

Job Title:	Senior Technologist: Satellite Quantum Communications
Department:	Institute for Quantum Computing
Reports To:	Principal Investigator for Canadian Quantum Satellite QEYSSat
Jobs Reporting:	None
Salary Grade:	USG 9
Effective Date:	March 2020

Primary Purpose

The Senior Technologist: Satellite Quantum Communication is a professional-level staff position. The incumbent will be a member of the Quantum Photonics Laboratory at the Institute for Quantum Computing. The position is primarily responsible for supporting system design, analysis, and implementation related to the Quantum Encryption and Science Satellite (QEYSSat) and the Quantum Optical Ground Station (QOGS).

Key Accountabilities

System Design, Build and Validation

- Co-Lead (along with the PI) the design, build and validation of space and ground segment equipment related to satellite-based quantum communication experiments/missions
- Co-Lead (along with the PI) the design, build and validation of lab test equipment and setups related to the above
- Help formulate strategies and establish new technology capabilities and programs in the quantum science arena and related applications
- Perform breadboarding/prototyping of novel designs for early risk retirement and future developments
- Participate in testing/validation campaigns at outside labs (e.g. environmental test labs, radiation test facilities etc)

Communication and Reporting

- Communicate with internal (QPL, IQC, UW) and external stakeholders concerning status reporting, issue resolution, decision-making and other topics
- Take on role of subject matter expert for technical/scientific operations of the group concerning satellite quantum communications
- Document work in technical notes, status reports, planning documents, policies and procedures
- Create and deliver presentations/talks/papers as requested

Lab Operations

- Effectively organize contents, layout and inventory of laboratory
- Advise PI regarding laboratory status and needs related to infrastructure, equipment, scheduling, controls, safety, security and policies/best practices
- Provide inputs to project plans as pertains to lab operations
- Provide budgetary inputs to PI as requested

Leadership/Mentoring

- Assist junior group members (primarily students) with technical and scientific guidance
- Advise PI on selection of potential new group members
- Review and help edit scientific papers as requested

**All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

Required Qualifications

Education <ul style="list-style-type: none">• Bachelor's degree in Physics or Engineering with focus on electro-optics• Prefer Masters or PhD degree in relevant field
Experience <ul style="list-style-type: none">• Minimum 6 years' experience in a working optics lab• Prefer working knowledge of quantum optics
Knowledge/Skills/Abilities <ul style="list-style-type: none">• Broad and deep knowledge in quantum communications, quantum computing, foundation of quantum mechanics, optics, photonics, and related theoretical and experimental skills.• Extensive understanding and wide application of principles, theories, concepts and techniques in quantum phenomena, communication techniques, applied science and engineering.• Extensive knowledge of applicable academic practices and standards in both theoretical and experimental quantum mechanics, photonics, and fundamental physics.• Interest in taking leadership/mentoring role in a multifunctional and/or multidisciplinary team for a project, activity, or function.• Demonstrated ability to solve complex problems in the research arena.• Must obtain satisfactory Controlled Goods Program (CGP) security assessment and Reliability status through UW when hired.• Desired qualifications include:<ul style="list-style-type: none">○ Established track record in research and development in areas including quantum communications, quantum computing systems, nonlinear optics, or photonics devices.○ Direct experience in developing quantum entanglement sources, quantum cryptography methods, and experiments in testing the fundamental principles of quantum mechanics.

Nature and Scope

- **Contacts:** Will have contact with internal and external collaborators, internal and external project sponsors, other research group members, UW and IQC support staff.
- **Level of Responsibility:** Responsible for day to day activities in the lab in consultation with PI when cost and schedule impacts are likely.
- **Decision-Making Authority:** Authority over design implementation and measurement methodology details once design concepts and measurement goals are established in agreement with PI.
- **Physical and Sensory Demands:** Attention to detail and careful documentation of designs and test setups are required, multiple projects will be implemented in parallel, requiring some judgement regarding prioritization of activities.
- **Working Environment:** Primarily working in lab and office, some travel required (mostly within Canada), workload may vary depending on deadlines etc.