PyQuEST-cffi Documentation

Release 3.0.1

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May 07, 2021

Contents:

PyQuEST-cffi is a python interface to QuEST(https://github.com/QuEST-Kit/QuEST) based on cffi(https://cffi.readthedocs.io/en/latest/index.html) developed by HQS Quantum Simulations. QuEST is an open source toolkit for the simulation of quantum circuits (quantum computers).

PyQuEST-cffi provides two main functionalities:

1. An interactive python to QuEST interface based on cffi, mapping QuEST functions to python and executing them during runtime.
2. A compile function generating a complete QuEST c-source-file from python calls, building it and importing it into python via cffi).

For more information see the detailed code documentation below

CHAPTER 1

Note

Please note, PyQuEST-cffi is currently in the alpha stage and not an official QuEST project.

PyQuEST-cffi currently depends on a forked version of the development branch of QuEST. We plan to move dependency to the official QuEST master and bring PyQuEST-cffi to beta stage after the next official QuEST release.

In the developing branches of QuEST the QuEST project has implemented a ctypes-based python interface QuestPy(https://github.com/QuEST-Kit/QuEST/tree/PythonTesting/tests/QuESTPy) for unit testing.

Do not assume that any bugs occuring using PyQuEST-cffi are QuEST bugs unless the same bug occurs when compiling/using a QuEST c-programm with the official release version of QuEST(https://github.com/QuEST-Kit/QuEST).

1.1 PyQuEST-cffi

Provides a python interface for QuEST.

`pyquest_cffi.ops`	Gate operations in PyQuest-cffi
`pyquest_cffi.cheat`	Cheated functions in PyQuest-cffi
`pyquest_cffi.utils`	Utilities to create and destroy environment etc.

1.2 PyQuEST-cffi README

Documentation Status GitHub Workflow Status PyPI PyPI - License PyPI - Format

PyQuEST-cffi is a python interface to QuEST based on cffi developed by HQS Quantum Simulations. QuEST is an open source toolkit for the simulation of quantum circuits (quantum computers).

PyQuEST-cffi provides an interactive python to QuEST interface based on cffi, mapping QuEST functions to python and executing them during runtime.

For more information see the detailed code documentation

1.2.1 Note

Please note, PyQuEST-cffi is not an official QuEST project.

In the developing branches of QuEST the QuEST project has implemented a ctypes-based python interface QuestPy for unit testing.

Do not assume that any bugs occuring using PyQuEST-cffi are QuEST bugs unless the same bug occurs when compiling/using a QuEST c-program with the official release version of QuEST.

1.2.2 Installation

We do provide a PyPi source packages. The recommended way to install PyQuEST-cffi is

```
pip install pyquest_cffi
```

If you want to install PyQuEST-cffi in development mode we recommend

```
# PyQuEST-cffi add QuEST as a git submodule
git clone --recurse-submodules https://github.com/HQSquantumsimulations/PyQuEST-cffi.
↪git
pip install -e PyQuEST-cffi/
```

CHAPTER 2

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