LibKet: Cross-Platform Library for Running Quantum Algorithms on NISQ processors

LibKet – Advanced Features

IEEE Quantum Week 2022

September 18-23, 2022

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https://tinyurl.com/3vw4zdc8

IEEE QUANTUM WEEK

IEEE International Conference on Quantum Computing and Engineering — QCE22

Tutorial at IEEE QCE22, September 18-23, 2022

LibKet: A Cross-Platform Library for Running Quantum Algorithms on NISQ Processors

Organizers: Carmen G. Almudever, Matthias Möller

Session 1: Sunday, September 18, 10:00 AM – 11:30 AM MDT (UTC-6)

Time	Content	Lecturer	Slides	Binder
10:00-11:00 am	Hands-on Introduction to Quantum Computing	Carmen	slides	tutorial 01
11:00-11:30 am	Libket - The Basics	Matthias	slides	tutorial 02

Session 2: Sunday, September 18, 12:00 AM – 1:30 PM MDT (UTC-6)

Time	Content	Lecturer	Slides	Binder
1:00-1:45 pm	LibKet - Advanced Features	Matthias	slides	tutorial 03
1:45-2:30 pm	Variational Quantum Algorithms	Carmen/Matthias	slides	tutorial 04

Advanced features - Summary

- Quantum programs and expressions
- Filters and filter chains
- Synchronous and asynchronous offloading of computations
- *Gate-group optimization, i.e.* $U \circ U^{\dagger} = id$
- *Compile-time for loops*
- *Pre-implemented quantum building blocks, e.g. QFT, iQFT, …*
- *…*

Read the documentation https://libket.readthedocs.io/