

Quantum-notebook: a Docker stack for quantum computing

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Activities on Quantum computing are increasing thanks to the push of large investments promoted by Governments, Industries, and international actors of research. This environment stimulates the creation and integration of tools and components to design and simulate quantum circuits.

At the current state of the art, there are several different languages and frameworks for programming quantum computers, among them some of the most famous are Qiskit, Cirq, QASM, Q# and others.

In this work is presented a Quantum-Notebook built as a ready-to-deploy Docker image, based on JupyterHub technologies which implements a set of largely used tools for simulation or quantum programming.

Built on top of Jupiter Docker stack, the Quantum-Notebook provides a ready to use web-app to start directly programming in the preferred language, simplifying the installation steps. The image can be pulled and run on any device, such a laptop, server, or a cloud VM thanks to the versatility of docker.

Finally the Quantum-Notebook is easy to extend with additional libraries and is reusable in different contexts for development, simulation or training sessions.

The goal of this work is to give a contribution for helping, researchers, students, teachers and interested people to approach quantum programming.

Presenters: FALABELLA, Antonio (Istituto Nazionale di Fisica Nucleare); PARDI, Silvio (Istituto Nazionale di Fisica Nucleare)

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