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Education:

1977-1981: B. S., Department of Physics, Suzhou University, Suzhou, Jiangsu, China
1984-1991: Ph. D., Department of Physics, University of Texas at Austin, Austin, Texas, USA

Professional Employment:

2010– present: Professor, Institute of Physics, Chinese Academy of Sciences, Beijing, China
2001 – 2016: Professor, Department of Physics, University of Houston, USA
1999 – 2001: Associate Professor, Department of Physics, Boston University, Boston, USA
1995 – 1999: Research Associate, Department of Physics, University of California Berkeley, USA
1993 – 1995: Senior Research Staff, Applied Physics Department, Hamburg University, Germany
1991 – 1993: Postdoc Fellow, Department of Physics, Basel University, Switzerland

Research interests:

Scanning Tunnelling Microscopy/Spectroscopy; Strongly Correlated Electron Systems;
Superconductivity

Selected Publications:

1. *Evidence for topological edge states in large energy gap near the step edges on the surface of $ZrTe_5$*
R. Wu, J.-Z. Ma, L.-X. Zhao, S.-M. Nie, X. Huang, J.-X. Yin, B.-B. Fu, P. Richard, G.-F. Chen, Z. Fang, X. Dai, H.-M. Weng, T. Qian, H. Ding, and S. H. Pan
Phys. Rev. X **6**, 021017 (2016)
2. *Observation of a Robust Zero-energy Bound State in Iron-based Superconductor $Fe(Te/Se)$*
J.-X. Yin, Zheng Wu, J.-H. Wang, Z.-Y. Ye, Jing Gong, X.-Y. Hou, Lei Shan, Ang Li, X.-J. Liang, X.-X. Wu, Jian Li, C.-S. Ting, Z. Wang, J. -P. Hu, P.-H. Hor, H. Ding, S. H. Pan
Nature Physics **11**, 543-546, (2015).
3. *Microscopic Electronic Inhomogeneity in the High- T_c Superconductor $Bi_2Sr_2CaCu_2O_{8+\delta}$*
S. H. Pan, J. P. O'Neal, R. L. Badzey, C. Chamon, H. Ding, J. R. Engelbrecht, Z. Wang, H. Eisaki, S. Uchida, A. K. Gupta, K.-W. Ng, E. W. Hudson, K. M. Lang, and J. C. Davis
Nature **413**, 282-285, (2001)
4. *STM Studies of the Electronic Structure of Vortex Cores in $Bi_2Sr_2CaCu_2O_{8+\delta}$*
S. H. Pan, E. W. Hudson, A. K. Gupta, K-W Ng, H. Eisaki, S. Uchida, and J. C. Davis
Phys. Rev. Lett. **85** (7), 1536 (2000)
5. *Imaging the Effects of Individual Zinc Impurity Atoms on Superconductivity in $Bi_2Sr_2CaCu_2O_{8+\delta}$*
S. H. Pan, E. W. Hudson, K. M. Lang, H. Eisaki, S. Uchida, and J. C. Davis,
Nature **403**, 746-750, (2000)

Phase Coherence Dominated Superconducting Transition in $\text{Fe}_{1+x}(\text{Te,Se})$

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Abstract: This talk will report our STM/S studies on the iron-based superconductor $\text{Fe}_{1+x}(\text{Te,Se})$. Earlier, we reported the discovery of a zero-energy mode localized at each interstitial Fe impurity sites (Nature Physics **11**, 543-546, 2015). Further study has shown that, in addition to the novel localized effects, these interstitial magnetic impurity atoms also collectively destroy the superconducting condensate by decoherence, not by reduction of the pairing strength (energy-gap). This phenomenon is inconsistent with the Abrikosov-Gor'kov description of the effects of magnetic impurities on superconductivity. With a quantitative analyses of our STM/S results, we show that the linear reduction of T_c with increasing of the impurity concentration displayed by the magnetic susceptibility measurements is also consistent with the decoherence effect. In addition, we will show the results of the temperature dependent STS measurements to demonstrate that the interstitial Fe impurity atoms collectively drive a quantum phase transition from the coherence dominated superconducting state to an unknown quantum state.