Contribution ID : **17** Type : **not specified**

S. Poletto - Engineering superconducting transmon qubits (part 1)

Thursday, 19 September 2019 15:30 (90)

In this series of lectures I will describe how superconducting transmon qubits are engineered, designed, and fabricated.

I start introducing the building blocks of superconducting quantum processors from an engineering point of view, with a focus on working parameters and design considerations. I will emphasize similarities with standard microwave engineer elements such as transmission lines, resonators, and capacitive or inductive couplings.

I will provide a deep insight on how the working parameters of the quantum processor are linked to the performances of the device and to the lifetime of the qubits.

I will conclude with an overview of the common fabrication techniques to produce superconducting quantum processors.

At the end of this series of lectures the audience will be familiar with equations and tools used to engineer superconducting transmon quantum processors. Moreover, they will know how to balance the tradeoff between performances and coherence times imposed at the design stage.