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## (I) Quantum Information Processing With Superconducting Circuits

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By exploiting effects such as quantum superpositions and entanglement, quantum computers could solve problems that are intractable on standard, classical, computers. While building a full-scale quantum computer capable of rivalling with today's supercomputers remains a challenge, the last few years have seen tremendous improvements in our ability to build small superconducting quantum processors and run simple algorithms on these processors. In parallel to these advances towards quantum information processing, much effort has been invested in using superconducting qubits as artificial atoms to explore the physics of quantum optics in novel parameter regimes. I will discuss recent developments and future challenges that lie ahead.

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