پژوهشگاه دانش‌های بنیادی (مرکز تحقیقات فیزیک نظری و ریاضیات)
IPM
INSTITUTE FOR RESEARCH IN FUNDAMENTAL SCIENCES

School of Quantum Physics and Matter
Weekly Seminar

The 2025 Nobel Prize in Physics

Online Speaker:
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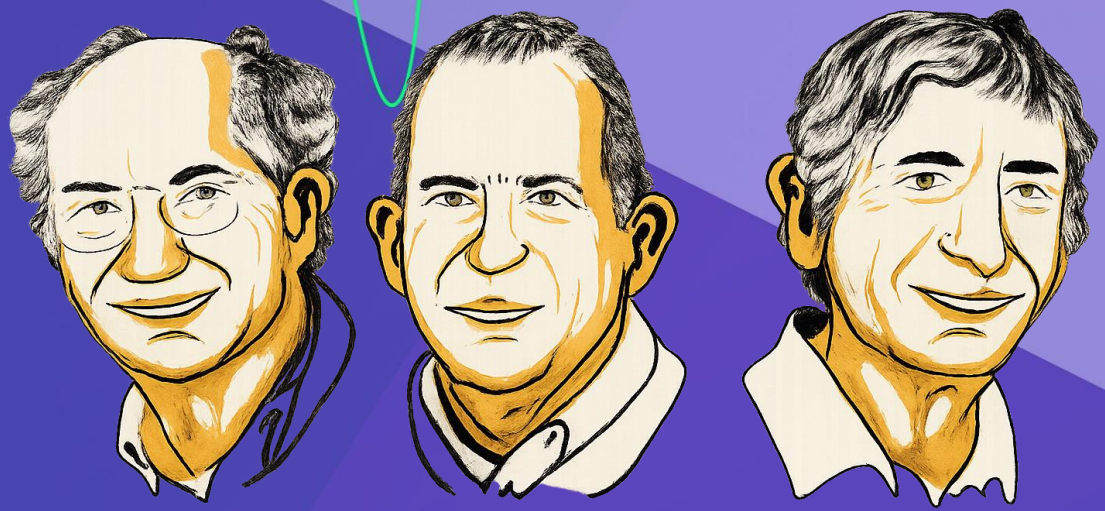
School of Quantum Physics and Matter, IPM

Abstract: Do macroscopic variables obey quantum mechanics? John Clarke, Michel H. Devoret, and John M. Martinis seriously considered this question and addressed it through a series of groundbreaking experiments. In 1984 and 1985, they conducted experiments that demonstrated the existence of two fundamental quantum phenomena in macroscopic devices. For this pioneering work, they were awarded the 2025 Nobel Prize in Physics. For the first time, they showed that quantum tunneling could be observed in a macroscopic device. In their experiments, they observed the current transition from a zero-voltage state to a nonzero-voltage state, providing clear evidence of quantum tunneling. They also found that the system absorbed electromagnetic radiation only at specific frequencies, confirming that its energy levels were quantized.

In this talk, we revisit their landmark experiments and explore how these discoveries laid the foundation for modern quantum technologies, including superconducting qubits and quantum-limited amplifiers, and highlight how their insights continue to shape today's rapidly advancing quantum technology landscape.



Hybrid format

Date: Wednesday, October 29, 2025 (7 Aban 1404)
Time: 14:00-15:00 (Tehran Time)
Venue: Room D, 3rd Floor, Farmanieh Building, IPM
Link: https://skyroom.online/ch/schoolofnanoscience/weeklyseminars

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