Trabalho_qiskit3

September 11, 2021

[343]:

```
import numpy as np
import math

from qiskit import *
from qiskit import QuantumCircuit, QuantumRegister, ClassicalRegister, execute,␣
 ↪BasicAer, IBMQ, Aer

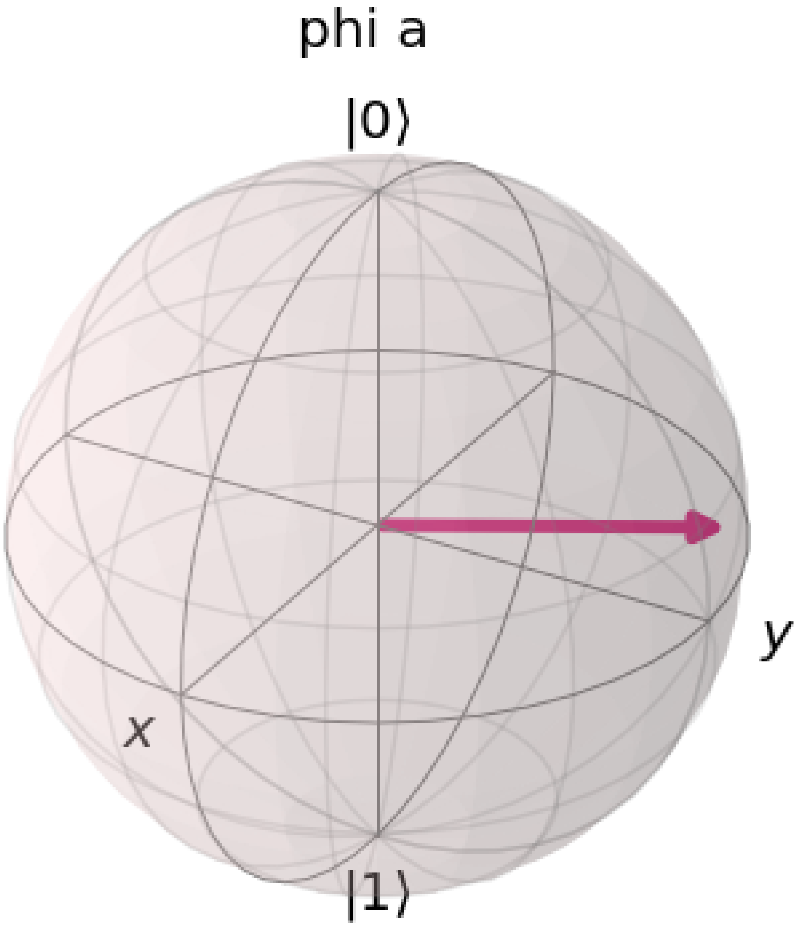
from qiskit.visualization import plot_histogram, plot_bloch_vector,␣
 ↪plot_bloch_multivector
from qiskit.extensions import Initialize

from qiskit.quantum_info import partial_trace




bloch_vector = [math.sin(math.pi*0.537)*math.cos((8/11)*math.pi), math.sin(math.
 ↪pi*0.537)*math.sin((8/11)*math.pi), math.cos(math.pi*0.537)]
plot_bloch_vector(bloch_vector, title= "phi a")
```

[343]:



phi a

[336]:

```
### parte 1

qc = QuantumCircuit(3,2)

qc.ry(math.pi*(0.537),0)
qc.rz(math.pi*(8/11),0)

qc.h(1)
qc.cx(1, 2)
qc.barrier()

# protocolo
qc.cx(0, 1)
qc.h(0)
qc.barrier()
```

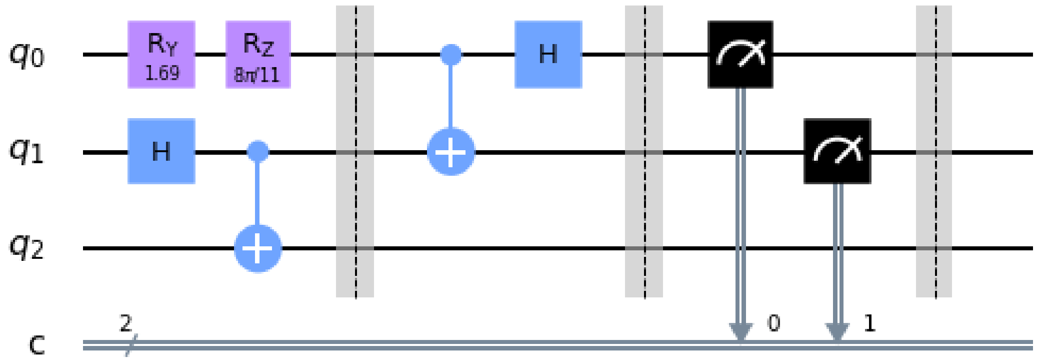
```
# medir os qubits
qc.measure([0,1], [0,1])



#qc.cx(1, 2)
#qc.cz(0, 2)
qc.barrier()

qc.draw(output='mpl')
```

[336]:



[337]:

```
rho_q2 = partial_trace(statevector,[0,1])
```

[338]:

```
rho_q2.data
```

[338]:

```
array([[0.44201133+0.j        , 0.32522082+0.37532483j],
       [0.32522082-0.37532483j, 0.55798867+0.j        ]])
```

[339]:

```
### parte 1

qc = QuantumCircuit(3,2)

qc.ry(math.pi*(0.537),0)
qc.rz(math.pi*(8/11),0)

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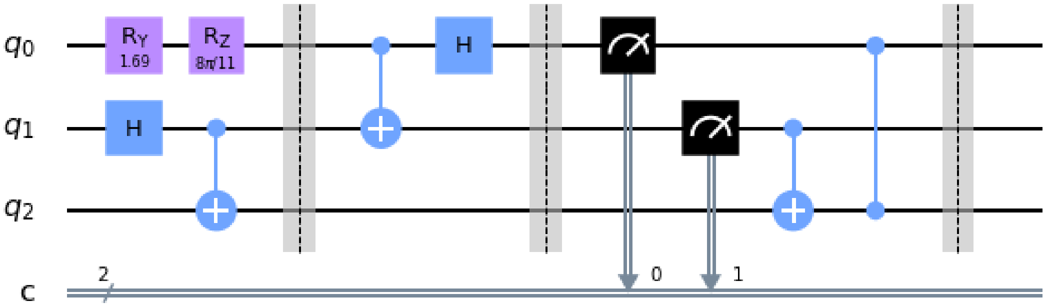
[339]:



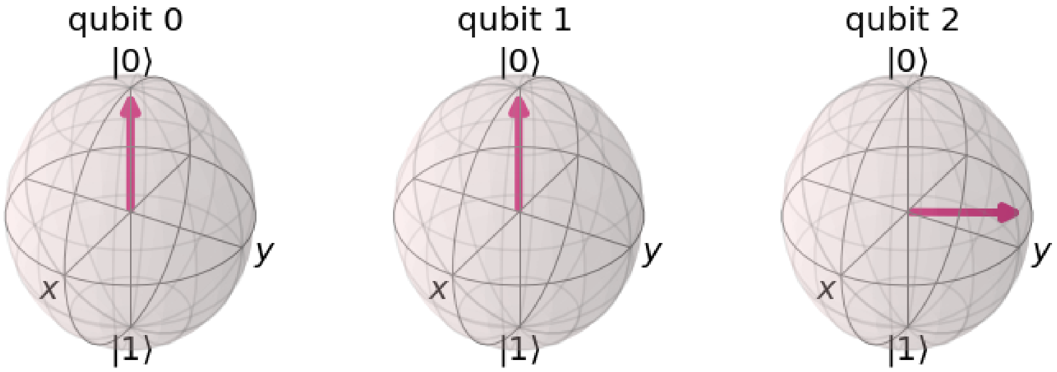
[340]:

```
backend = BasicAer.get_backend('statevector_simulator')
statevector = execute(qc, backend, shots=10000).result().get_statevector()



plot_bloch_multivector(statevector)
```

[340]:



```
[341]: rho_q2 = partial_trace(statevector,[0,1])
```

```
[342]: rho_q2.data
```

```
[342]: array([[ 0.44201133+0.j        , -0.32522082-0.37532483j],
              [-0.32522082+0.37532483j,  0.55798867+0.j        ]])
```

```
[ ]:
```