

Qasm exporter fails with RYYGate in subcircuit (with inverse) QasmError: "Duplicate declaration for gate 'ryy' #XXXX

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Environment

- Qiskit Terra version: 0.19.1
- Python version: 3.8
- Operating system: Ubuntu 18.04.6 LTS

What is happening?

Using an RYYGate in a subcircuit and then exporting it to qasm gives an invalid qasm code, which raise an error in case it is reimported. This happens only if the subcircuit and the subcircuit's inverse are both added to the larger circuit.

How can we reproduce the issue?

Run this snippets:

```
from qiskit import QuantumCircuit, ClassicalRegister, QuantumRegister
from qiskit.circuit.library.standard_gates import *
qr = QuantumRegister(2, name='qr')
cr = ClassicalRegister(2, name='cr')
qc = QuantumCircuit(qr, cr, name='qc')
subcircuit = QuantumCircuit(qr, name='subcircuit')
subcircuit.append(RYYGate(5.76), qargs=[qr[0], qr[1]], cargs=[])
qc.append(subcircuit, qargs=qr)
qc.append(subcircuit.inverse(), qargs=qr)
qc.qasm(formatted=True)
```

Output:

```
OPENQASM 2.0;
include "qelib1.inc";
gate ryy(param0) q0,q1 { rx(pi/2) q0; rx(pi/2) q1; cx q0,q1; rz(-5.76) q1; cx q0,q1; rx(-pi/2) q0; rx(-pi/2) q1;
gate ryy(param0) q0,q1 { rx(pi/2) q0; rx(pi/2) q1; cx q0,q1; rz(5.76) q1; cx q0,q1; rx(-pi/2) q0; rx(-pi/2) q1;
gate subcircuit q0,q1 { ryy(5.76) q0,q1; }
gate subcircuit_dg q0,q1 { ryy(-5.76) q0,q1; }
qreg qr[2];
creg cr[2];
subcircuit qr[0],qr[1];
subcircuit_dg qr[0],qr[1];
```

Reimport the qasm code:

```
qc = QuantumCircuit.from_qasm_str(qc.qasm())
```

Output

```
QasmError: "Duplicate declaration for gate 'ryy' at line 4, file .\nPrevious occurrence at line 3, file "
```

What should happen?

The QASMexporter should generate a valid qasm.

Any suggestions?

```
qc.append(subcircuit, qargs=qr)
qc.append(subcircuit.inverse(), qargs=qr)
```

This is probably related to the issue #XXXX, but I fear they might be different since this case involves a subcircuit and an call to the inverse.

Looking forward to listening to your feedback. Thanks in advance

Assignees

No one assigned

Labels

bug qasm

Projects

None yet

Milestone

No milestone

Development

No branches or pull requests

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2 participants

- ANONYMOUS added the bug label 3 days ago
- turian0 added the qasm label 2 days ago



Review added the **open** label 2 days ago

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