

Abstract Submitted
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ProjectQ Software Framework DAMIAN S. STEIGER, THOMAS HAENER, MATTHIAS TROYER, ETH - Zurich — Quantum computers promise to transform our notions of computation by offering a completely new paradigm. A high level quantum programming language and optimizing compilers are essential components to achieve scalable quantum computation. In order to address this, we introduce the ProjectQ software framework – an open source effort to support both theorists and experimentalists by providing intuitive tools to implement and run quantum algorithms. Here, we present our ProjectQ quantum compiler, which compiles a quantum algorithm from our high-level Python-embedded language down to low-level quantum gates available on the target system. We demonstrate how this compiler can be used to control actual hardware and to run high-performance simulations.

Damian S. Steiger
ETH - Zurich

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