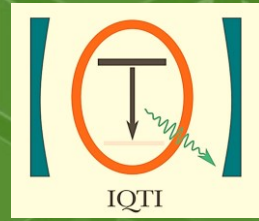




QuanTalks

IISc Quantum Technologies Initiative (IQTI)
Seminar Series



**Title: Diamond spin optomechanics:
connecting spins, phonons, and photons**

Speaker: Prof. Paul Barclay, Institute
for Quantum Science and Technology,
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Abstract: Owing to their ability to sense and be actuated by a wide range of physical systems, nanomechanical devices are natural transducers for quantum information. This is particularly exciting for applications that require conversion of information between quantum systems that do not interact directly.

We have recently harnessed nanomechanical devices to create a new interface between light and quantum memory based on diamond NV centre electronic spins. This interface uses cavity optomechanical devices to coherently convert light to mechanical motion, and then couples this motion to the quantum memory. The resulting spin-photon interface does not rely on the optical transitions of the quantum memory, enabling telecommunication wavelength light to be coupled to a spin that would otherwise not interact with photons in this wavelength range. This interface, if extended to operate at the single photon level, will enable a wide range of applications in quantum networking.

About the Speaker: Paul Barclay completed his Ph.D. in Applied Physics at the California Institute of Technology in 2007, where as one of the first students in the Painter lab he created silicon nanophotonic devices for experiments in nonlinear optics. He also collaborated with atomic physicists to study light-matter interaction using chip-based photonic devices and atom traps. In 2008, he joined Hewlett Packard Labs, in Palo Alto, California, where he advanced the emerging field of diamond quantum nanophotonics. Since starting his lab at the Institute for Quantum Science and Technology at the University of Calgary, he has performed pioneering research in the field of diamond photonics and optomechanics.



Date & Time

14th July 2021 at 7:00 PM IST

Meeting Link

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