White-box and black-box macromodeling for superconducting quantum circuits [Part II] MAXWELL BLOCK, MICHAEL SCHEER, EYOB SETE, NICK RUBIN, NIKOLAS TEZAK, MATT REAGOR, CHAD RIGETTI, Rigetti Quantum Computing — Modeling and simulation tools enable more rapid exploration of the superconducting quantum circuit parameter space than would be possible with fabrication and measurement alone. A variety of modeling schemes for these circuits have been proposed. However, experimental studies of these schemes are required to determine their regimes of applicability. In this talk we compare several modeling techniques to the measured parameters of many qubits. We evaluate these models in terms of their accuracy and resource requirements and discuss their utility for designing many-qubit systems.

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