

CP-03-01

## **Blueprint for a scalable photonic fault-tolerant quantum computer**

**J. Eli Bourassa***Xanadu*

---

### **Abstract**

This talk will present Xanadu's proposal for a scalable and fault-tolerant photonic quantum computer. Central to the architecture are Gottesman-Kitaev-Preskill bosonic qubits and squeezed states of light, stitched together into a qubit cluster state with one time and two spatial dimensions. This proposal for generating and manipulating a 3D resource state for fault-tolerant, measurement-based quantum computation combines state-of-the-art proposals for the preparation of bosonic qubits with the strengths of continuous-variable quantum computation performed using easy-to-generate squeezed states. Moreover, the architecture is based on modular, easy-to-network integrated photonic chips, opening the door to scalable fabrication and operation.