Curriculum Vitae

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Academic Qualifications:

- B. Sc. (Physics Hons.), University of Delhi, Delhi, 1993-1996
- M.S. (Physics), Indian Institute of Science, Bangalore, 1996-1999
- Ph.D. (Physics) Princeton University, 2000-2005

Employment:

- Mar. 2015 - Present; Associate Professor, Department of Physics, Indian Institute of Science, Bangalore.
- Apr. 2009 - Apr. 2015; Assistant Professor, Department of Physics, Indian Institute of Science, Bangalore.
- Oct. 2005 - Mar. 2009; Postdoctoral fellow, Department of Physics, University of California, Berkeley

Awards and Honors:

- Preeti Shankar Teaching Prize (2014)
- Associateship of the Indian Academy of Sciences, 2011-2013

- Ramanujan Fellowship of the Department of Science and Technology, India, 2010-2015
- Award for excellence in teaching: Department of Physics, Princeton University, 2003.
- Joseph Henry Prize, Department of Physics, Princeton University, 2001.
- Graduate Student Fellowship, Princeton University, 2000-2001
- Meera Memorial Prize for the highest CGPA, Department of Physics, Indian Institute of Science, 1999.

Field of specialization: Theoretical condensed matter physics

Research interests: Transport in strongly correlated systems, Many body physics of cold atomic systems, thermalization and localization in quantum systems

List of publications:

1. *High Temperature Superconductivity in the Cuprates: Materials, Phenomena and a Mechanism*, S. Banerjee, C. Dasgupta, S. Mukerjee, T. V. Ramakrishnan and K. Sarkar, AIP Conference Proceedings **2005**, 020001 (2018)
2. *Many-body localized phase of bosonic dipoles in a tilted optical lattice*, A. Dutta, S. Mukerjee and K. Sengupta, arXiv:1806.025302 (2018)
3. *Enhanced Specular Andreev reflection in bilayer graphene*, A. Soori, M. R. Sahu, A. Das and S. Mukerjee, Phys. Rev. B **98**, 075301 (2018).
4. *Luminosity and cooling of highly magnetized white dwarfs: suppression of luminosity by strong magnetic fields*, M. Bhattacharya, B. Mukhopadhyay and S. Mukerjee, MNRAS **477**, 2 (2018).
5. *Criterion for the occurrence of many body localization in the presence of a single particle mobility edge*, R. Modak, S. Ghosh and S. Mukerjee, Phys. Rev. B **97**, 104204 (2018)
6. *Seebeck Coefficient of a Single van der Waals Junction in Twisted Bilayer Graphene*, P. S. Mahapatra, K. Sarkar, H. R. Krishnamurthy, S. Mukerjee and A. Ghosh, Nano Lett.,**17(11)**,pp 6822-6827 (2017)
7. *The correlation between the Nernst effect and fluctuation diamagnetism in strongly fluctuating superconductors*, K. Sarkar, S. Banerjee, S. Mukerjee and T. V. Ramakrishnan, New J.Phys. **19**, 073009 (2017)

8. *Many-body localization in incommensurate models with a mobility edge*, D. -L. Deng, S. Ganeshan, X. Li, R. Modak, S. Mukerjee and J. H. Pixley, Ann. Phys. (Berlin) Invited Review, Special Issue on Many-Body Localization, **529**, 1600399 (2017)

9. *Boosted one dimensional superfluids on a lattice*, S. Ray, S. Mukerjee and V. .B. Shenoy, Annals of Physics, **384**, 71-84 (2017)

10. *Enhancement of crossed Andreev reflection in a superconducting ladder connected to normal metal leads*, A. Soori and S. Mukerjee, Phys. Rev. B **95**, 104517 (2017)

11. *Significantly super-Chandrasekhar limiting mass white dwarfs and their consequences*, B. Mukhopadhyay, U. Das, A. R. Rao, S. Subramanian, M. Bhattacharya, S. Mukerjee, T. S. Bhatia, J. Sutradhar, , proceedings of The 20th European Workshop on White Dwarfs (EuroWD16) (2016).

12. *Integrals of motion for one dimensional Anderson localized systems*, R. Modak, S. Mukerjee, E. A. Yuzbashyan and B. S. Shastry, New J. Phys. **18** 033010 (2016)

13. *Role of different scattering mechanisms on the temperature dependence of transport in graphene*, S. Sarkar, K. Rafsanjani Amin, R. Modak, A. Singh, S. Mukerjee, and A. Bid, Scientific reports **5**, 16772 (2015)

14. *Many-body localization in the presence of a single particle mobility edge*, R. Modak and S. Mukerjee, Phys. Rev. Lett. **115**, 230401 (2015)

15. *Universal power law in crossover from integrability to quantum chaos*, R. Modak, S. Mukerjee and S. Ramaswamy, Phys. Rev. B **90**, 075152 (2014).

16. *Finite size scaling in crossover among different random matrix ensembles in microscopic lattice models*, R. Modak and S. Mukerjee, New J. Phys. **16**, 093016 (2014).

17. *Finite temperature dynamics of vortices in Bose-Einstein condensates*, S. Gautam, A. Roy and S. Mukerjee, Phys. Rev. A **89**, 013612 (2014).

18. *Anisotropic merging and splitting of dipolar Bose-Einstein condensates*, S. Gautam and S. Mukerjee, J. Phys. B: At. Mol. Opt. Phys. **47**, 185301 (2014)

19. *Frustration in optical lattices of interacting bosons*, S. Mukerjee, Journal of the Indian Institute of Science, **2** (2014).

20. *Supersolid phases of hardcore bosons on a one dimensional optical lattice with frustration*, T. Mishra, R. V. Pai and S. Mukerjee, Phys. Rev. A **89**, 013615 (2014).

21. *Hardcore bosons in a zig-zag optical superlattice*, A. Dhar, T. Mishra, R. V. Pai, S. Mukerjee, B. P. Das, Phys. Rev. A **88**, 053625 (2013).

22. *Quantum phases and phase transitions of frustrated hard-core bosons on a triangular ladder*, T. Mishra, R. V. Pai, S. Mukerjee, and A. Paramekanti, Phys. Rev. B **87**, 174504 (2013).

23. *Chiral Mott insulator with staggered loop currents in the fully frustrated Bose-Hubbard model*, A. Dhar, T. Mishra, M. Maji, R. V. Pai, S. Mukerjee and A. Paramekanti, Phys. Rev. B **87**, 174501 (2013).

24. *Theromelectricity in Graphene: Effects of a gap and magnetic fields*, A. A. Patel and S. Mukerjee, Phys. Rev. B **86** 075411 (2012).

25. *Bose-Hubbard model in a strong effective magnetic field: Emergence of a chiral Mott insulator ground state*, A. Dhar, M. Maji, T. Mishra, R. V. Pai, S. Mukerjee and A. Paramekanti, Phys. Rev. A **85**, 041602 (R) (2012).

26. *Evidence of gate-tunable topological excitations in two-dimensional electron systems*, R. Koushik, M. Baenninger, V. Narayan, S. Mukerjee, M. Pepper, I. Farrer, D. A. Ritchie and A. Ghosh, Phys. Rev. B **83** 085302 (2011).

27. *Tuning the electronic effective mass in double-doped $SrTiO_3$*, J. Ravichandran, W. Siemons, M. L. Scullin, S. Mukerjee, M. Huijben, J. E. Moore, A. Majumdar, and R. Ramesh, Phys. Rev. B **83**, 035101 (2011).

28. *Dynamics after a sweep through a quantum critical point*, F. Pollmann, S. Mukerjee, A. G. Green and J. E. Moore, Phys. Rev. E **81**, 020101(R) (2010).

29. *Theory of finite-entanglement scaling at one-dimensional quantum critical points*, F. Pollmann, S. Mukerjee, A. Turner and J. E. Moore, Phys. Rev. Lett. **102**, 255701 (2009).

30. *Optimal thermoelectric figure of merit of a molecular junction*, P. Murphy, S. Mukerjee and J. E. Moore, Phys. Rev. B **78**, 161406(R) (2008).

31. *Signatures of diffusion and ballistic transport in the stiffness, dynamical correlation functions, and statistics of one-dimensional systems*, S. Mukerjee and B. S. Shastry, Phys. Rev. B **77**, 245131 (2008).

32. *Vortex lattice transitions in cyclic spinor condensates*, R. Barnett, S. Mukerjee and J. E. Moore, Phys. Rev. Lett. **100**, 240405 (2008).

33. *Anomalously large measured thermoelectric power factor in $Sr_{1-x}La_xTiO_3$ thin films due to $SrTiO_3$ substrate reduction*, M. L. Scullin, C. Yu, M. Huijben, S. Mukerjee, J. Seidel, Q. Zhan, J. Moore, A. Majumdar, and R. Ramesh, Appl. Phys. Lett. **92**, 202113 (2008).

34. *Dynamical models and the phase ordering kinetics of the $S = 1$ spinor condensate*, S. Mukerjee, C. Xu and J. E. Moore, Phys. Rev. B **76**, 104519 (2007).

35. *Dynamical thermal response functions for strongly correlated one-dimensional systems*, M. R. Peterson, S. Mukerjee, B. S. Shastry, J. O. Haerter, Phys. Rev. B **76**, 125110 (2007).

36. *Doping dependence of thermopower and thermoelectricity in strongly correlated systems*, S. Mukerjee and J. E. Moore, Appl. Phys. Lett. **90**, 112107 (2007).

37. *Topological defects and the superfluid transition of the $S = 1$ spinor condensate in two dimensions*, S. Mukerjee, C. Xu and J. E. Moore, Phys. Rev. Lett. **97**, 120406 (2006).

38. *Towards a statistical theory of transport by strongly interacting fermions*, S. Mukerjee, V. Oganesyan and D. A. Huse, Phys Rev. B, **73**, 035113 (2006).

39. *Thermopower of the Hubbard model: Effects of multiple orbitals and magnetic fields*, S. Mukerjee, Phys. Rev. B, **72**, 195109 (2005).

40. *Nernst effect in the vortex liquid regime of a type-II superconductor*, S. Mukerjee and D. A. Huse, Phys. Rev. B, **70**, 014506 (2004).

41. *Ellipsometric investigation of strain reduction in $Si_{1-x-y}Ge_xC_y$ layers compared to $Si_{1-x}Ge_x$ on silicon*, S. Mukerjee and V. Venkataraman, Solid State Electronics, **45**(11), 1875 (2001).

42. *Characterization of strain in $Si_{1-x}Ge_x$ films using multiple angle of incidence ellipsometry*, S. Mukerjee and V. Venkataraman, Appl. Phys. Lett., **77**(22), 3259 (2000).