Curriculum Vitae VIVEK MISHRA (vivekm.phys@gmail.com)

EDUCATION

Ph.D. in physics
University of Florida, Gainesville, USA (2011).

M.Sc. (Integrated) in Physics
Indian Institute of Technology, Kanpur, India (2006).

EMPLOYMENT

Postdoctoral Scholar
July 2015 - July 2017
Oak Ridge National Laboratory, Oak Ridge, TN.

Postdoctoral Scholar
July 2012 - July 2015
Center for Emergent Superconductivity, Argonne National Laboratory, Chicago, IL.

Postdoctoral Scholar
July 2011 - June 2012
James Franck Institute, University of Chicago, Chicago, IL.

MAJOR AWARDS

2003-2005
"Student Benefit Fund Scholarship",
Indian Institute of Technology, Kanpur, India.

2010
"Russell Dissertation Fellowship",
College of Liberal Arts and Sciences, University of Florida, Gainesville, USA.

PROFESSIONAL AFFILIATIONS

American Physical Society

PROFESSIONAL SERVICES

Referee : American Physical Society and Institute of Physics Journals.
Reviewer : NSF proposals, Argonne National Laboratory - LDRD proposals.

INVITED TALKS

1. **"Disorder in Multiband Systems : Application to Fe-pnictides," CMCSN Meeting, Dallas, TX, USA (2011).**
2. **"Effect of gap structure and Fermi surface topology on transport in pnictide superconductors," Northwestern University, Evanston, IL, USA (2011).**
3. **"Effect of disorder and gap structure on transport in iron-pnictide superconductors," Argonne National Laboratory, Lemont, IL, USA (2011).**
4. **"Effect of pseudogap on superconductivity in cuprates." Fall workshop of Center for Emergent Superconductivity, Brookhaven National Laboratory, Upton, NY, USA (2013).**
5. **"Using disorder as a probe of superconducting order parameter." Iowa State University, Ames, IA, USA (2013).**
6. **"Disorder effects in a multiband superconductor in the presence of competing order : Implications for underdoped pnictides." APS March Meeting, Denver, CO, USA (2014).**
7. **"Spin density wave order inside vortex cores in multiband superconductors." Fall workshop of Center for Emergent Superconductivity, University of Illinois, Urbana-Champaign, IL, USA (2014).**
8. **"Superconductivity near a Lifshitz transition : Importance of submerged band," University of Tennessee, Knoxville, TN USA(2016).**
9. **"Case of FeSe: Nematicity and high-temperature superconductivity." Indian Institute of Technology, Kharagpur, India (2017).**
10. **"Case of FeSe: Nematicity and high-temperature superconductivity." Indian Institute of Sciences, Banglore, India (2017).**
11. **"Pairing in cuprates: Signatures of a non-BCS paradigm." Indian Institute of Sciences, Banglore, India (2017).**
12. **"Origin of charge density wave order in the underdoped cuprates." Tata Institute of Fundamental Research , Mumbai, India (2017).**
13. **"Impurity scattering : A phase-sensitive probe of the superconducting order." Tata Institute of Fundamental Research , Mumbai, India (2017).**
14. **"Case of FeSe: Nematicity and high-temperature superconductivity." Harish-Chandra Research Institute, Allahabad, India (2017).**
15. **"Pairing in cuprates: Signatures of a non-BCS paradigm." Harish-Chandra Research Institute, Allahabad, India (2017).**
16. **" Case of FeSe : Nematicity and 100K superconductivity." Indira Gandhi Center for Atomic Research, Kalpakkam, India (2017).**

PUBLICATIONS

29. **"From Mott to not: phenomenology of overdoped cuprates," N. R. Lee-Hone, U. Ozdemir, V. Mishra, D. M. Broun, and P. J. Hirschfeld, submitted to Phys. Rev. Letters, arXiv:1902.08286.**
28. **"Disorder raises the critical temperature of a cuprate superconductor," Maxime Leroux, Vivek Mishra, Jacob P.C. Ruff, Helmut Claus, Matthew P. Smylie, Christine Opagiste, Pierre Rodire, Asghar Kayani, G. D. Gu, John M. Tranquada, Wai-Kwong Kwok, Zahirul Islam, Ulrich Welp, Proceedings of the National Academy of Sciences 116, 10691 (2019).**

27. **"Effective pairing interaction in a system with an incipient band," Thomas A. Maier, Vivek Mishra, Douglas J. Scalapino, submitted to Phys. Rev. B 99, 140504(R) (2019).**

26. **"Optical conductivity of overdoped cuprate superconductors: application to LSCO," N. R. Lee-Hone, V. Mishra, D. M. Broun, and P. J. Hirschfeld, Phys. Rev. B. 98, 054506 (2018).**

25. **"Using controlled disorder to probe the interplay between charge order and superconductivity in $NbSe_2$," Kyuil Cho, M. Konczykowski, S. Teknowijoyo, M. A. Tanatar, J. P. Guss, P. B. Gartin, V. Mishra, P. J. Hirschfeld, R. Prozorov, Nature Communications 9, 2796 (2018).**

24. **"Robust odd-parity superconductivity in the doped topological insulator $Nb_xBi_2Se_3$," M. P. Smylie, K. Willa, H. Claus, A. Snezhko, I. Martin, W.-K. Kwok, Y. Qiu, Y. S. Hor, E. Bokari, P. Niraula, A. Kayani, V. Mishra, U. Welp, Phys. Rev. B 96, 115145 (2017) .**

23. **"Measurement of the dynamic charge response of materials using low-energy, momentum-resolved electron energy-loss spectroscopy (M-EELS)," Sean Vig, Anshul Kogar, Matteo Mitrano, Ali A. Husain, Vivek Mishra, Melinda S. Rak, Luc Venema, Peter D. Johnson, Genda D. Gu, Eduardo Fradkin, Michael R. Norman, Peter Abbamonte, SciPost Phys. 3, 26 (2017).**

22. **"Effect of disorder on the competition between nematic and superconducting order in FeSe," V. Mishra and P. J. Hirschfeld, New Journal of Physics 18, 103001 (2016).**

21. **"Energy gap evolution across the superconductivity dome in single crystals of $(Ba_{1-x}K_x)Fe_2As_2$," K. Cho, M. Kończykowski, S. Teknowijoyo, M. A. Tanatar, Y. Liu, T. A. Lograsso, W. E. Straszheim, V. Mishra, S. Maiti, P. Hirschfeld, R. Prozorov, Science Advances 2, e1600807 (2016).**

20. **"Effect of nonmagnetic impurities on $s_\pm$ superconductivity in the presence of incipient bands," X. Chen, V. Mishra, S. Maiti and Peter Hirschfeld, Phys. Rev. B. 94, 054524 (2016).**

19. **"Enhancement of T_c by point-like disorder and anisotropic gap in FeSe," S. Teknowijoyo, K. Cho, M. Kończykowski, M. A. Tanatar, J. Gonzales, A. E. Böhmer, V. Mishra, P. J. Hirschfeld,S. L. Bud'ko, P. C. Canfield, R. Prozorov, Phys. Rev. B. 94, 064521 (2016).**

18. **"$s_\pm$ pairing near a Lifshitz transition," Vivek Mishra, Douglas J. Scalapino and Thomas Maier, Scientific Reports 6, 32078 (2016).**

17. **"Pairing in a dry Fermi sea," T. A. Maier, P. Staar, V. Mishra, U. Chatterjee, J. C. Campuzano and D. J. Scalapino, Nature Communications 7, 11875 (2016).**

16. **"Effect of proton irradiation on supercoductivity in optimally doped $BaFe_2(As_{1-x}P_x)_2$ single crystals," M. P. Smylie, M. Leroux, V. Mishra, L. Feng, K. Taddei, O. Chmaissem, H. Claus, A. Kayani, A. Snezhko, U. Welp, W.-K. Kwok, Phys. Rev. B 93, 115119 (2016).**

15. **"Strong coupling critique of spin fluctuation driven charge order in underdoped cuprates," Vivek Mishra and M. R. Norman, Phys. Rev. B 92, 060507(R) (2015).**

14. **"Local spin-density-wave order inside vortex cores in multiband superconductors," Vivek Mishra and A. E. Koshelev, Phys. Rev. B 92, 064511 (2015).**

13. **"Effect of disorder on superconductivity in the presence of spin density wave order," Vivek Mishra, Phys. Rev. B. 91, 104501 (2015).**

12. **"Disorder-induced topological change of the superconducting gap structure in iron pnictides," Y. Mizukami, M. Kończykowski, Y. Kawamoto, S. Kurata, S. Kasahara, K. Hashimoto, V. Mishra, A. Kreisel, Y. Wang, P. J. Hirschfeld, Y. Matsuda and T. Shibauchi, Nature Communications 5, 5657 (2014).**

11. **"Effect of electron irradiation on superconductivity in single crystals of isovalently substituted $Ba(Fe_{1-x}Ru_x)_2As_2$ ($x = 0.24$)," R. Prozorov, M. Kończykowski, M. A. Tanatar, A. Thaler, S. L. Bud'ko, P. C. Canfield, V. Mishra, P. J. Hirschfeld, Phys. Rev. X 4, 041032 (2014).**

10. **" London Penetration Depth and Pair Breaking ," V. G. Kogan, R. Prozorov and V. mishra, Phys. Rev. B 88, 224508 (2013).**

9. **"Effect of the pseudogap on T_c in the cuprates and implications for its origin," Vivek Mishra, U. Chatterjee, J. C. Campuzano and M. R. Norman, Nature Physics 10, 357 (2014).**

8. **"Huge critical current density and tailored superconducting anisotropy in $SmFeAsO_{0.8}F_{0.15}$ by low density columnar-defect incorporation," L. Fang, Y. Jia, V. Mishra, C. Chaparro, V. Vlasko-Vlasov, A. E. Koshelev, U. Welp, G. Crabtree , S. Zhu , S. Katrych , N. Zhigadlo , J. Karpinski, W.-K. Kwok, Nature Communications 4, 2655 (2013).**

7. **"Using controlled disorder to distinguish $s_{\pm}$ and s_{++} gap structure in Fe-based superconductors," Y. Wang, A. Kreisel, P. J. Hirschfeld and V. Mishra, Phys. Rev. B 87, 094504 (2013).**

6. **"Transport properties of 3D extended s-wave states appropriate for iron-based superconductors," V. Mishra, S. Graser and P. J. Hirschfeld, Phys. Rev. B 84, 014524, (2011).**

5. **"Theory of thermal conductivity in extended-s state superconductors: application to ferropnictides," V. Mishra, A. Vorontsov, P.J. Hirschfeld and I. Vekhter, Phys. Rev. B 80, 224525, (2009).**

4. **"Probing the pairing symmetry of the iron pnictides with electronic Raman scattering," G. R. Boyd, T. P. Devereaux, P. J. Hirschfeld, V. Mishra and D. J. Scalapino, Phys. Rev. B 79, 174521, (2009).**

3. **"Lifting of nodes by disorder in extended-s state superconductors: application to ferropnictides," V. Mishra, G. Boyd, S. Graser, T. Maier, P. J. Hirschfeld and D. J. Scalapino, Phys. Rev. B 79, 094512, (2009).**

2. **"Sublattice model of atomic scale pairing inhomogeneity in a superconductor," Vivek Mishra, P. J. Hirschfeld and Yu. S. Barash, Phys. Rev. B 78, 134525, (2008).**

1. **"Bulk and surface transitions in asymmetric simple exclusion process: Impact on boundary layers," Sutapa Mukherji and Vivek Mishra, Phys. Rev. E 74, 011116, (2006).**

REFERENCES

1. **Peter J. Hirschfeld,**
Professor, Department of Physics,
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2. **Michael R. Norman,**
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Professor, Physics Department,

University of California, Santa Barbara, California, USA.
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Senior Research Staff, Center for Nanophase Materials Sciences,
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