



Superconducting quantum devices for quantum computing

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Abstract

Superconducting quantum computing is a burgeoning field that seeks to develop Josephson-junction-based qubits and superconducting circuitry as a scalable architecture for quantum information processing. In particular, advancements in qubits design and fabrication techniques have led to the development of the building blocks necessary for the development of one of the leading technologies for quantum computing. This lecture series will give an overview of this rapidly developing field. We will provide the students, researchers, and other attendees with a broad introduction to the basic physics of superconducting circuits and a review of the field, avenues of investigation, and applications of research in the field. The lectures will be structured to provide the fundamentals of this cutting-edge technology and the relevant up-and-coming technologies such as quantum processing, communication, and simulation. Moreover, the lectures will provide the relevant information to seek additional resources for a more in-depth study and research involvement in the future.