Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Observation of coexistence of itinerant electronic states and local moments in parents compound superconductor $Sr_4V_2O_6Fe_2As_2$ WON-JUN JANG, Center for Axion and Precision Physics, IBS, SEOKHWAN CHOI, Dept. of physics, KAIST, JONG MOK OK, Dept. of physics, POSTECH, HYUN WOO CHOI, HYUN JUNG LEE, JIN OH JUNG, DONG HYUN SON, Dept. of physics, KAIST, HWAN SOO SUH, Samsung Advanced Institute of Technology, JUN SUNG KIM, Dept. of physics, POSTECH, YANNIS K. SEMERTZIDIS, Center for Axion and Precision Physics, IBS, JHINHWAN LEE, Dept. of physics, KAIST — Using variable temperature scanning tunneling spectroscopy (STS) and quasi-particle interference (QPI) analysis, we studied coexistence of itinerant electronic states and local moments in $Sr_4V_2O_6Fe_2As_2$. Temperature dependent STS measurements showed Fano resonances resulting from the hybridization between local moments (V) and itinerant electrons (Fe) below 100 K, and the formation of Fano lattice implying collective spin excitations between local moments of V atoms below 50 K. QPI analysis showed replica bands and kink features in Fe-itinerant band, implying the existence of Bosonic modes between Sr_2VO_3 layers and FeAs layers. Our results show the collective behaviors of itinerant electrons and local moments, and the possibility of local moments contributing to superconductivity.

Won-Jun Jang
Korea Adv Inst of Sci
Tech

Date submitted: 06 Nov 2015 Electronic form version 1.4