Gehad Mostafa Hasan Eldibany

10 Badr El-Deen, Saba Basha, Alexandria, 21531, Egypt
gehadmostafa@hotmail.com | gehadibany.github.io | +201060275780

Education

Master of Science in Quantum Technologies 10/2024–10/2025
Universidad Internacional Menéndez Pelayo (in collaboration with CSIC) | GPA: 8.1 (Tentative)

Bachelor of Science (Honours) in Physics 01/2019–10/2023
The Open University UK | Grade: First-class Honours

Research Experience

Master's Thesis: Free-Space Quantum Key Distribution Under Atmospheric Fluctuations
CSIC — 12/2024-09/2025
Investigated the atmospheric transmission effects on QKD downlinks and optimizing the operational parameters and the receiver.
Supervisors: Dr Daniel Balado Souto and Dr Verónica Fernández Mármol.

Undergraduate Thesis: Review of Entanglement-Based Quantum Cryptography
The Open University — 04/2023-08/2023
Explored entanglement-based QKD protocols, scalability challenges and the early implementations in currently operational networks and satellite-based quantum communication.

Research Internships

- **Max Planck Institute for the Physics of Complex Systems** (05/2025-Present)
  Supervisor: Dr Ashley Cook | Project: Topological skyrmion semimetals.
- **The Nordic Institute for Theoretical Physics** (08/2025-Present)
  Supervisor: Dr Sofia Qvarfort| Project: Non-linear quantum metrology.

Undergraduate Experimental Work

- **Investigating the violation of CHSH inequality using a quantum computer** 03/2023
  Used IBM Quantum Computing to create entanglement and analyse the CHSH sum.
- **Investigating the Hall effect to identify an unknown conductor** 01/2023
  Identified conductors by measuring Hall coefficients using an electromagnet setup.
- **Investigation of the Nucleus Processing over the Orbit of 2P/Encke** 04–06/2022
  Designed a remote-sensing mission concept for Jupiter-family comet studies.
- **Identifying planetary atmospheres using infrared spectroscopy in a gas cell** 03/2022
  Analyzed gas spectra using an IR spectrometer to infer planetary atmosphere characteristics.
- **Experimental verification of Compton effect** 02/2022
  Validated photon scattering predictions using an X-ray apparatus.
- **Mapping the Spiral Structure of the Milky Way Using a Radio Telescope** 12/2021
  Collected HI emission data with a radio telescope to map the Galaxy's arms using Python.

Conferences and Schools

The Quantum Technologies for Young Researchers workshop (QTYR2025) 07/2025
CSIC, Spain
Presented a poster titled "*Investigation of Beam Wander's Impact on QBER in a Free-Space BB84 QKD Receiver*"

49^{th} **International Nathiagali Summer College on Quantum Technologies** 06/2024
ICTP, Pakistan Atomic Energy Commission, and National Centre for Physics

9^{th} **Spring Plasma Physics School**, ICTP and EGYPlasma 03/2024

Multi-Scale Methods Summer School, Gdańsk University of Technology 07/2023
ECTS: 6 | Grade: 93%

Trainings and Courses

Statistics, Machine Learning, Git & GitLab, CI Workshops 10/2024–12/2024
Helmholtz Association

Helmholtz Summer School: From Data to Knowledge 09/2024

Qiskit Global Summer School 2024, IBM 07/2024

Quantum Barsaat 2024 (quantum computing & annealing), QWorld 07/2024

Introduction to Quantum Computing with Google Quantum AI 09/2023–04/2024
The Coding School | Project: Encryption with a BB84-generated key using Cirq.

Global Quantum Program, Womanium 07/2023–08/2023

Science Journalism Training Program, British Council 11/2021–12/2021

Skills

- **English language:** Proficient | IELTS Academic [02/2024]: 8.0
- **Digital skills:** Python (Data processing and visualization, quantum programming), LaTex (Academic writing), Git (Version control).

Transferable Skills and Volunteering

- **Problem solving:** Awarded *Best Problem Solving* at the 9^{th} Spring Plasma Physics School.
- **Teamwork and leadership:** Volunteering (since 2014) and currently the team leader of Egypt Scholars Library, a platform for science-focused articles for Arabic speakers. Selected as the *Volunteer of the Year* in 2022.
- **Editing and science communication:** Worked (since 2013) as a translator and editor and won the *Best Coverage of the RO Water Treatment Project* during the 2^{nd} science journalism training organized by the British Council.
- **Peer support and communication skills:** Provided guidance to new physics students as a Science Project Student Buddy at The Open University (For the academic year 2023/2024).
- **Time management and organisation:** Managing work and study simultaneously for nearly 12 years.
- **Coordination skills:** Coordinated *Egypt Scholars Science Writing Contest* in 2022.