Abstract Submitted
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Enhanced conductance in the normal state of Fe pnictides & chalcogenides measured by quasiparticle scattering spectroscopy (QPS): evidence of orbital fluctuations HAMOOD ARHAM, C.R. HUNT, W.K. PARK, L.H. GREENE, U of IL at Urbana, J. GILLETT, S.D. DAS, S.E. SEBASTIAN, U. Cambridge, S. RAN, A. THALER, S.L. BUD'KO, P.C. CANFIELD, Ames Lab & ISU, Z.J. XU, J.S. WEN, Z.W. LIN, Q. LI, G. GU, BNL — QPS reveals a conductance enhancement at a temperature, T_{onset}, for RFe_2As_2 (R=Ca, Sr, Ba) and $Fe_{1.13}Te$. For Ba/Sr Fe_2As_2 and $Fe_{1.13}Te$ the enhancement survives well above the magnetic and structural transition temperatures (Ba: T_N ∼132 K, T_{onset} ∼175 K; Sr: T_N ∼192 K, T_{onset} ∼240 K; $Fe_{1.13}Te$: T_N ∼60 K, T_{onset} ∼75 K) while for most $CaFe_2As_2$junctions it disappears below T_N and T_S(11 junctions tested, only 2 showed weak enhancement above T_N). For Co underdoped $BaFe_2As_2$ the enhancement coexists with the superconducting Andreev peaks while it is not observed for Co overdoped Ba122. We construct a modified phase diagram for $Ba(Fe_{1-x}Co_x)_2As_2$ to reflect the presence of this feature for the underdoped regime.[1] We discuss this conductance enhancement in the context of non-Fermi liquid behavior of these compounds due to orbital fluctuations.[2] This work is supported by the Center for Emergent Superconductivity, an Energy Frontier Research Center funded by the US DOE, Office of Science, Award No. DE-AC0298CH1088. Work at Cambridge supported by EPSRC. Work at BNL under DOE Award No.DE-AC0298CH10886. Ames Lab. operated by ISU for the U.S. DOE under Award No. DE-AC02-07CH11358.

[1]Arham et. al, arXiv:1108.2749.
[2]Lee et. al, arXiv:1110.5917.

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