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ProjectQ: Compiling quantum programs for various backends
THOMAS HAENER, DAMIAN S. STEIGER, MATTHIAS TROYER, ETH - Hoenggerberg — In order to control quantum computers beyond the current generation, a high level quantum programming language and optimizing compilers will be essential. Therefore, we have developed ProjectQ – an open source software framework to facilitate implementing and running quantum algorithms both in software and on actual quantum hardware. Here, we introduce the backends available in ProjectQ. This includes a high-performance simulator and emulator to test and debug quantum algorithms, tools for resource estimation, and interfaces to several small-scale quantum devices. We demonstrate the workings of the framework and show how easily it can be further extended to control upcoming quantum hardware.

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