

# STUDENT SEMINAR SERIES ON RECENT QUANTUM ADVANCES

FALL 22 EVERY WEDNESDAY 5:30 - 6:30 PM  
 IN MSEE B012 WITH REFRESHMENTS  
 ALL ARE WELCOMED

We will explain the basic concepts and experimental platforms in the quantum science and technology field and review recent groundbreaking results.

For more information, please visit [purdue.link/qseminar](http://purdue.link/qseminar).

**Yisheng Lei**  
*1st Speaker*  
 Aug 31st

Ph.D. Student in the Dept of Physics and Astronomy

### A Brief Overview of Quantum Communications

In this seminar, I will explain the working principles of quantum key distribution (BB84 & Ekert 91 protocols), quantum repeater (entanglement swapping, entanglement purification & quantum memory), Bell state measurement, quantum teleportation and also its recent experimental progresses

**Ramya Suresh**  
*2nd Speaker*  
 Sept 7th

Ph.D. Student in the Dept of Physics and Astronomy

### Superconducting Qubits, Hybrid Devices, and Circuit Architectures

In this talk, I will be introducing the physics of superconducting circuits, recent developments in qubit architecture, and hybrid devices that combine electromagnetic qubit modes with other non-electromagnetic modes and give rise to rich physics.

**Xinchao Zhou**  
*3rd Speaker*  
 Sept 14th

Ph.D. Student in the Dept of Physics and Astronomy

### Atom-light interaction with cold atoms on a nanophotonic circuit

In this seminar, I will first talk about the experimental techniques about laser cooling and trapping by starting from the basics of atom-light interaction. In the second part, I will present experimental platform in our group about combining cold atoms with nanophotonic microring resonator for creating strong atom-photon coupling and photon-mediated atom-atom interactions. The related recent experimental progresses about photon-mediated interaction in cavity QED and waveguide QED will be discussed.

### SPONSORS

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