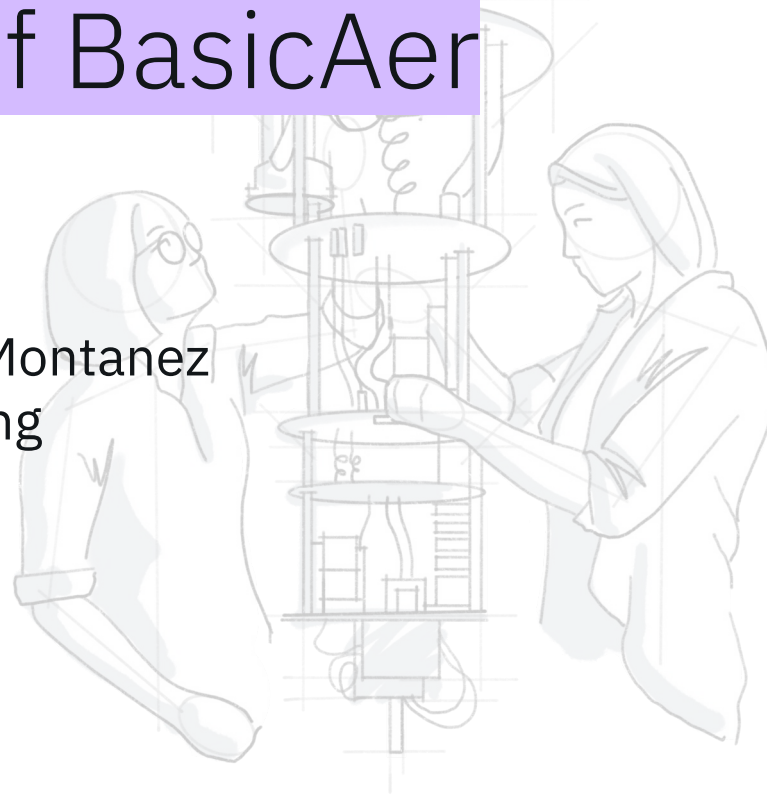


# Improve performance and usability of BasicAer

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# Summary of the project



**Improve BasicAer the numpy-based Qiskit backend**

**Solving some basic issues**

- BasicAer fails when shots requested exceeds a threshold [Qiskit/qiskit-terra#7634](#)
- Add date attribute to BasicAer job result [Qiskit/qiskit-terra#7781](#)

**Improve the user experience of BasicAer**

- Leverage `quantum_info` in BasicAer.
- Removing duplication of code adding some functions from `quantum_info` in BasicAer
- Leverage `quantum_info` in StatevectorSimulatorPy [Qiskit/qiskit-terra#7670](#)

# Pull request of basic Issues

## Remove BasicAer shot limit - QAMP #7801

Merged mergify merged 11 commits into [Qiskit:main](#) from [alejomonbar:fixissue7634](#) on May 3

Conversation 9   Commits 11   Checks 14   Files changed 4



alejomonbar commented on Mar 22 · edited

Contributor

### Summary

Fixes [#7634](#)

Executing the following code gives an error because `max_shots` for BasicAer has a limit of 65536 shots.

```
from qiskit import BasicAer, QuantumCircuit

backend = BasicAer.get_backend('qasm_simulator')
circuit = QuantumCircuit(1,1)
circuit.x(0)
circuit.measure(0,0)
job = backend.run(circuit, shots=int(1e6))
```

## add date to all Result objects - QAMP #7877

Open alejomonbar wants to merge 6 commits into [Qiskit:main](#) from [alejomonbar:Issue7781](#)

Conversation 8   Commits 6   Checks 12   Files changed 2



alejomonbar commented on Apr 4 · edited

Contributor

### Summary

Executing the following code gives an error because BasicAer backend job has no attribute date.

```
import numpy as np
import mthree
from qiskit import BasicAer, QuantumCircuit, Aer

backend = BasicAer.get_backend("statevector_simulator")
mit = mthree.M3Mitigation(backend)
mit.cals_from_system(range(2))

circuit = QuantumCircuit(2)
circuit.rx(np.pi / 4, 0)
circuit.rx(np.pi / 2, 1)
circuit.measure_all()
```

## tox is not working properly in MacBook pro chip M1 #8052

Open alejomonbar opened this issue 29 days ago · 1 comment



alejomonbar commented 29 days ago · edited

Contributor

### Environment

- Qiskit Terra version: 0.21.0
- Python version: Python 3.9
- Operating system: MacOS Monterey Version 12.3.1 Chip:M1

### What is happening?

When trying to contribute I couldn't execute the command 'tox' to test the changes of a new pull request. They only work on some CPUs.

### How can we reproduce the issue?

executing on MacBook with M1 Chip.  
on terminal run tox

# Improving the user experience of BasicAer

## Utility Functions 📄

```
partial_trace(state, qargs)
```

```
shannon_entropy(pvec[, base])
```

Adding a new functionality into quantum\_info to execute quantum circuits called "sample\_circuit"

We identify different options that makes the same procedure of BasicAer

```
reset
```

```
evolve
```

```
measure
```

Reset state or subsystems to the 0-state.

Evolve a quantum state by the operator.

Measure subsystems and return outcome and post-measure state.