



QuanTalks

IISc Quantum Technology Initiative (IQTI) Seminar Series



Title: Creating and controlling hybrid quantum systems – one electron and phonon at a time.

Speaker

Prof. Pollanen Johannes

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Wednesday,
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at 5.30 PM (IST)

Meeting Link

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Abstract: Developing novel hybrid & synthetic quantum systems with novel properties and/or functionalities is at the forefront of Quantum Information Science. The ability to imagine and create these types of quantum systems, which bring together seemingly disparate (but interacting) degrees of freedom, brings the exciting possibility of unexpected discoveries and new directions with systems ranging from individual trapped electrons to tailor-made artificial atoms based on superconducting circuits. In this talk, I will describe our group's work on hybrid quantum systems that integrate superconducting qubits, electrons trapped above the surface of liquid helium, and phonons. By leveraging the precision techniques of QIS our experiments open the door to altogether new qubits based on electrons trapped on the surface of superfluid helium as well as new regimes of circuit quantum optics using phonons.



Biography : Prof. Pollanen leads the Laboratory for Hybrid Quantum Systems (LHQS) at MSU and also serves as the Associate Director of the MSU Center for Quantum Computing Science and Engineering. He is also a co-founder and Chief Science Officer of EeroQ Quantum Hardware Corporation, which is a quantum computing startup company located in Chicago working on developing scalable quantum computing hardware based on the spins of trapped electron systems.