Hands-on Scientific Computing with LibKet

IEEE Quantum Week 2021

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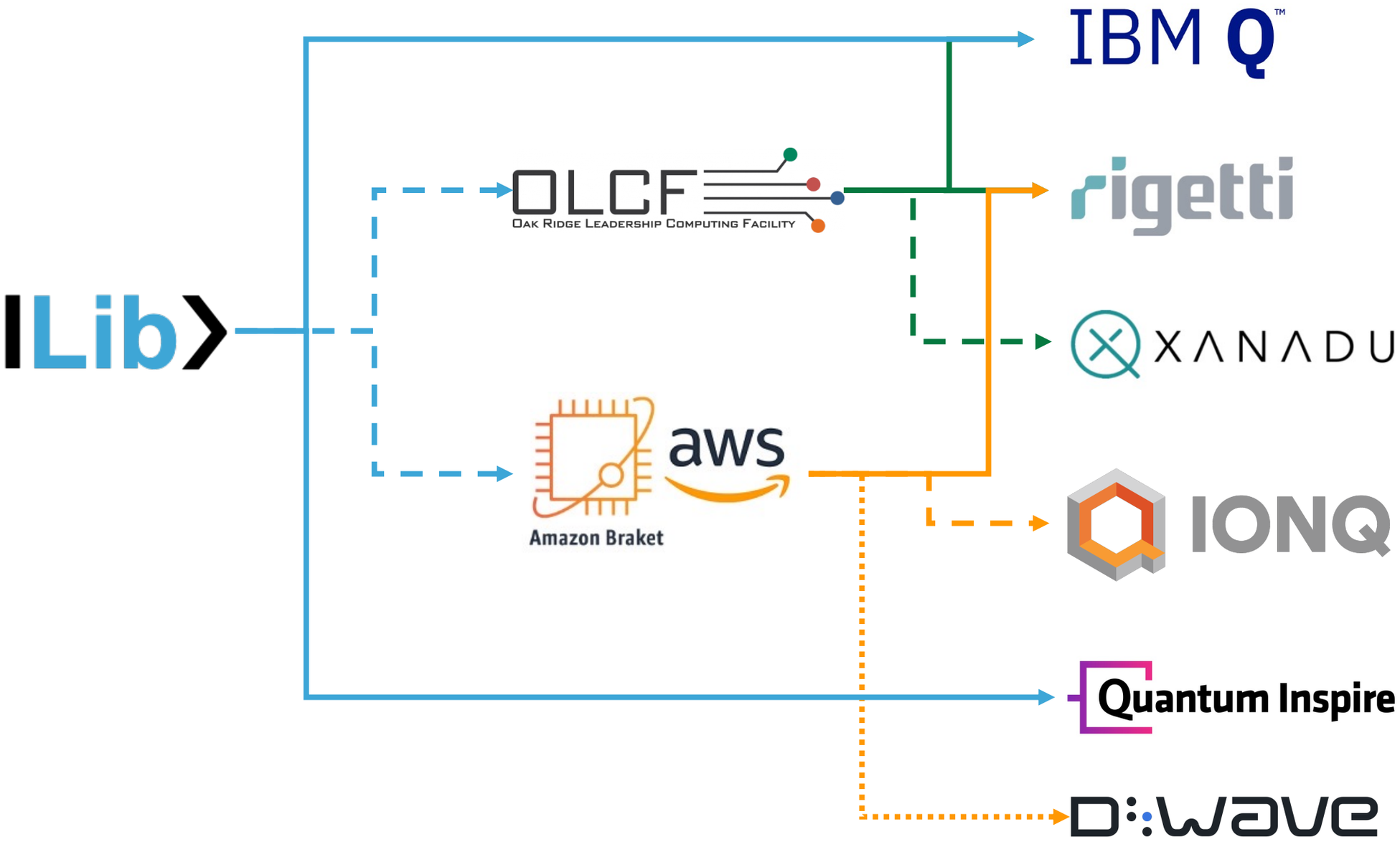
Quantum computers in the cloud



https://tinyurl.com/yru4f4yv

IEEE QUANTUM WEEK

IEEE International Conference on Quantum Computing and Engineering — QCE21

Tutorial at IEEE QCE21, October 17-22, 2021

Learning Quantum-accelerated Scientific Computing with LibKet

Organizers: Carmen G. Almudever, Matthias Möller

Session 1: Monday, October 18, 10:45 AM – 12:15 AM MDT (UTC-6)

Time	Content	Lecturer	Slides	Binder
10:45-10:55	Quantum-accelerated scientific computing	Matthias	slides	
10:55-12:15	Hands-on introduction to quantum computing with LibKet	Carmen/Matthias	slides	tutorial 01

Session 2: Monday, October 18, 1:00 PM – 2:30 PM MDT (UTC-6)

Time	Content	Lecturer	Slides	Binder
1:00-2:10	Hands-on scientific computing with LibKet	Matthias	slides	tutorial 02 tutorial 03 tutorial 04
2:10-3:30	Quantum computing today and future perspective	Carmen	slides	

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 -k
```

```
-- 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 …
```

Using LibKet on your own computer

Install optional Python packages (here Qiskit)

```
$> make install-python-packages-venv    # local Python (Linux)
$> make install-python-packages         # system-wide (macOS)
```

Activate Python virtual environment

```
$> source ./venv/libket/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
```