Sourav Nandy *(he/him/his)* *Google Scholar* — *Curriculum Vitae*

Date of Birth	April 28th, 1991.
Nationality	Indian
Languages	Bengali (mother tongue), Hindi, English.

Contact(office)

Max Planck Institute for the Physics of Complex Systems
Division of Condensed Matter,
Nöthnitzer Str. 38, 01187 Dresden
Germany

snandy@pks.mpg.de
☎ +49 351 871-2155

Contact(Home / personal)

141, N.S Road, Seoraphuly (Anjangarh)
712223, West Bengal, India

souravqphys91@gmail.com
☎ +386 696 11 946

Academic Employments

Postdoctoral Research Scholar — 2024 – Present
Division of Condensed Matter,
Max Planck Institute for the Physics of Complex Systems
Dresden, Germany

Research Associate — 2021 – 2024
Theoretical Physics Department (F1),
Jožef Stefan Institute
Ljubljana, Slovenia.

Project Research Scientist (Max Planck Partner Group position at IITB) — 2019 – 2021
Department of Physics,
Indian Institute of Technology, Bombay
Bombay, India

Education

PhD Research Fellow — 2014 – 2019
School of Physical Sciences (Department of Theoretical Physics),
Indian Association for the Cultivation of Science, Kolkata, India.

Masters of Science in Physics — 2012 – 2014
Department of Physics,
Indian Institute of Technology, Kharagpur, India.

Bachelor of Science in Physics — 2009 – 2012
Department of Physics,
Serampore College (affiliated to the University of Calcutta), Serampore, India.

PhD Thesis

Thesis Title: *Correlations, Dynamics and Entanglement In Strongly Correlated Spin Systems.*

Thesis Advisor: Prof. Arnab Sen

Degree Award Date: 16.09.2020

Honors and Awards

1. **INSPIRE Scholarship** 2009-2014
   Awarded by Department of Science and Technology, India

Areas of Specialisation

Non-equilibrium many-body physics

- Transport in near-integrable quantum systems.
- Open quantum systems.
- Machine learning in many-body physics.
- Periodically driven (Floquet) and quasi-periodically driven quantum matter.
- Quantum many-body scars.
- Many-body localization.

Journal Publications

Google scholar link : : https://scholar.google.co.in/citations?user=zyfSSfcAAAAJ&hl=en

17. **Einstein relation for subdiffusive relaxation in Stark chains**
    P. Prelovšek, **S. Nandy**, M. Mierzejewski,
    Physical Review B , **110**, L081105 (2024)

16. **Lindblad dynamics from spatio-temporal correlation functions in nonintegrable spin-1/2 chains with different boundary conditions**
    T. Heitmann, J. Richter, F. Jin, **S. Nandy**, J. Herbrych, K. Michielsen, H. D. Raedt, J. Gemmer, R. Steinigeweg,
    Physical Review Research, **106**, 023251 (2024)

15. **Emergent dipole moment conservation and subdiffusion in tilted chains**
    S. Nandy, J. Herbrych, Z. Lenarčič, A. Głódkowski, P. Prelovšek, M. Mierzejewski,
    Physical Review B, **109**, 115120 (2024)

14. **Reconstructing effective Hamiltonians from nonequilibrium (pre-)thermal steady states**
    Sourav Nandy, Markus Schmitt, Marin Bukov, Zala Lenarčič
    Physical Review Research, **106**, 023160 (2024)

13. **Quantum state complexity meets many-body scars**
    Sourav Nandy, Bhaskar Mukherjee, Arpan Bhattacharyya, Aritra Banerjee
    Journal of Physics: Condensed Matter, **36**, 155601(2024)

12. **Weak universality, quantum many-body scars and anomalous infinite-temperature autocorrelations in a one-dimensional spin model with duality**
    Adithi Udupa, Samudra Sur, **Sourav Nandy**, Arnab Sen, Diptiman Sen
    Physical Review B, **108**, 214430 (2023)

11. **The spin-1/2 XXZ chain coupled to two Lindblad baths: Constructing nonequilibrium steady states from equilibrium correlation functions**
    T. Heitmann, J. Richter, F. Jin, **S. Nandy**, Z. Lenarčič, J. Herbrych, K. Michielsen, H. D. Raedt, J. Gemmer, R. Steinigeweg
    Physical Review B, **108**, L201119 (2023)

10. **Spin diffusion in perturbed isotropic Heisenberg spin chain**
    S. Nandy, Z. Lenarčič, E. Ilievski, M. Mierzejewski, J. Herbrych, and P. Prelovšek
    Physical Review B, **108**, L081115 (2023)

9. **From dissipationless to normal diffusion in easy-axis Heisenberg spin chain**
   P. Prelovšek, **S. Nandy**, Z. Lenarčič, M. Mierzejewski and J. Herbrych
   Physical Review B, **106**, 245104 (2022)

8. **Dephasing in strongly disordered interacting quantum wires**
Sourav Nandy, Ferdinand Evers and Soumya Bera
Physical Review B, **103**, 085105 (2021)

7. **Collapse and revival of quantum many-body scars via Floquet engineering** ‡ [1]
Bhaskar Mukherjee, **Sourav Nandy**, Arnab Sen, Diptiman Sen and Krishnendu Sengupta
Physical Review B, **101**, 245107 (2020).

6. **Transport across junctions of pseudospin-one fermions**
Sourav Nandy, Krishnendu Sengupta and Diptiman Sen
Physical Review B, **100**, 085134 (2019)

5. **Steady states of a quasiperiodically driven integrable system**
Sourav Nandy, Arnab Sen and Diptiman Sen
Physical Review B, **98**, 245144 (2018)

4. **Periodically driven integrable systems with long-range pair potentials**
Sourav Nandy, Krishnendu Sengupta, and Arnab Sen
Journal of Physics A: Mathematical and Theoretical, **51**, 334002 (2018)

3. **Aperiodically Driven Integrable Systems and Their Emergent Steady States**†
Sourav Nandy, Arnab Sen, and Diptiman Sen
Physical Review X, **07**, 031034 (2017)

2. **Entanglement generation in periodically driven integrable systems: Dynamical phase transitions and steady state**†
Arnab Sen, **Sourav Nandy**, and Krishnendu Sengupta
Physical Review B, **94**, 214301 (2016).

1. **Eigenstate Gibbs ensemble in integrable quantum systems and steady state**†
Sourav Nandy, Arnab Sen, Arnab Das, and Abhishek Dhar
Physical Review B, **94**, 245131 (2016)

Talks

1. University of Osnabrück, Germany ♣ — July, 2024
Title: *Anomalous Spin Transport in Quantum Spin Systems.*
2. Indian Association for the Cultivation of Science, Kolkata, India ♣ — March, 2024
Title: *Transport in Perturbed Integrable Quantum Spin Systems.*
3. International School of Non-equilibrium Phenomena, Erice, Italy — November, 2023
Title: *Anomalous Spin Transport in Quantum Spin Systems.*
4. Karlsruhe Institute of Technology, Germany ♣ — November, 2023
Title: *Spin Transport in Quantum Spin Systems.*
5. Openqmbp2023, Institut Pascal (Saclay), France — June, 2023
Title: *Spin Transport in Quantum Spin Systems.*
6. Ljubljana-Trieste-Zagreb meeting, Jožef Stefan Institute, Slovenia ♣ — March, 2023
Title: *Spin Transport in Quantum Spin Systems.*
7. Indian Institute of Technology, Bombay, India, ♣ — January, 2023
Title: *Spin Transport in Perturbed Integrable Quantum Spin Systems.*
8. Non-equilibrium Quantum Workshop, Krvavec, Slovenia, — December, 2022
Title: *Autoencoder Assisted Learning of many-body Hamiltonians*

[1] Citations: ‡(100+), †(50+)

9. Many-body systems out of equilibrium: recent advances and future directions, Logarska Dolina, Slovenia September, 2022
   Title: *Autoencoder Assisted Learning of many-body Hamiltonians*
10. Non-equilibrium Quantum Workshop, Krvavec, Slovenia, ♣[2] December, 2021
    Title: *Study of critical dynamics close to the many-body localisation transition.*
11. Young Investigators Meet on Quantum Condensed Matter Theory (online) December, 2020
    Title: *Dephasing in strongly disordered interacting quantum wires.*
12. National Conference On Quantum Condensed Matter, IISER, Mohali, India July, 2018
    Title: *Aperiodically Driven Integrable Systems and Their Emergent Steady States*
13. Indian Institute of Technology, Kanpur ♣ April, 2018
    Title: *Some Aspects of Driven Integrable Quantum Systems: Entanglement Generation, Dynamical Transitions and Emergent Steady States*
14. School and Conference on Driven Quantum Systems, IACS, Kolkata, India February, 2018
    Title: *Aperiodically Driven Integrable Systems and Their Emergent Steady States*

Contributed Posters

1. SPICE-Workshop on Non-Equilibrium Emergence in Quantum Design, Ingelheim, Germany 2022
   Title: *rom dissipationless to normal diffusion in easy-axis Heisenberg spin chain.*
2. OPENQMBP 2022, CY Advanced Studies, University of Cergy, Neuville sur Oise, France 2022
   Title: *From dissipationless to normal diffusion in easy-axis Heisenberg spin chain.*
3. Summer School on Collective Behaviour in Quantum Matter, ICTP, Trieste, Italy 2018
   Title: *Aperiodically Driven Integrable Systems and Their Emergent Steady States*
4. Indian Statistical Physics Community Meeting, ICTS, Bangalore, India 2017
   Title: *Eigenstate Gibbs ensemble in integrable quantum systems*

Academic Visits

- **University of Osnabrück,** Germany July, 2024
  Host : Prof. Dr. Robin Stenigeweg
- **Indian Association for the Cultivation of Science,** Kolkata, India March, 2024
  Host : Prof. Arnab Sen
- **Budapest University Of Technology and Economics,** Budapest, Hungary January, 2024
  Host : Prof. Gergely Zaránd
- **Max Planck Institute of Quantum Optics,** Garching, Germany November, 2023
  Host : Prof. Mari Carmen Bañuls
- **Karlsruhe Institute of Technology,** Germany November, 2023
  Host : Prof. Igor Gornyi
- **Indian Institute of Technology,** Bombay, India January, 2023
  Host : Prof. Soumya Bera
- **Indian Institute of Technology,** Kanpur, India April, 2018
  Host : Prof. Arijit Kundu and Prof. Amit Dutta
- **Max Planck Institute for the Physics of Complex Systems,** Germany September, 2017
  Host : Division of Condensed Matter

[2] ♣: Invited seminar.

Schools, Workshops and Conferences

1. **Non-equilibrium Quantum Workshop**
   Krvavec, Slovenia — December, 2023
2. **Chaos and Information Dynamics in Quantum Many-body Systems**
   Ettore Majorana Centre, Erice, Italy — November, 2023
3. **School on Quantum Many-Body Phenomena out of Equilibrium: from Chaos to Criticality** ,
   ICTP, Trieste, Italy, — August, 2023
4. **New Perspective in the out-of-equilibrium dynamics of open many-body quantum systems (openqmbp2023)**
   Institut Pascal (Saclay), France — June, 2023
5. **Many-body systems out of equilibrium: recent advances and future directions.**
   Logarska Dolina, Slovenia — September, 2022
6. **SPICE-Workshop on Non-Equilibrium Emergence in Quantum Design**
   Ingelheim, Germany — June, 2022
7. **Quantum Many-Body Physics in the presence of an environment (openqmbp2022)**
   University of Cergy, Neuville sur Oise, France — June, 2022
8. **Non-equilibrium Quantum Workshop**
   Krvavec, Slovenia — December, 2021
9. **Young Investigators Meet on Quantum Condensed Matter Theory-2020**
   NISER, Bhubaneswar, India (online mode), — December, 2020
10. **School on algorithms in lattice gauge theory and spin systems**
    IACS, Kolkata, India — January, 2020
11. **Novel phases of quantum matter**
    ICTS, Bengaluru, India — December, 2019
12. **Summer School on Collective Behaviour in Quantum Matter**
    ICTP, Trieste, Italy — August, 2018
13. **National Conference On Quantum Condensed Matter**
    IISER Mohali, India, — July, 2018
14. **School and Conference on Driven Quantum Systems**
    IACS, Kolkata, India, — February, 2018
15. **School and Conference on Open Quantum Systems**
    ICTS, Bengaluru, India — July, 2017
16. **School and Conference on Frustrated Magnetism**
    IMSc, Chennai India, — April, 2017
17. **Indian Statistical Physics Community Meeting**
    ICTS, Bengaluru, India — February, 2017
18. **School On Current Frontiers in Condensed Matter**
    ICTS, Bengaluru, India — June, 2016
19. **School on Topological Quantum Matter**
    HRI, Prayagraj (Allahabad), India, — February, 2015