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Introduction to quantum technology

Thursday 30 October 2025 14:00 (15 minutes)

Due to recent technological advancements academic and industrial groups are now able to test and apply many of the beautiful concepts of quantum theory. I will introduce two of the key concepts underlying quantum computing and quantum communication, namely superposition and entanglement, and I will show how these are applied in the fields of quantum communication and in quantum computation.

For the field of quantum computation different, scalable approaches are pursued. Each type of quantum bit has its own energy scale and different measurement protocols lead to different requirements for the operating conditions (temperature, noise, power consumption). The state of the art of two developments will be discussed: the superconducting transmon qubit and topological Majorana qubits.

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Track Classification: Cryogenics for Quantum Technologies