Postdoc Position Description

Principal Objectives:
Candidate will be responsible for designing, building, and operating the world’s first quantum internet testbed. Specifically, this will entail constructing and operating a quantum optical correlator for continuous variables measurements to perform photon entanglement verification and swapping. Candidate will develop and test network protocols to be utilized in the establishment of a low-noise, stable, optical channel operating at or near the quantum limit. Measurements will include channel characterization, quantum tomography, entanglement verification, signal integrity, and protocol demonstrations.

General Duties and Responsibilities:
• Design and construct optical processing and detection systems using bulk components which maximize mode matching and minimize optical loss.
• Implement feedback control systems to stabilize optical frequency, phase, polarization, and mechanical motion to enable coherent optical measurements.
• Design and construct low-noise electronic circuits for detection, control, and measurement.
• Perform analysis on and interpretation of statistical measurements from optical systems.
• Work as a member of a collaborative, interdisciplinary team.
• Provide technical input to research problems which have been recognized as critical obstacles to progress in areas of exceptional interest.
• Prepare and review journal publications, contributing important advancements to quantum optics, quantum networking, optical communications, and optical measurement techniques.
• Attend research conferences and present technical results.

Knowledge, Skills, and Abilities:
• Experience with ultra-stable lasers, entangled light sources, phase-locked loops, balanced detection, low-noise receive design, polarization optics, and optical modulators.
• Experience with optical measurement techniques such as: coherent detection, quantum tomography, beam diagnostics, laser diagnostics, noise characterization, and statistical optics.
• Experience with protocols used in traditional, coherent optical networks is very desirable.
• Ability to code with, or learn to code with: MATLAB, LabView, and Python is required.
• Familiarity with optical system design software (e.g. Zemax, Code V, OSLO) is advantageous.
• Ability with opto-mechanical design and machine shop fabrication is desirable.

For more information contact:
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