

Julia Backend for Qiskit

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Julia Programming Language



Julia in a Nutshell

Fast

Julia was designed from the beginning for [high performance](#). Julia programs compile to efficient native code for [multiple platforms](#) via LLVM.

Composable

Julia uses [multiple dispatch](#) as a paradigm, making it easy to express many object-oriented and [functional](#) programming patterns. The talk on the [Unreasonable Effectiveness of Multiple Dispatch](#) explains why it works so well.

Dynamic

Julia is [dynamically typed](#), feels like a scripting language, and has good support for [interactive](#) use.

General

Julia provides [asynchronous I/O](#), [metaprogramming](#), [debugging](#), [logging](#), [profiling](#), a [package manager](#), and more. One can build entire [Applications and Microservices](#) in Julia.

Reproducible

[Reproducible environments](#) make it possible to recreate the same Julia environment every time, across platforms, with [pre-built binaries](#).

Open source

Julia is an open source project with over 1,000 contributors. It is made available under the [MIT license](#). The [source code](#) is available on GitHub.

Qiskit Extensions



qiskit-cold-atom

Public

Tools to control cold-atom-based quantum simulators and quantum computers.

● Python ☆ 11 📄 6

qiskit-alt

Public

High-performance Qiskit features backed by Julia. A Python front end to algorithms using Pauli and Fermionic operators implemented in Julia.

● Python ☆ 9

QuantumOps.jl

Public

Pauli and Fermionic operators implemented in Julia. qiskit-alt provides a Python/Qiskit front end to this package.

● Julia ☆ 2

QiskitQuantumInfo.jl

Public

Provides Julia types closely following the structure of some Qiskit classes for Pauli operators. Includes conversion to types in QuantumOps. This is the Julia layer that qiskit-alt calls.

● Julia ☆ 2

QuantumRegistry

Public

Registry of Julia packages that qiskit-alt depends on.

☆ 2

ElectronicStructure.jl

Public

Julia interface to electronic structure packages. Includes functions for processing and conversion. qiskit-alt provides a Qiskit frontend to this package.

● Julia ☆ 1