LibKet: A Software Framework for Quantum-Accelerated Scientific Computing

Hands-on Scientific Computing with LibKet

2021 SIAM Conference on Computational
Science and Engineering
March 1st, 2021

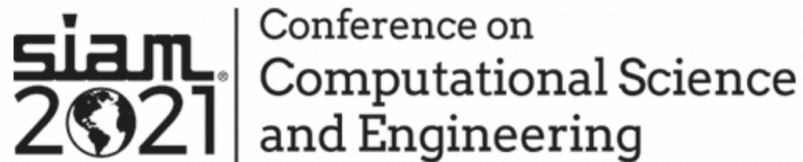**Matthias Möller[1] and Carmen G. Almudever[2]**
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SIAM 2021 | Conference on Computational Science and Engineering

Mini-tutorial at SIAM CSE21, March 1-5, 2021

LibKet: A Software Framework for Quantum-Accelerated Scientific Computing

Organizers: Carmen G. Almudever, Matthias Möller

Session 1 (MT5): Monday, March 1, 9:45 AM – 11:25 AM CST

Time	Content	Lecturer	Slides	Binder
9:45-09:55	Quantum-accelerated scientific computing	Matthias	slides	
09:55-11:25	Hands-on introduction to quantum computing with LibKet	Carmen/Matthias	slides	tutorial 01

Session 2 (MT6): Monday, March 1, 2:15 PM – 3:55 PM CST

Time	Content	Lecturer	Slides	Binder
2:15-3:00	Quantum computing today and future perspective	Carmen	slides	
3:00-3:55	Hands-on scientific computing with LibKet	Matthias		tutorial 02 tutorial 03 tutorial 04

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Using LibKet on your own computer

Check out the code

$> git clone https://gitlab.com/mmoelle1/LibKet.git

Configure & build

$> cd LibKet && mkdir build && cd build
$> cmake .. –DLIBKET_WITH_<BACKEND_NAME>=ON
$> make –j

-- The C compiler identification is GNU 7.5.0
-- The CXX compiler identification is GNU 7.5.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info – done

…

[100%] Built target …

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Using LibKet on your own computer

Install optioal Python packages (here Qiskit)

```
$> make qiskit-venv    # virtual environment (Linux)
$> make qiskit         # system-wide Python (macOS)
```

Activate Python virtual environment

```
$> source ./venv/qiskit/bin/activate    # only for venv
```

Create IBMQ account and set access token

```
$> export IBMQ_API_TOKEN=abcd0123…
```

Run your first example program

```
$> ./examples/tutorial01_simple
```

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At the end of the mini-tutorial

Get the code

Join us on slack

Feedback, bug reports, and feature requests are welcome!
Thank you very much!

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