

Abstract Submitted  
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**White-box and black-box macromodeling for superconducting quantum circuits [Part I]** MICHAEL SCHEER, MAXWELL BLOCK, EYOB SETE, NICK RUBIN, NIKOLAS TEZAK, MATT REAGOR, CHAD RIGETTI, Rigetti Quantum Computing — As superconducting qubit architectures increase in size and complexity, the ability to build and analyze numerical quantum mechanical models of global chip parameters is becoming increasingly important. White-box models, in which the circuit topology is assumed known, are useful for finding the mapping between geometrical design parameters and Hamiltonian parameters. In contrast, black-box models (e.g. Fosters or Brunes circuit synthesis methods) hide the connection between geometry and Hamiltonian parameters, though they can be far more accurate. In this talk we present a unified framework for building and analyzing white-box and black-box models of superconducting circuits.

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