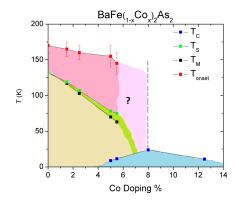
Detection of novel electronic order above the structural transition in underdoped $Ba(Fe_{1-x}Co_x)_2As_2$ and $Fe_{1-y}Te$ with point contact spectroscopy

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Point contact spectroscopy reveals a novel ordered region above the magnetic and structural transition temperatures for underdoped $Ba(Fe_{1-x}Co_x)_2As_2$ and $Fe_{1-y}Te$. The conductance measured across ballistic nanoscale Au junctions reveals a conductance enhancement starting as high as T = 177 K for the parent pnictide and with decreasing temperature grows reminiscent of a gap opening. The energy scale and temperature dependence of the spectra are consistent with the orbital ordering as detected by ARPES. [2] Similar results are observed in the chalcogenides. We construct a modified phase diagram for the Co:Ba122 showing a new ordered region existing above the structural and antiferromagnetic transitions.

- [1] H. Z. Arham, C. R. Hunt, W. K. Park, J. Gillett, S. Sebastian Z. J. Xu, J. S. Wen, Z. W. Lin, Q. Li and G. Gu, L. H. Greene (in preparation)
- [2] Yi et al. arXiv:1011.0050v1
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