

A software framework for scalable quantum computing

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Abstract

Quantum computing architectures have expanded to systems that support many qubits. With an increase in qubit number, both qubit control hardware and software must support quantum engineers and scientists in breaking down experimental complexity. Here, we show the advantage provided by the combination of our open-source software framework with our high-performance control electronics. The software framework supports programming many instruments together as a single machine, allowing users to program experiments at a high level, from which optimized code is generated for the control hardware. We show how the software speeds-up the practical operation of quantum computers and how it performs state-of-the-art experiments on the latest qubit processors.