Md Mehdi Hassan

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Experimental Physicist in Quantum Networking & Photonics Systems

Technical Skills

Instrument
- Single Photon Detectors (SNSPD, SAPD)
- Intensity and Phase Modulators
- Arbitrary Waveform Generators (AWG)
- White Rabbit Switch
- Rubidium Vapor Cell (Vacuum Squeezing)
- Time-Correlated Single Photon Counter (TCSPC)
- Communication Band Lasers (IR, Class 3B)
- Biphoton Sources (1570 nm & 810 nm)
- Active/Automated Polarization Controller (APC)
- Metropolitan Quantum Network Infrastructure (3-node)

Programming | Python, C++, LaTeX, Git, Docker

Application | Blender, Inkscape, GIMP, Illustrator, Photoshop, MS Word, MS Excel, MS PowerPoint

OS | Linux, Windows

Communication | English (fluent), Bengali (primary)

Professional Experience

Research Assistant (08/2022 - Present)

University of Tennessee, Knoxville; Department of Physics & Astronomy
Supervisor: Professor George Siopsis
Group: Quantum Entanglement Science and Technology (QUEST)
Section: Quantum Networking (Experiment)
Topic:
- Fiber and free space optics
- Hong Ou Mandel Visibility Characterization
- Entanglement Distribution in Practical Quantum Network
- BB84 (Quantum Key Distribution Protocol)
- Measurement Device Independent QKD

Intern (05/2025 - 08/2025)

Quantum Center, University of Tennessee at Chattanooga
Supervisor: Professor Tian Li
Group: Quantum Networking and Communications, Quantum Sensing Lab
Topic:
- Four-photon *GHZ* and *N00N* state preparation
- Secure Quantum Clock Synchronization
- Squeezed Light Coupling from Free-Space to Fiber
- Network Time Synchronization
- Network Data Analysis
- Fidelity Measurement

Teaching Assistant (08/2019 - 12/2022)

University of Tennessee, Knoxville, Department of Physics & Astronomy.
Conducted undergraduate physics lab courses including Optics, Electricity & Magnetism, and Mechanics over:
- 7 semesters
- 15 lab sections
- 2,200+ cumulative teaching hours.

Responsibilities included: Lab instruction, Grading, and Individualized student support.

Lab Officer (01/2018 – 06/2019)

North South University (Bangladesh), Department of Mathematics and Physics
Taught introductory undergraduate lab courses in Electricity & Magnetism, Mechanics, and Electronics across:
- 4 semesters
- 14 lab sections
- 1,300+ cumulative teaching hours

Responsibilities included: Lab instruction, Grading, and Maintenance of lab equipment

Research Assistant (10/2017 - 08/2018)

University of Dhaka, Department of Theoretical Physics
Supervisor: Professor Golam Mohammad Bhuiyan
Topic: Theory of Melting Point for Three FCC Elements: *Al*, *Cu*, *Ni*

Conference Presentations

Professional Talk
- IonQ– Quantum Immersion Day *(Knoxville, TN, 2025)*
- IEEE Quantum Week *(Bellevue, WA, 2023)*
- QuaNTRASE Seminar Series *(Knoxville, TN, 2023)*

Poster
- QCUF Workshop *(Oak Ridge National Lab, 2025)*
- CLEO Conference *(Charlotte, NC, 2024)*
- NSF Research Traineeship *(Tempe, AZ, 2023)*
- Quantum Technology Workshop *(UT Chattanooga, TN, 2025)*
- Southeast Quantum Workshop *(UT Knoxville, TN, 2024)*
- NSF Research Traineeship *(Blacksburg, VA, 2022)*

Academic Background

08/2019 - Present [1]	**Doctor of Philosophy in Physics** Department of Physics & Astronomy University of Tennessee, Knoxville, TN 37996, USA
12/2024 (Concurrent)	**Master of Science with a major in Physics** Department of Physics & Astronomy University of Tennessee, Knoxville, TN 37996, USA
02/2016 - 08/2018	**Master of Science in Theoretical Physics** Department of Theoretical Physics University of Dhaka, Dhaka-1000, Bangladesh
01/2011 - 11/2015	**Bachelor of Science in Physics** Department of Physics University of Dhaka, Dhaka-1000, Bangladesh

Publications

bit.ly/mmh-utk

12/2025	M. Hassan, J. Humberd, MJU Haq, N. Crum *et al.*: Distributed $g^{(2)}$ Retrieval with Atomic Clocks: Eliminating Conventional Sync Protocols [submitted to CLEO, 2026]
12/2025	J. Humberd, N. Crum, MJU Haq, M. Hassan *et al.*: Distributed Time Tagging of Correlated Photons with White Rabbit Syntonized Event Timers [submitted to CLEO, 2026]
01/2025	N. Crum, M. Hassan and G. Siopsis: Practical Quantum Clock Synchronization Using Weak Coherent Pulses
09/2025	K. Reaz, M. Hassan, J. Humberd, M. Boone *et al.*: Polarization-Controlled Dual-State Distribution of Bell and N00N Entanglement Over a Metro-Scale Commercial Quantum Network
01/2025	N. Crum, M. Hassan, A. Green and G. Siopsis: Mode Distinguishability in Multi-photon Interference
05/2024	A. Green, M. Hassan, N. Crum, K. Reaz, and G. Siopsis: Two-Crystal Configuration for Frequency-Converted Spontaneous Parametric Down Conversion
05/2024	N. Crum, K. Reaz, M. Hassan, A. Green, and G. Siopsis: Clock Synchronization with Weak Coherent Pulses
11/2023	K. Reaz, M. Hassan, A. Green, N. Crum, and G. Siopsis: Experimental decoy state asymmetric MDI-QKD over a turbulent high-loss channel
09/2023	M. Hassan, K. Reaz, A. Green, N. Crum, and G. Siopsis: Experimental Free-Space Quantum Key Distribution Over a Turbulent High-Loss Channel

Honors & Award

Champion	Three Minute Thesis (3MT) Competition, UT Knoxville, *[2025]*
Graduate Fellowship	Department of Physics & Astronomy, The University of Tennessee, Knoxville *[2019-2024]*
Selected Participant	US Quantum Information Science Summer School *[2024]*
Best Paper Award	IEEE Quantum Week 2023, Quantum Network & Communication (3rd Place) *[2023]*

[1] Anticipated graduation: Spring, 2026

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