Mustansar Nadeem

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Professional Summary

Dedicated Physics academic with over 18 years of teaching and research experience. Strong background in Quantum Information and Computation Theory, with a passion for integrating cutting-edge scientific advancements into teaching and collaborative research. Proven ability to foster critical thinking, independent research, and academic excellence among students. Interested in contributing to technological innovation through interdisciplinary research and collaboration.

Education

- **PhD in Physics (In Progress)**
  Quaid-i-Azam University, Islamabad
- **MPhil in Electronics**
  Quaid-i-Azam University, Islamabad
- **MSc in Physics**
  Quaid-i-Azam University, Islamabad
- **BSc in Physics, Mathematics, Chemistry**
  Govt. College Asghar Mall, Rawalpindi (Punjab University)

Work Experience

- **Assistant Professor**
  Department of Physics, FUUAST Islamabad
  July 2022 – Present
- **Lecturer**
  Department of Physics, FUUAST Islamabad
  Nov 2011 – June 2022
- **Visiting Researcher**
  Department of Physics and Astronomy, Hunter College, CUNY, New York, USA
  Feb 2008 – Oct 2010
- **Adjunct Lecturer / Teaching Assistant**
  Department of Physics and Astronomy, Hunter College, CUNY, New York, USA
  Jan 2009 – Aug 2009
- **Junior Research Assistant**
  Department of Physics, Quaid-i-Azam University, Islamabad
  Jan 2004 – Feb 2005

Research Interests

- Quantum information theory, with a focus on quantum teleportation, entanglement dynamics, and secure communication protocols in two-qubit systems.
- Investigation of decoherence, fidelity enhancement, and quantum channel performance in noisy environments.
- Development and characterization of nanomaterials synthesized via electrospinning, with applications in quantum information processing, charge storage, and biomedical technologies.
- Interdisciplinary integration of nanophysics and quantum mechanics to explore material-based implementations for next-generation quantum devices and sensors.

Selected Publications

- *Scheme for generating coherent state superpositions with realistic cross-Kerr nonlinearity*, **Phys. Rev. A 79**, 035802 (2009)
- *Properties of quantum coherence and correlations in quasi-entangled coherent states*, **Eur. Phys. J. D (2021)**, 75:266

MPhil Thesis

Channel Capacity of Amplitude Damping Channel in Bloch Sphere Representation (2005)

Key Subjects Studied in MPhil

Quantum Computing and Information Theory, Laser Physics, Fiber Optics, Microwave Engineering, Digital Signal Processing, Stochastic Processes, Engineering Optics

Computer Skills

Scientific WorkPlace, Mathematica, MS Office, Windows OS

Conferences, Schools & Seminars

- DBFC – GIKI (Team Lead, FUUAST Applied Physics Team), 2014–2017
- International Scientific Spring – NCP Islamabad, 2010
- 31st and 36th International Nathiagali Summer Colleges – 2006, 2011
- ICTP, Trieste – School on Mathematical Methods and Quantum Optics, 2006
- Course on Quantum Computation and Information – NCP Islamabad, 2004
- Pakistan Physical Society Conference – GC Lahore, 2005

Supervision

Curently supervising MPhil and BS Students (Ongoing):

- Research on Quantum Coherence in Open Quantum Systems
- Study of Thermoluminescence Response in Eocene Salt under Thermal Treatment

- Ni-doped Nanofibers for Enhanced Charge Storage in Energy Applications
- Exploring Charge Storage Properties of NiO/rGO Composite for Energy Storage Applications

Academic Coordination & Supervision

- **Final Year Project Coordinator (BS Physics):** Supervising and managing undergraduate research projects with focus on emerging areas in Applied Physics and Quantum Technologies.
- **Departmental Coordinator (2022–2025):** Responsible for managing academic schedules, project reviews, exam coordination, and inter-departmental communication within the Department of Physics.

Languages

Urdu (Native), English (Fluent), Punjabi (Fluent)

Extracurricular Activities

Cricket, Hockey, Football, Hiking, Video Games

References

Dr. A. H. Toor
Associate Professor, Department of Physics
Quaid-i-Azam University, Islamabad