

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Pseudogap in non-superconducting pnictides, CaFe_2As_2 and EuFe_2As_2 K. MAITI, G. ADHIKARY, N. SAHADEV, D.N. BISWAS, R. BINDU, N. KUMAR, A. THAMIZHAVEL, S.K. DHAR, Dept of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai - 400 005, India — Superconductivity in Fe-pnictides are studied extensively recently as they provide a non-cuprate domain to study unconventional superconductivity via doping induced suppression of magnetism. In order to study the role of magnetic interactions in the electronic structure and its implication in superconductivity, we probed the electronic structure of the parent compounds CaFe_2As_2 and EuFe_2As_2 using high resolution photoemission spectroscopy. Single crystalline samples were prepared by flux method. Photoemission measurements were carried out using a Gammadata Scienta analyzer R4000 and monochromatic photon sources. The high resolution spectra exhibit signature of a pseudogap above the spin density wave (SDW) transition temperature in both CaFe_2As_2 and EuFe_2As_2 . The intensity at the Fermi level show a sudden decrease across the SDW transition indicating more prominent pseudogap. An additional gap opens up in EuFe_2As_2 across the antiferromagnetic transition temperature as expected. Interestingly, CaFe_2As_2 also exhibit signature of another gap opening at low temperatures although no phase transitions observed in this temperature range.

K. Maiti
Dept of Condensed Matter Physics and Materials Science,
Tata Institute of Fundamental Research,
Homi Bhabha Road, Colaba, Mumbai - 400 005, India

Date submitted: 29 Nov 2010

Electronic form version 1.4