

cQED@Tn - "Circuit QED: From Quantum Devices to Analogues on Superconducting Circuits"



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Continuous quantum gate sets and pulse class meta-optimization

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Quantum gate synthesis and control problems exhibit a vast range of external parameter dependencies, both physical and application-specific.

In this article we address the possibility of learning families of optimal control pulses which depend adaptively on various parameters, in order to obtain a global optimal mapping from the space of potential parameter values to the control space, and hence producing continuous classes of gates.

Our proposed method is tested in particular on superconducting quantum circuit settings for different experimentally relevant quantum gates and proves capable of producing high-fidelity pulses even in presence of multiple variables or uncertain parameters with wide ranges.

See: <https://arxiv.org/abs/2203.13594>

Primary author: PRETI, Francesco (Forschungszentrum Jülich)

Co-authors: Dr MOTZOI, Felix; Prof. CALARCO, Tommaso (FZJ)

Presenter: PRETI, Francesco (Forschungszentrum Jülich)

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