

Dhiman Biswas

404 Wadsack Drive, Apt G, Norman, Oklahoma, 73072
dbiswas@ou.edu • +1 4057236867

EDUCATION

University of Oklahoma, Oklahoma, USA

- PhD in Condensed Matter Physics Jun 2022 – present
 - Adviser: Professor T. Venky Venkatesan.
 - Focus: Materials for Neuromorphic computing, Lithography of functional oxides on silicon
 - GPA: 4.00 / 4.00

Indian Institute of Technology, Guwahati, India

- MSc in Physics Jun 2019 – Jun 2021
 - Thesis: Superfluid to Mott insulator phase transition of two-level atoms interacting with a monochromatic electromagnetic field.
 - Adviser: Dr. Tapan Mishra
 - Focus: Numerical simulation of temporal evolution of Phases in open quantum systems.
 - Elective courses: Quantum Optics, Quantum Information and Computing, Quantum Field Theory
 - CPI: 9.28 / 10.00

Ramakrishna Mission Residential College, Narendrapur, Kolkata, India

- BSc in Physics Jun 2016 – Jun 2019
 - Thesis: A device to increase the efficiency of conventional polychromatic light sources and solar panels
 - Adviser: Dr. Sourav Chattopadhyay
 - Focus: Designing a intense poly-chromatic light source.
 - Graduated with College Honors. (Grade A+, First Class)
 - Cumulative GPA: 8.76 / 10.00

Kalna Ambika Mahismardini High School, Kalna, West Bengal, India

- Specialization in Science Jun 2016
 - Subjects: Physics, Mathematics, Chemistry, Biology, English, Bengali
 - Grade: O [90.8%]

PROJECTS AND INTERNSHIPS

Indian Institute of Technology, Guwahati, India

- MSc Thesis
 - Project: Superfluid to Mott insulator phase transition of two-level atoms interacting with a monochromatic electromagnetic field
 - Supervisors: *Dr. Tapan Mishra*

Ramakrishna Mission Residential College, Narendrapur, Kolkata, India

- BSc Thesis
 - Project: A device to increase the efficiency of conventional polychromatic light sources and solar panels.
 - Supervisor: *Dr. Sourav Chattopadhyay*

Institute of Physics, Bhubaneswar, India

- Student research intern Jun 2019 – Jul 2019
 - Project: Understanding Mirage
 - Supervisors: *Prof Ajit Mohan Shrivastava, Rajesh B Khapade*
 - As a continuation of last year's project "Understanding Mirage", here we investigated the prospective theoretical description of the behavior of light in gradient-index material by reviewing the literature and came up with a more accurate description of the phenomena.

Homi Bhaba Centre for Science Education, Tata Institute of Fundamental Research, Mumbai, India

- Student research intern Jun 2018 – Jul 2018
 - Project: Understanding Mirage
 - Supervisors: *Prof Ajit Mohan Shrivastava, Rajesh B Khapade*
 - Here we designed several experiments to point out the conceptual ambiguities of geometrical optics in describing the behaviour of light in gradient index material. This problem was first pointed out by Nobel laureate Dr CV Raman in 1959 and investigated by Pancharatnam and MV Berry in later years.

AWARDS & SCHOLARSHIPS

- Indian Oil Educational Scholarship 2014-2016

- Innovation in Science Pursuit for Inspired Research (INSPIRE) scholarship, 2015-2021.
- National top 1% in National Graduate Physics Examination-2017.
- Secured 3rd position in All India Essay Writing Event-2017 in the State of West Bengal.
- Certified outstanding performance at National Anvesika Experimental Skill Test 2020 (NAEST-2020).
- Avenir Fellowship 2025, University of Oklahoma

LANGUAGES

- Bengali: Native language.
- Hindi: Fluent (Speaking); Intermediate (Reading, writing)
- English: Fluent (speaking, reading, writing).

SKILLS

- **Programming:** C, Python, Latex, MATLAB, Qiskit, QuTiP
- **Technical:** Pulsed Laser Deposition, Xray Diffraction, Scanning Electron Microscopy, Physical Properties Measurement Systems (PPMS), Magnetic Properties Measurement Systems (MPMS), Focused Ion Beam (FIB) cross section
- **Academic:** Research Paper writing, Essay writing, Seminar lectures and presentation.
- **Public speaking:** 3 Minute thesis finalist (2025)

VOLUNTEER ACTIVITIES

- Sub cultural chair of India Student Association (ISA) [2024-present]
- OU Big event [2023, 2024, 2025]

PUBLICATIONS

JOURNALS

- [1] Dhiman Biswas, "A device for generating collimated polychromatic light and for concentrating scattered light from a fluid," *International student's journal of physics*, vol. 7, no. 4, Dec 2018.
- [2] Dhiman Biswas, Simran Chourasia, Rathindra Nath Das, Rajesh B. Khaparde, Ajit M. Srivastava, "Mirage in geometrical optics and the horizontal ray," *International student's journal of physics*, , vol. 7, no. 4, Dec 2018.

UNDER REVIEW

- [1] M.Reza Eslami, Dhiman Biswas, Soheib Takhtardeshir, Sarah S. Sharif, Yaser M. Banad "On-Chip Learning with Memristor-Based Neural Networks: Assessing Accuracy and Efficiency Under Device Variations, Conductance Errors, and Input Noise", Jul 2024.

CONFERENCES

- [1] Biswas, Dhiman, Thirumalai Venkatesan, and Yaser Mike Banad. "Exploring neuromorphic potentials of silver-based self-directed-channel memristors for artificial synapses in neural network circuits." Bioinspiration, Biomimetics, and Bioreplication XIV. Vol. 12944. SPIE, 2024.
- [2] Biswas, Dhiman, et al. "Revolutionizing Biologically-inspired AI Hardware Accelerators: Unveiling the Potential of Metal Self-Directed Channel (M-SDC) Memristors in Neuromorphic Computing." Bulletin of the American Physical Society (2024).
- [3] Biswas, Dhiman, Junyeob Song, Yiwei Ju, Melissa I. Ayala Artola1, Sumit Goswami1, Pralay Paul, Casey Kerr, Sreehari Puthan Purayil, Ben Summers, Horst Hahn, Alisa Javadi, Binbin Weng, Dhruv Fomra, Chaojie Du, Francisco Guzman, Xiaoqing Pan, Henri Lezec, T. Venkatesan. "Growth of Self-Aligned Oxide Photonic Devices on Silicon.", MRS fall meeting (2024).

PATENT DISCLOSURES

- [1] Thirumalai Venkatesan, Henri Lezec, Sumit Goswami, Pralay Paul, Dhiman Biswas, "PLATEN: Pulsed Laser Template Engineering", PCT filing in progress.
- [2] Thirumalai Venkatesan, Dhiman Biswas, Sumit Goswami, Pralay Paul, Sreehari Puthan Purayil, "PLATEN for Memristive Circuit Fabrication", PCT filing in progress.