


ABHIRUP MUKHERJEE

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RESEARCH EXPERIENCE

RenderCV  is a LaTeX-based CV/resume version-control and maintenance app. It allows you to create a high-quality CV or resume as a PDF file from a YAML file, with **Markdown syntax support** and **complete control over the LaTeX code**.

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EDUCATION

BS **University of Pennsylvania**, Computer Science Sept 2000 – May 2005

- GPA: 3.9/4.0 (a [link to somewhere](#) )
- **Coursework**: Computer Architecture, Comparison of Learning Algorithms, Computational Theory

ONGOING PROJECTS

- Project 1
- Project 2

TECHNICAL SKILLS

- Field theory-based techniques (unitary renormalisation group method) and *low-energy Hamiltonian* methods
- Numerical evaluation of two-point and multi-point *correlation functions and entanglement measures* in fermionic systems
- *Julia and Python* for numerical computation

TALKS AND POSTER PRESENTATIONS

- Poster at 7th Annual Conference on Quantum Condensed Matter (QMAT) - December 2024, IIT Guwahati
- Poster at Young Investigators Meet on Quantum Condensed Matter Theory (YIMQMCT) - December 2023, IISER Bhopal
- Poster at Conference on Emergent phenomena in Quantum MATerials (E-QMAT) - October 2022, IIT Roorkee
- Talk on *Insights On The Pseudogap In 2D From An Impurity Model* at DPS Day, Department of Physical Sciences - June 2025, IISER Kolkata
- Talk on *Kondo Effect and Its Breakdown: Interplay of Fluctuations in Zero Dimensions* at PP65: Physics Trends @ IISER Kolkata - June 2023, IISER Kolkata

TEACHING EXPERIENCE

Teaching Assistantship at IISER Kolkata

- Condensed Matter Physics II (2022). Instructor: Prof. Siddhartha Lal
- Quantum Mechanics. (2023) Instructor: Prof. Siddhartha Lal
- Computational Physics (2024). Instructor: Prof. Rangeet Bhattacharyya

AWARDS AND HONOURS

- Qualified *CSIR-UGC NET* with national rank 59 (Dec 2018)
- Gold medallist, National Graduate Physics Examination (*NGPE*) - 2018
- Silver medallist, *B.Sc. (Hons.)*, Ramakrishna Mission Vidyamandira (2015-2018)

PUBLICATIONS AND PREPRINTS

- Mott Criticality as the Confinement Transition of a Pseudogap-Mott Metal** July 2025
Abhirup Mukherjee, S. R. Hassan, Anamitra Mukherjee, N. S. Vidhyadhiraja, A. Taraphder, Siddhartha Lal [arXiv:2507.17201](#)
- Revealing the magnetic dimensional crossover in the Heisenberg ferromagnet CrSiTe₃ through picosecond strain pulses** April 2025
Anjan Kumar N M, Soumya Mukherjee, *Abhirup Mukherjee*, Ajinkya Punjal, Shubham Purwar, Thirupathaiah Setti³, Shriganesh Prabhu S., Siddhartha Lal, N. Kamaraju [Phys. Rev. B 111, L140414](#)
- Holographic entanglement renormalisation for fermionic quantum matter** June 2024
Abhirup Mukherjee, Siddhartha Patra, Siddhartha Lal [J. Phys. A: Math. Theor. 57 275401](#)
- Kondo frustration via charge fluctuations: a route to Mott localisation** November 2023
Abhirup Mukherjee, NS Vidhyadhiraja, A Taraphder, Siddhartha Lal [New J. Phys. 25 113011](#)
- Frustration shapes multi-channel Kondo physics: a star graph perspective** May 2023
Siddhartha Patra, *Abhirup Mukherjee*, Anirban Mukherjee, NS Vidhyadhiraja, A Taraphder, Siddhartha Lal [New J. Phys.: Condens. Matter 35 315601](#)
- Unveiling the Kondo cloud: Unitary renormalization-group study of the Kondo model** February 2022
Anirban Mukherjee, *Abhirup Mukherjee*, NS Vidhyadhiraja, A Taraphder, Siddhartha Lal [Phys. Rev. B 105, 085119](#)

REFERENCES

Prof. Siddhartha Lal (Ph.D. advisor)
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