

ICTS Seminar

- Title : Route to universal fault-tolerant quantum computation using photonics
- Speaker : Krishnakumar Sabapathy (Xanadu Quantum Technologies, Toronto, Canada)
- Date : Wednesday, 3rd March 2021
- Time : 06:30 pm (IST)
- Abstract : In this talk I will go over some of the aspects of designing a scalable photonic fault-tolerant quantum computer [1]. Any quantum computing platform has two broad divisions (i) the architecture---that deals with the physical resources required to realize states, gates and measurements and (ii) error correction---the code being implemented to protect against device imperfections in the various modules. I will briefly touch upon these two aspects with regard to photonic computation that is based on qubits encoded in continuous degrees of freedom. I will then focus on one particular problem that is an important bottleneck needed to be overcome for a photonic implementation: that of non-Gaussian state generation for use as codewords. I will talk about some recent advances in this direction both from the experimental [2] and the theoretical side [3].

References:

- [Blueprint for a Scalable Photonic Fault-Tolerant Quantum Computer](#), *Quantum* (2021)
- (2) Quantum circuits with many photons on a programmable nanophotonic chip, *Nature* (2021) [in press]
- (3) [Conversion of Gaussian states to non-Gaussian states using photon-number-resolving detectors](#), *PRA* (2019)

- Venue : Please click on the link to join the meeting.
<https://zoom.us/j/96245040820?pwd=biszUWhuSktyY1VicXRyZlNUMnprdz09>
Meeting ID: 962 4504 0820
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