

## ITL Opportunity Description Template

**TITLE:** Metrology for Continuous Variable Quantum Computing and Networking (U.S. Citizens preferred)

**Overview:** The Information Technology Laboratory of the National Institute of Standards and Technology is seeking qualified candidates for the position of research physicist. The position will be a graduate student performing advanced quantum optical experiments. The position requires the development of novel quantum optical devices, systems and tools that will be deployed in challenging field experiments on continuous variable (CV) quantum networking. These devices, systems and tools include sources of squeezed light, photon-number resolving detectors, homodyne detectors and optical fiber phase stabilization. Field experiments include distributing CV entanglement over long distances along with phase stabilization, high timing precision and high fidelity; tools and protocols that can be used for applications in CV quantum networking and using quantum-enhanced measurement protocols for exotic quantum states of light.

### **Key responsibilities will include but are not limited to:**

- Development of a squeezed vacuum source for continuous variable quantum networking and associated homodyne detection apparatus.
- Develop source and detection characterization protocols.
- Conceptualizing novel and useful quantum optical research ideas and their associated experiments.
- Presenting results at internal and external meetings and conferences.
- Producing high-quality publications based on research and results.
- Ensuring that results, protocols, software, and documentation have been archived or otherwise transmitted to the larger organization.
- Collaborate with team members and share expertise.

### **Qualifications**

- US citizenship preferred.
- Experience with lasers, related setups, homodyne detection, transition edge sensors and superconducting nanowire single-photon detectors.
- 3 or more years of relevant experimental experience.
- Expertise in Quantum Optics, Quantum mechanics and Quantum Information Systems (QIS).
- Ability to build complex and extensive quantum optical experiments.
- Ability to develop prototypes and deployable tools used in advanced quantum field experiments.
- Strong oral and written communication skills and strong presentation skills.
- Programming skills in Matlab and/or Python with extensive experience in data acquisition and instrument control.
- Electrical circuit design and use of photodetectors.
- Must be able to work independently and with other researchers while under the guidance of a mentor.

**Employment Terms:** This opportunity is to be an associate researcher in the NIST Quantum Information Group for a term of 3 years, with options to renew and/or pursue longer term federal

employment. Associate researchers are NOT Federal Employees, but they work as NIST researchers. Relocation expenses will not be provided.

**Salary:** \$50,000 - \$55,000

**How to express interest:** Candidates (US Citizens preferred) who meet all of the required qualifications and who would be interested in taking this position are invited to express their interest in the position by sending an updated CV to Dr. Thomas Gerrits via [gerrits@nist.gov](mailto:gerrits@nist.gov).