Pinaki Majumdar

1. **Personal detail:** Male, born 26 January 1964, Indian

2. **Address:**

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3. **Education:**

- B.E. in Electrical Engg (1986), 1st Class Honours, Jadavpur Univ, India.
- M.Tech in Solid State Technology (1990), CGPA 9.7/10, I.I.T Madras, India.
- Ph.D. in Physics (1996), Indian Institute of Science, Bangalore, India.

4. **Positions held:**

Post Doctoral Fellow (1996-98): Bell Laboratories, Murray Hill, NJ, USA.

Permanent employment: Harish-Chandra Research Institute, Allahabad

Fellow (1998-2001), Reader (2001-03), Associate Professor (2003-07),
Professor (2007-2023), Senior Professor (Jan-Dec 2024)
Director (2017-2024)

Professor, Ahmedabad University (from Jan 2025)

Visiting positions:

- Cambridge University, Cavendish Laboratory, UK: February-March 2006.
- Oxford University, Physical & Theoretical Chemistry, UK, Apr-May 2006.
- Institut Laue-Langevin, Grenoble, France, June-Aug 2006.

5. **Awards, fellowships, etc:**

- Institute Merit Prize and Silver Medal, I.I.T Madras (1990)
- S. S. Bhatnagar Award in Physical Sciences (2007)
- Outstanding Research Investigator Award of the DAE-SRC (2008)
- Fellow, National Academy of Sciences, India (2015)

6. **Ph.D thesis guided:**

Name	Year	Position
1. Sanjeev Kumar	2004	Professor, IISER Mohali
2. Kalpataru Pradhan	2009	Associate Prof, SINP Kolkata
3. Anamitra Mukherjee	2009	Reader, NISER Bhubaneswar
4. Vivekanand Singh	2012	Deceased
5. Rajarshi Tiwari	2013	Scientist, TC Dublin, Ireland
6. Sabyasachi Tarat	2014	Assistant Prof, RKMVERI Belur
7. Nyayabanta Swain	2017	Postdoc, NTU, Singapore
8. Abhishek Joshi	2019	Postdoc, NISER Bhubaneswar
9. Sauri Bhattacharyya	2021	Postdoc, University of Rome, Sapienza
10. Arijit Dutta	2021	Postdoc, Goethe-Universitat, Germany
11. Sankha Subhra Bakshi	2025	Postdoc, IISER Kolkata

7. **Publications**:

(a) Journal papers:

1. **Inhomogeneous tunneling, nonmonotonic resistivity, and non-Drude optics in EuB6**
   Tanmoy Mondal and Pinaki Majumdar,
   Phys. Rev. B 111, 195103 (2025)

2. **Distinct charge and spin recovery dynamics in a photoexcited Mott insulator**,
   Sankha Subhra Bakshi and Pinaki Majumdar,
   Phys. Rev. Lett. 133, 256501 (2024)

3. **Nonequilibrium dynamics of suppression, revival, and loss of charge order in a laser-pumped electron-phonon system**,
   Sankha Subhra Bakshi, Debraj Bose, Arijit Dutta, and Pinaki Majumdar,
   Phys. Rev. B 110, 075102 (2024).

4. **Spin-orbital liquids and insulator-metal transitions on the pyrochlore lattice**
   Nyayabanta Swain, Madhuparna Karmakar and Pinaki Majumdar
   Phys. Rev. B 106, 245114 (2022)

5. **Nonequilibrium thermal state of a voltage-biased Mott insulator**
   Arijit Dutta and Pinaki Majumdar
   Phys Rev B 105, 075149 (2022)

6. **Fermi arcs and pseudogap phase in a minimal microscopic model of d-wave superconductivity**
   Dheeraj Kumar Singh, Samrat Kadge, Yunkyu Bang, and Pinaki Majumdar
   Phys Rev B 105, 054501 (2022)

7. **Dynamics of magnetic collective modes in square- and triangular-lattice Mott insulators at finite temperature**
   Sauri Bhattacharyya and Pinaki Majumdar
   Phys. Rev. B 104, 235124 (2021)

8. **Spatial behavior in a Mott insulator near the voltage-driven resistive transition**
   Arijit Dutta and Pinaki Majumdar
   Phys Rev B 101, 245155 (2020)

9. **Strongly anharmonic collective modes in a coupled electron-phonon-spin problem**
   Sauri Bhattacharyya, Sankha Subhra Bakshi, Saurabh Pradhan, Pinaki Majumdar
   Phys Rev B 101, 125130 (2020)

10. **A classical fluctuation theory of the superfluid, Mott, and normal phases of correlated bosons**
    Abhishek Joshi and Pinaki Majumdar
    Eur. Phys. J. B (2020) 93: 33

11. **Thermal transitions of the modulated superfluid for spin-orbit coupled correlated bosons in an optical lattice**
    Arijit Dutta, Abhishek Joshi, K. Sengupta, and Pinaki Majumdar
    Phys Rev B 99, 195126 (2019)

12. **Langevin approach to lattice dynamics in a charge-ordered polaronic system**
    Sauri Bhattacharyya, Sankha Subhra Bakshi, Samrat Kadge, Pinaki Majumdar
    Phys Rev B 99, 165150 (2019)

13. **Impact of speckle disorder on a superfluid Fermi system**
    Abhishek Joshi and Pinaki Majumdar
    Phys Rev B 100, 045149 (2019)

14. **Drude weight anisotropy in the doped iron pnictides: The primary role of orbital weight redistribution along the reconstructed Fermi surfaces**
    Dheeraj Kumar Singh and Pinaki Majumdar
    Phys Rev B 98, 195130 (2018)

15. **Quasi-one-dimensional nanoscale modulation as sign of nematicity in iron pnictides and chalcogenides**
    Dheeraj Kumar Singh, Alireza Akbari and Pinaki Majumdar
    Phys Rev B 98, 180506(R) (2018)

16. **The competition and coexistence of antiferromagnetism and d-wave superconductivity: probing coupled thermal fluctuations in a two dimensional minimal model**
    Samrat Kadge and Pinaki Majumdar
    Eur. Phys. J. B (2018) 91: 206

17. **Highly anisotropic quasiparticle interference patterns in the spin-density wave state of the iron pnictides**
    Dheeraj Kumar Singh and Pinaki Majumdar
    Phys Rev B 96, 235111 (2017)

18. **Giant magnetoelectric effect in pure manganite-manganite heterostructures**

Sanjukta Paul, Ravindra Pankaj, Sudhakar Yarlagadda, Pinaki Majumdar, and Peter B. Littlewood
Phys Rev B 96, 195130 (2017)

19. **Magnetic order and Mott transition on the checkerboard lattice**
Nyayabanta Swain and Pinaki Majumdar
J. Phys.: Condens. Matter 29 (2017) 085603

20. **Mott transition and anomalous resistive state in the pyrochlore molybdates**
Nyayabanta Swain and Pinaki Majumdar
Europhys Lett. 119 (2017) 17004

21. **Noncollinear order and gapless superconductivity in s-wave magnetic superconductors**
Madhuparna Karmakar and Pinaki Majumdar
Phys Rev B 93, 195147 (2016)

22. **Mott-Hubbard transition and spin-liquid state on the pyrochlore lattice**
Nyayabanta Swain, Rajarshi Tiwari, and Pinaki Majumdar
Phys Rev B 94, 155119 (2016)

23. **Population-imbalanced lattice fermions near the BCS-BEC crossover: Thermal physics of the breached pair and Fulde - Ferrell - Larkin - Ovchinnikov phases**
Madhuparna Karmakar and Pinaki Majumdar
Phys Rev A 93, 053609 (2016)

24. **Anomalous pseudogap in population imbalanced Fermi superfluids**
Madhuparna Karmakar and Pinaki Majumdar
Eur. Phys. J. D (2016) 70: 220

25. **A real space auxiliary field approach to the BCS-BEC crossover**
Sabyasachi Tarata and Pinaki Majumdar
Eur. Phys. J. B (2015) 88: 68

26. **Charge dynamics across the disorder-driven superconductor-insulator transition**
Sabyasachi Tarat and Pinaki Majumdar
Europhys. Lett. 105 (2014) 67002

27. **Radio-frequency spectroscopy of the attractive Hubbard model in a trap**
Sanjoy Datta, Viveka Nand Singh, and Pinaki Majumdar
Phys. Rev. A 89, 053609 (2014)

28. **Huge positive magnetoresistance in antiferromagnetic double perovskite metals**
Viveka Nand Singh and Pinaki Majumdar
J. Phys.: Condens. Matter 26 (2014) 296001

29. **A real space description of magnetic field induced melting in the charge ordered manganites: I. The clean limit** Anamitra Mukherjee and Pinaki Majumdar

Eur. Phys. J. B (2014) 87: 238

30. **A real space description of magnetic field induced melting in the charge ordered manganites: II. The disordered case**
Anamitra Mukherjee and Pinaki Majumdar
Eur. Phys. J. B (2014) 87: 239

31. **Magnon spectrum in the domain ferromagnetic state of antisite - disordered double perovskites**
Subrat Kumar Das, Viveka Nand Singh, and Pinaki Majumdar
Phys. Rev. B **88**, 214428 (2013)

32. **Pairing fluctuations, the BCS-BEC crossover, and strong disorder in superconductors**
Pinaki Majumdar and Sabyasachi Tarat
Journal of Superconductivity and Novel Magnetism **26**, 1787, (2013)

33. **Noncollinear magnetic order in the double perovskites: double exchange on a geometrically frustrated lattice**
Rajarshi Tiwari and Pinaki Majumdar
IJMPB **27**, 1350018, (2013)

34. **Visualizing the Mott transition**
Rajarshi Tiwari and Pinaki Majumdar
Current Science, **103**, 518, (2012)

35. **Antisite domains in double perovskite ferromagnets: impact on magnetotransport and half-metallicity**
Viveka Nand Singh and Pinaki Majumdar
Europhys. Lett. **94**, 47004 (2011)

36. **Antiferromagnetic order and phase coexistence in a model of antisite disordered double perovskites**
Viveka Nand Singh and Pinaki Majumdar
Eur. Phys. J. B **83**, 147 (2011)

37. **A magnetic model for the ordered double perovskites**
Prabuddha Sanyal and Pinaki Majumdar
Phys. Rev. **B 80**, 054411 (2009)

38. **Conductance switching and inhomogeneous field melting in the charge ordered manganites**
Anamitra Mukherjee, Kalpataru Pradhan and Pinaki Majumdar
Europhys. Lett. **86**, 27003 (2009)

39. **Magnetic order beyond RKKY in the classical Kondo lattice**
Kalpataru Pradhan and Pinaki Majumdar
Europhys. Lett. **85**, 37007 (2009)

40. **Exploiting B site disorder for phase control in the manganites**
Kalpataru Pradhan, Anamitra Mukherjee and Pinaki Majumdar
Europhys. Lett. **84**, 37007 (2008)

41. **Structural ordering and antisite defect formation in double perovskites**
Prabuddha Sanyal, Sabyasachi Tarat and Pinaki Majumdar
Eur. Phys. J. **B 65**, 39, (2008)

42. **Distinct effects of homogeneous weak disorder and dilute strong scatterers on phase competetion in the manganites**
Kalpataru Pradhan, Anamitra Mukherjee, and Pinaki Majumdar
Phys. Rev. Lett. **99**, 147206 (2007)

43. **The effect of disorder in an orbitally ordered Jahn-Teller insulator**
Sanjeev Kumar, Arno P. Kampf, Pinaki Majumdar
Phys. Rev. **B 75**, 014209 (2007)

44. **Bose-Fermi mixtures in an optical lattice**
K. Sengupta, N. Dupuis, and P. Majumdar
Phys. Rev. **A 75**, 063625 (2007)

45. **Domain formation and orbital ordering transition in a doped Jahn-Teller insulator**
Sanjeev Kumar, Arno P. Kampf and Pinaki Majumdar
Phys. Rev. Lett. **97**, 176403 (2006)

46. **Insulator-metal phase diagram of the optimally doped manganites from the disordered Holstein-double exchange model**
Sanjeev Kumar and Pinaki Majumdar
Phys. Rev. Lett. **96**, 016602 (2006)

47. **The travelling cluster approximation for strong correlation models of lattice fermions coupled to classical fields**
Sanjeev Kumar and Pinaki Majumdar
Eur. Phys. J. **B 50**, 571 (2006)

48. **Singular effect of disorder on electronic transport in strong coupling electron-phonon systems**
Sanjeev Kumar and Pinaki Majumdar
Phys. Rev. Lett. **94**, 136601 (2005)

49. **Giant tunneling magnetoresistance, glassiness, and the energy landscape at nanoscale cluster coexistence**
Sanjeev Kumar, Chandra Shekhar Mohapatra, and Pinaki Majumdar
Europhys. Lett. **71**, 804 (2005)

50. **Double exchange models: self consistent renormalisation**
Sanjeev Kumar and Pinaki Majumdar
Eur. Phys. J. **B 46**, 315 (2005)

51. **Structural disorder induced polaron formation and magnetic scattering in the disordered Holstein-double exchange model**
Pinaki Majumdar and Sanjeev Kumar
J. Phys. Soc. Jpn. Suppl. **XX**, 217 (2005)

52. **Transport and localisation in the presence of strong structural and spin disorder**
Sanjeev Kumar and Pinaki Majumdar
Eur. Phys. J. **B 46**, 237 (2005)

53. **The many electron ground state of the adiabatic Holstein model in two and three dimensions**
B. Poornachandra Sekhar, Sanjeev Kumar and Pinaki Majumdar
Europhys. Lett. **68**, 564 (2004)

54. **Anti-localisation to strong localisation: the interplay of magnetic scattering and structural disorder**
Sanjeev Kumar and Pinaki Majumdar
Europhys. Lett. **65**, 75 (2004)

55. **Nanoscale phase coexistence and percolative quantum transport**
Sanjeev Kumar and Pinaki Majumdar
Phys. Rev. Lett. **92**, 126602 (2004)

56. **Inhomogeneous ferromagnetism and unconventional charge dynamics in disordered double exchange magnets**
Sanjeev Kumar and Pinaki Majumdar
Phys. Rev. Lett. **91**, 246602 (2003)

57. **Anderson-Mott transition driven by spin disorder: spin glass transition and magnetotransport in amorphous GdSi**
Pinaki Majumdar and Sanjeev Kumar
Phys. Rev. Lett. **90**, 237202 (2003)

58. **Doped magnetic moments in a disordered electron system: insulator-metal transition, spin glass and "colossal magnetoresistance"**
Sanjeev Kumar and Pinaki Majumdar
IJMPB, **15**, 2683 (2001)

59. **Resistivity of lightly doped ferromagnetic semiconductors**
Peter B. Littlewood and Pinaki Majumdar
J. Superconductivity **12**, 277 (1999)

60. **Berry phase theory of the anomalous Hall effect: application to colossal magnetoresistance manganites**
Jinwu Ye, Y. B. Kim, A. J. Millis, B. I. Shraiman, P. Majumdar and Z. Tesanovic
Phys. Rev. Lett. **83**, 3737 (1999)

61. **Hall effect in the perovskite manganites**
Pinaki Majumdar, Steven H. Simon and Anirvan M. Sengupta
Phys. Rev. **B 59**, 4746 (1999)

62. **Dependence of magnetoresistivity on charge carrier density in metallic ferromagnets and doped magnetic semiconductors**
Pinaki Majumdar and Peter B. Littlewood
Nature, **395**, 479 (1998)

63. **Magnetoresistance in the Mn pyrochlore: electrical transport in a low carrier density ferromagnet**.
Pinaki Majumdar and Peter B. Littlewood
Phys. Rev. Lett. **81**, 1314 (1998)

64. **Re-entrant insulator-metal transition in the half-filled Hubbard model**
Pinaki Majumdar and H. R. Krishnamurthy
Phys. Rev. **B 52**, Rap Comm, R5479 (1995)

65. **Lattice contraction driven insulator-metal transition in the local approximation**
Pinaki Majumdar and H. R. Krishnamurthy
Phys. Rev. Lett. **73**, 1525 (1994)

(b) Book Chapters:

1. **Quantum many particle physics**
Pinaki Majumdar
Lecture Notes of a SERC School, published in "Field Theories in Condensed Matter Physics", Edited by Sumathi Rao, Inst of Physics Publishing (2002)

2. **Percolative quantum transport in manganites**
Pinaki Majumdar
Chapter in Springer Lecture Notes on Quantum and Semiclassical Percolation and Breakdown in Disordered Solids. Edited by B. K. Chakrabarti, *et al.* (2008).

(c) Preprints:

1. **Disorder enhanced ferromagnetic polaron formation - and the test case of Europium Oxide**,
Tanmoy Mondal and Pinaki Majumdar
arXiv:2506.14001v1

2. **Enormous enhancement of resistivity in nanostructured electron-phonon systems**
Debraj Bose, Sankha Subhra Bakshi, Pinaki Majumdar
arXiv:2408.12542

3. **Dynamics in the nonequilibrium energy landscape of a frustrated Mott insulator**
Sankha Subhra Bakshi, Tanmoy Mondal, Pinaki Majumdar
arXiv:2409.05555

4. **Thermally induced gaplessness and Fermi arcs in a s-wave magnetic superconductor**
Madhuparna Karmakar and Pinaki Majumdar
arXiv:1808.02012v1

5. **Phonon spectrum near a polaronic crossover: the impact of short range charge order and electronic pseudogap**
Sauri Bhattacharyya, Saurabh Pradhan and Pinaki Majumdar
arXiv:1711.08749v1

6. **Thermal decoherence in a strongly correlated Bose liquid**
   Abhishek Joshi and Pinaki Majumdar
   arXiv:1712.04433v1

7. **Ground state of the two orbital Hubbard model on the pyrochlore lattice with competing double exchange and superexchange Interactions**
   Nyayabanta Swain and Pinaki Majumdar
   arXiv:1610.00695v2

8. **Tunneling spectroscopy across the superconductor-insulator thermal transition**
   Sabyasachi Tarat and Pinaki Majumdar
   arXiv:1406.5423v1

9. **Mott transition and glassiness in the face centered cubic lattice**
   Rajarshi Tiwari and Pinaki Majumdar
   arXiv:1302.2922v1