Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Influence of Cr-doping on the magnetic structure of the FeAs strip compounds CaFe4As3 : a single crystal neutron diffraction study PASCAL MANUEL, ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, Didcot OX11 0QX, United Kingdom, LAURENT CHAPON, Institut Laue Langevin, 6 rue Jules Horowitz, BP156, Grenoble Cedex 9, France, ILLIYA TODOROV, DUCK Y. CHUNG, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, BACHIR OULADDIAF, Institut Laue Langevin, 6 rue Jules Horowitz, BP156, Grenoble Cedex 9, France, MERCOURI G. KANATZIDIS, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439 & Department of Chemistry, Northwestern University — $CaFe_4As_3$ offers the unique opportunity to modify the topology of the Fe_2As_2 layers, key in the understanding of superconductivity in the new iron pnictide superconductors, from infinite layers to strips of finite width linked a rectangular cross pattern. Bulk measurement on $CaFe_4As_3$ indicate a magnetic ordering at 90K with a second transition seen at about 26K. Neutron diffraction allowed to ascribe the high temperature transition to a Spin Density Wave(SDW) with a propagation vector k=(0,δ,0) eventually locking to δ=3/8 at the lower transition. As expected a profound effect on the magnetic properties of $CaFe_4As_3$ can be obtained by chemically doping or applying pressure. We report here on the consequence of Cr-doping on the magnetic structure of $CaFe_4As_3$ derived from single crystal neutron diffraction.

Pascal Manuel
ISIS Facility, STFC Rutherford Appleton Laboratory,
Chilton, Didcot OX11 0QX, United Kingdom

Date submitted: 15 Dec 2011 Electronic form version 1.4