Eslam Ahmed, Ph.D.

islam69010@stemegypt.edu.eg @Eslam-Sabry
https://eslam-sabry.github.io/

Employment History

Nov 2025 – · · · · **Specially Appointed Assistant Professor,** Nagoya University.

Education

2022 – 2025 **Doctorate of Engineering, Nagoya University** in Applied Physics.
Thesis title: *Theory of odd frequency pairing as a probe of topological superconductivity and Majorana fermions*
Supervisor: *Prof. Yukio Tanaka*

2020 – 2022 **Master's of Engineering, Nagoya University** in Applied Physics.
Thesis title: *Odd-frequency Pairing in Floquet Topological Superconductors.*
Supervisor: *Prof. Yukio Tanaka*

2016 – 2020 **Bachelor's of Science, Nagoya University** in Physics.
Thesis title: *Gauge/Gravity Duality.*
Supervisor: *Prof. Masaharu Tanabashi*

Research Publications

Journal Articles

1. **E. Ahmed**, Y. Tanaka, and J. Cayao, "Anomalous proximity effect under andreev and majorana bound states," *Journal of Superconductivity and Novel Magnetism*, vol. 38, no. 5, p. 220, Oct. 2025. DOI: 10.1007/s10948-025-07057-9.
2. **E. Ahmed**, S. Tamura, Y. Tanaka, and J. Cayao, "Odd-frequency pairing due to majorana and trivial andreev bound states," *Phys. Rev. B*, vol. 111, p. 224 508, Jun. 2025. DOI: 10.1103/fksg-x8pr.
3. **E. Ahmed**, S. Tamura, Y. Tanaka, and J. Cayao, "Odd-frequency superconducting pairing due to multiple majorana edge modes in driven topological superconductors," *Phys. Rev. B*, vol. 111, p. 024 507, Jan. 2025. DOI: 10.1103/PhysRevB.111.024507.

Presentations

Dec 2025 **Frontiers of Superconducting Science with Novel Superconductors**, Yukawa Institute for Theoretical Physics (YITP), Kyoto University.
Participation (Scheduled)

Oct 2025 **ISSP International Workshop "Quantum Transport Frontiers of Mesoscopic Physics"**, ISSP, University of Tokyo.
Poster Presentation: *Robust Zero-Bias Peaks from Non-Local Quasi-Majoranas in the Topologically Trivial Phase*

Presentations (continued)

Jun 2025 — **New Developments in Condensed Matter Physics of Emergent Quantum Phenomena**, Kyoto University.
Oral Presentation: *Anomalous proximity effect under Andreev and Majorana bound states*

Mar 2025 — **Physical Society of Japan (JPS) Annual Meeting**.
Oral Presentation: *Anomalous Proximity Effect in Disordered Rashba Nanowire Junctions: Interplay Between Trivial and Topological Bound States*

May 2024 — **Frontiers of Emergent Quantum Phenomena: Superconducting Junctions, Edge Conduction, and Anyons**, Kyoto University.
Poster Presentation: *Majorana fermions and odd frequency pairing in Floquet superconductors*

Sep 2024 — **Physical Society of Japan (JPS) Annual Meeting**.
Oral Presentation: *Odd-frequency superconducting pairing and multiple Majorana edge modes in driven topological superconductors*

Aug 2023 — **Frontiers of Correlated Electron Systems**, Nagoya University.
Poster Presentation: *Majorana fermions and odd frequency pairing in Floquet superconductors*

Sep 2022 — **Physical Society of Japan (JPS) Annual Meeting**.
Oral Presentation: *Odd-Frequency Pairing in Floquet Topological Superconductor*

Skills

Theoretical — Topological Superconductivity, Majorana Fermions, Floquet Theory, Quantum Hall Effect (QHE), Conformal Field Theory (CFT), Bosonization, Luttinger Liquids, Green's Functions.

Computational — **Languages:** Python, Julia.
Numerical Methods: Tight-binding, Recursive Green's Functions, DMRG (ITensors).
Libraries: PyTorch, JAX, CuPy, Kwant, NumPy, SciPy, matplotlib, sympy, ITensors.

Languages — Arabic (Native), English (Fluent), Japanese (Daily conversation).

References

Prof. Yukio Tanaka — Professor, Department of Applied Physics, Nagoya University.
hg.25k.1670@f.thers.ac.jp

Dr. Jorge Cayao — Senior Researcher, Department of Physics and Astronomy, Uppsala University.
jorge.cayao@physics.uu.se