

Dr. Siddharth Banerjee

Assistant Professor of Physics

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PROFILE

Experimental condensed-matter physicist building superconducting and topological devices for quantum technologies. Runs a low-temperature lab with two dilution refrigerators and a team of eight.

Research interests: Quantum materials · superconducting circuits · nanofabrication · cryogenic measurement

EDUCATION

Ph.D., Physics <i>Eastern Institute of Fundamental Research</i> Thesis: Proximity-induced superconductivity in topological insulator nanowires	2011 – 2016
M.Sc., Physics <i>Hooghly River University</i> Gold Medal	2009 – 2011
B.Sc. (Hons.), Physics <i>St. Aloysius College, Kolkata</i>	2006 – 2009

RESEARCH EXPERIENCE

Assistant Professor <i>Gangetic Institute of Science Education and Research</i> - Built the Quantum Devices Lab from an empty room: two dilution fridges, a cleanroom bay and a 12-member group. - Demonstrated a transmon qubit with 85 μs coherence, the longest reported by an Indian lab (sample data).	2020 – Present
Postdoctoral Fellow <i>Nordlicht Institute for Solid State Research</i> - Fabricated Josephson junctions on topological thin films; 6 papers from the project. - Co-supervised 3 master's theses.	2016 – 2020

PUBLICATIONS

- Rao, S., Fischer, A., **Banerjee, S.**, & Chen, L. (2026). Understanding quantum dot single-photon sources. *Physical Review of Condensed Matter Letters*, 9(7), 727–749.
- Iyer, M., & **Banerjee, S.** (2026). New approaches to spin transport in graphene. *Proceedings of the Asia-Pacific Physics Conference*, pp. 801–813.
- Chen, L., Gupta, R., **Banerjee, S.**, & Rao, S. (2026). New approaches to magnetic skyrmion dynamics. *Journal of Quantum Materials*, 29(11), 559–572.
- Banerjee, S.**, & Sato, Y. (2025). Understanding quantum dot single-photon sources. *Physical Review of Condensed Matter Letters*, 6(3), 109–119.
- Banerjee, S.**, Banerjee, P., & Menon, V. (2025). Towards magnetic skyrmion dynamics. *Physical Review of Condensed Matter Letters*, 16(11), 734–755.
- Mensah, K., Fischer, A., **Banerjee, S.**, & Rao, S. (2025). A study of topological insulator thin films. *Applied Photonics Letters*, 45(5), 382–390.
- Sato, Y., Banerjee, P., Okafor, D., & **Banerjee, S.** (2024). Rethinking spin transport in graphene. *Proceedings of the Asia-Pacific Physics Conference*, pp. 183–193.

- Banerjee, S., Mensah, K., Menon, V., & Okafor, D. (2024).** Measuring ultrafast spectroscopy of perovskites. *Journal of Quantum Materials*, 36(1), 151–164.
- Banerjee, P., Mensah, K., & **Banerjee, S. (2024).** Towards superconducting qubit coherence. *Proceedings of the Asia-Pacific Physics Conference*, pp. 618–631.
- Banerjee, S., Okafor, D., & Kim, J. (2023).** New approaches to quantum dot single-photon sources. *Applied Photonics Letters*, 10(8), 432–444.
- Gupta, R., **Banerjee, S.**, & Menon, V. (2023). Designing for superconducting qubit coherence. *Applied Photonics Letters*, 7(8), 604–618.
- Banerjee, S., Menon, V., Okafor, D., & Fischer, A. (2023).** Evidence on spin transport in graphene. *Applied Photonics Letters*, 31(6), 89–98.
- Banerjee, P., Rao, S., **Banerjee, S.**, & Chen, L. (2022). Revisiting topological insulator thin films. *Physical Review of Condensed Matter Letters*, 14(4), 479–487.
- Menon, V., & **Banerjee, S. (2022).** Towards quantum dot single-photon sources. *Journal of Quantum Materials*, 36(4), 767–779.
- Rao, S., & **Banerjee, S. (2022).** Revisiting ultrafast spectroscopy of perovskites. *Proceedings of the Asia-Pacific Physics Conference*, pp. 810–819.
- Haddad, N., **Banerjee, S.**, & Sato, Y. (2021). Scaling magnetic skyrmion dynamics. *Physical Review of Condensed Matter Letters*, 25(9), 761–773.
- Banerjee, S.**, & Banerjee, P. (2021). Revisiting magnetic skyrmion dynamics. *Proceedings of the Asia-Pacific Physics Conference*, pp. 611–623.

CONFERENCE PRESENTATIONS & INVITED TALKS

- Invited talk: “Towards quantum dot single-photon sources”, Proceedings of the Asia-Pacific Physics Conference, Boston, 2026.
- Seminar: “Scaling spin transport in graphene”, Symposium on Quantum Materials, New Delhi, 2026.
- Poster: “Scaling spin transport in graphene”, Proceedings of the Asia-Pacific Physics Conference, Bengaluru, 2025.
- Seminar: “Scaling topological insulator thin films”, Symposium on Quantum Materials, Melbourne, 2025.
- Invited talk: “Measuring quantum dot single-photon sources”, Physical Review of Condensed Matter Letters, Berlin, 2024.
- Seminar: “Towards ultrafast spectroscopy of perovskites”, Symposium on Quantum Materials, Boston, 2024.
- Invited talk: “Revisiting ultrafast spectroscopy of perovskites”, Proceedings of the Asia-Pacific Physics Conference, Singapore, 2023.
- Keynote: “Revisiting quantum dot single-photon sources”, Physical Review of Condensed Matter Letters, London, 2023.

TEACHING

- Quantum Mechanics II (M.Sc.)
- Condensed Matter Physics (Integrated M.S.)
- Advanced Laboratory: Cryogenics and Low-Noise Measurement

GRANTS, AWARDS & HONOURS

- PI, national quantum mission grant (2022–2027), ₹4.2 crore
- Young Scientist Medal, national science academy (2023)
- Postdoctoral fellowship, Nordlicht Foundation (2016–2018)

PROFESSIONAL SERVICE

- Referee for Journal of Quantum Materials and Applied Photonics Letters

- Convener, departmental colloquium series (2021–present)

SKILLS

Experimental: Dilution refrigeration, e-beam lithography, microwave measurement, AFM

Computational: Python, QuTiP, COMSOL, LabVIEW

Languages: Bengali (native), English, Hindi, German (B1)

REFERENCES

Prof. A. Mukherjee

Professor of Physics, Eastern Institute of Fundamental Research

a.mukherjee@institute.edu

Prof. H. Lindqvist

Director, Nordlicht Institute for Solid State Research

h.lindqvist@institute.example