Dr. Md Mursalin Islam

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General Information

Nationality: Indian
Gender: Male
Date of Birth: August 09, 1994

Research Interests

Theoretical condensed matter physics, Quantum optics, Cavity QED,
Non-equilibrium field theory, Non-equilibrium dynamics of quantum many-body systems

Employments

Postdoctoral Researcher, 2025 -
University of Augsburg, Augsburg, Germany

Postdoctoral Researcher, 2023 - 2025
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

Education

Doctor of Philosophy (Physics), 2019 - 2023
Tata Institute of Fundamental Research, Mumbai, India
Thesis: *Non-equilibrium dynamics of bosons and fermions starting from athermal Fock states*

Master of Science (Physics), 2016 - 2019
Tata Institute of Fundamental Research, Mumbai, India
First Class (81.4%)

Bachelor of Science (Physics), 2013 - 2016
St. Xavier's College (Autonomous), Kolkata, India
First Class (88.8%)

Distinctions

CSIR-UGC NET (June, 2017) Physicsl Sciences: Rank-1
National level test for award of junior research fellowship and eligibility for lectureship

Professor Sukumar Biswas Ph.D. Student Award for Excellence in Physics (2017)
For obtaining the highest grade in the 1st year's course-work of integrated M.Sc-Ph.D. programme (2016-17) in Physics at TIFR, Mumbai

Dr. Ranjan Ray Memorial Gold Medal (2017)
For securing the highest marks in B.Sc. (2013-16) at St. Xavier's College, Kolkata

JEST (2016) Physics: Rank-2
Screening test for admission in Ph.D/Int. Ph.D programme in public research institutes

JAM (2016) Physics: Rank-1
Admission test for M.Sc. and other post-graduate science programs at IITs and IISC

DST INSPIRE Scholarship (2013-2016)
For being among top 1% in H.S. Board exam and pursuing basic science in undergrad

Publications & Preprints

Cavity-induced Eliashberg effect: superconductivity vs charge density wave
Md Mursalin Islam, *Michele Pini*, *R. Flores-Calderón* and *Francesco Piazza*
[arXiv: 2509.07865]

Nonthermal electron-photon steady states in open cavity quantum materials
R. Flores-Calderón, *Md Mursalin Islam*, *Michele Pini* and *Francesco Piazza*
Phys. Rev. Research 7, 013073 (2025) [arXiv: 2312.17436]

Non-equilibrium dynamics of bosons with dipole symmetry: Large-N Keldysh approach
Md Mursalin Islam, *K. Sengupta* and *Rajdeep Sensarma*
Phys. Rev. B 108, 214314 (2023) [arXiv: 2305.13372]

Non-equilibrium scalar field dynamics starting from Fock states: Absence of thermalization in one dimensional phonons coupled to fermions
Md Mursalin Islam and *Rajdeep Sensarma*
Phys. Rev. B 106, 024306 (2022) [arXiv: 2108.04264]

Dulmage-Mendelsohn Percolation: Geometry of Maximally Packed Dimer Models and Topologically Protected Zero Modes on Site-Diluted Bipartite Lattices
Ritesh Bhola, *Sounak Biswas*, *Md Mursalin Islam* and *Kedar Damle*
Phys. Rev. X 12, 021058 (2022) [arXiv: 2007.04974]

Talks

March, 2024: **Non-equilibrium dynamics of bosons with dipole symmetry: Emergence of new symmetry-broken steady state**
DPG Spring Meeting at TU Berlin, Germany

September, 2022: **Non-equilibrium scalar field dynamics starting from Fock states: Absence of thermalization in one dimensional phonons coupled to fermions**
Q-MAT at IIT-Kanpur, India

August, 2022: **Non-equilibrium scalar field dynamics starting from Fock states: Absence of thermalization in one dimensional phonons coupled to fermions**
"New Trends in Nonequilibrium Many-Body Systems: Methods and Concepts"
at MPIPKS, Dresden, Germany

March, 2022: **Non-equilibrium scalar field dynamics starting from Fock states: Absence of thermalization in one dimensional phonons coupled to fermions**
APS March Meeting (Hybrid)

March, 2021: **Non-equilibrium dynamics of Fermions: Initial Correlations as Interaction Vertices**
APS March Meeting (Online)

Posters

August, 2025: **Cavity-induced Eliashberg effect: SC vs CDW**
at Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

February, 2025: **Non-thermal cavity control of order in electronic system**
at Universitätszentrum Obergurgl (Universität Innsbruck), Austria

June, 2024: **Non-equilibrium dynamics of bosons with dipole symmetry: Emergence of new symmetry broken steady states**
at Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

June, 2024: **Cavity control of charge density wave transition**
at Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

July, 2023: **Non-equilibrium dynamics of bosons with dipole symmetry: Emergence of new symmetry broken steady states**
at Harish-Chandra Research Institute, Prayagraj, India

December, 2021: **Non-equilibrium scalar field dynamics starting from Fock states: Absence of thermalization in one dimensional phonons coupled to fermions**
in Q-MAT (Online), Inida

Teaching Assistantship

Quantum Mechanics II (Spring 2019-20) at TIFR, Mumbai.
Instructor: Prof. Nilmani Mathur

Statistical Physics I (Spring 2018-19) at TIFR, Mumbai.
Instructor: Prof. Kedar Damle

Quantum Mechanics II (Spring 2017-18) at TIFR, Mumbai.
Instructor: Prof. Vikram Tripathi

Comp. Skills

C, C++, Python, Julia, Mathematica

Languages

English (Fluent), Bengali (Native), Hindi (Fluent), German (Basic)

References

Prof. Rajdeep Sensarma (Ph.D. Supervisor)
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