: the recent discovery of a reentrant tetragonal phase with SDW magnetic ordering has opened new avenues to study the competition between microscopically coexistent superconductivity and magnetism. This intriguing new phase is not only an exceedingly rare example of a magnetic structure with two ordering vectors, and consequently a confirmation of itinerate magnetism, but has also allowed for the determination of spin fluctuations as the driving mechanism behind the phase evolution in these materials. Evidence has been mounting of the universality of C_4 in the hole doped iron pnictides providing a useful playground for the comparison of how this phase behaves as it is stabilized out of different parent compounds and through different dopant atoms. Here all members of the hole doped family which show the C_4 phase will be compared and the parameters which appear to tune the phase's extent in temperature and phase space will be discussed.

Keith Taddei
Northern Illinois University

Date submitted: 05 Nov 2015 Electronic form version 1.4