

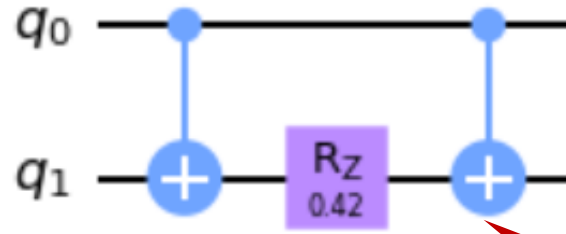
Fix Template Optimizing Issue

Mentor : Kevin Sung

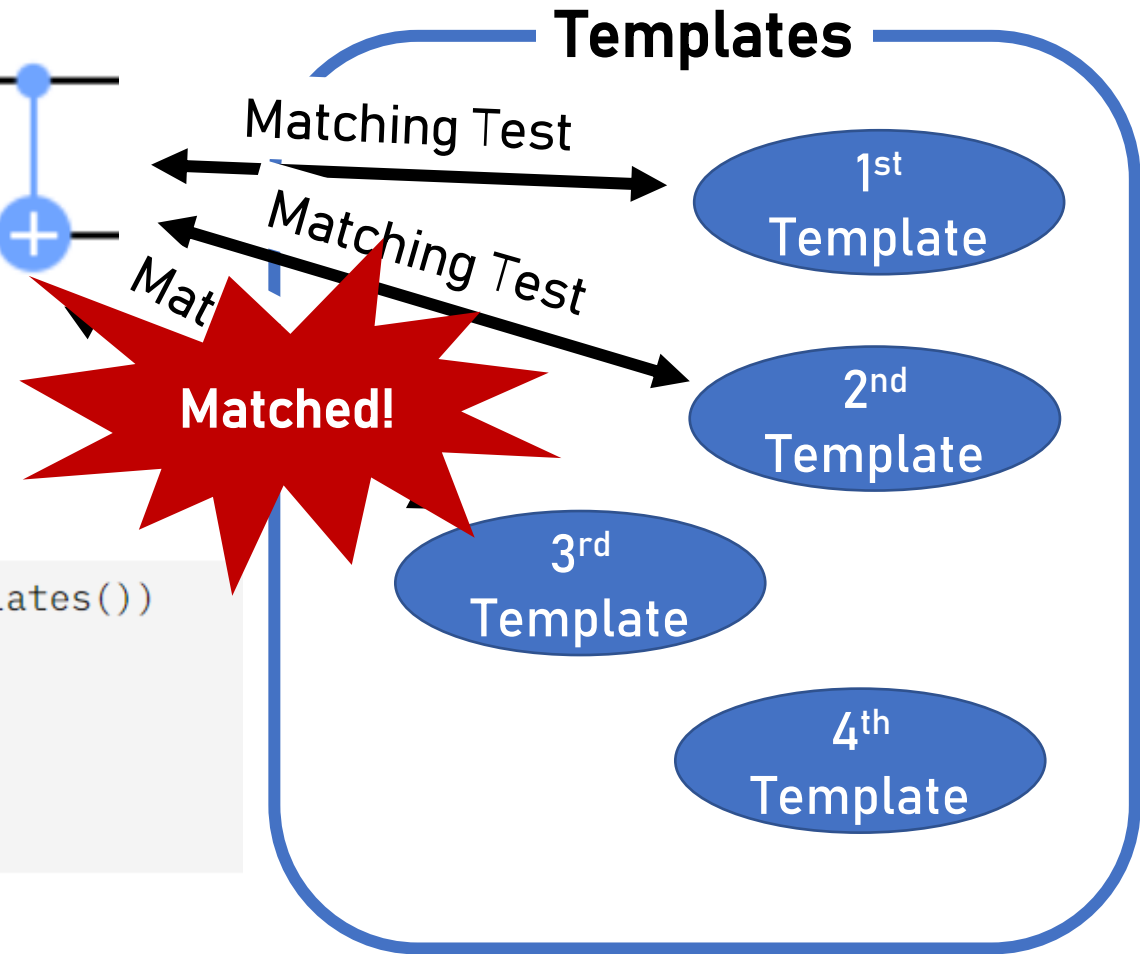
Mentee : Ha Eum Kim

Template Optimization

```
[3]: test_circ1 = QuantumCircuit(2)
test_circ1.cx(0, 1)
test_circ1.rz(0.42, 1)
test_circ1.cx(0, 1)
test_circ1.draw()
```

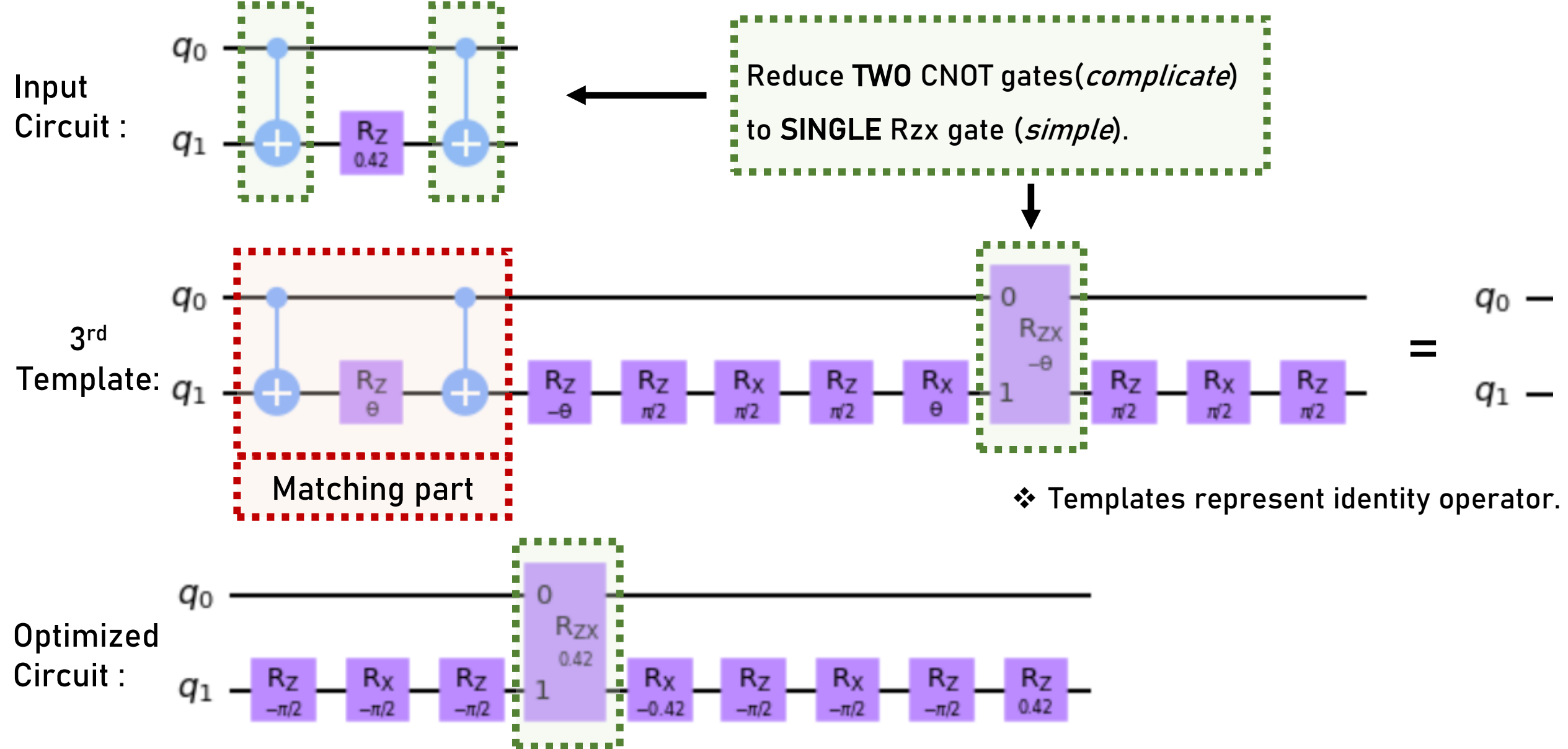


```
[4]: pass_ = TemplateOptimization(**rzx_templates.rzx_templates())
templist = pass_.template_list
#dag form
circuit_dag_1=circuit_to_dag(test_circ1)
passtemp = pass_.run(circuit_dag_1)
dag_to_circuit(passtemp).draw()
```



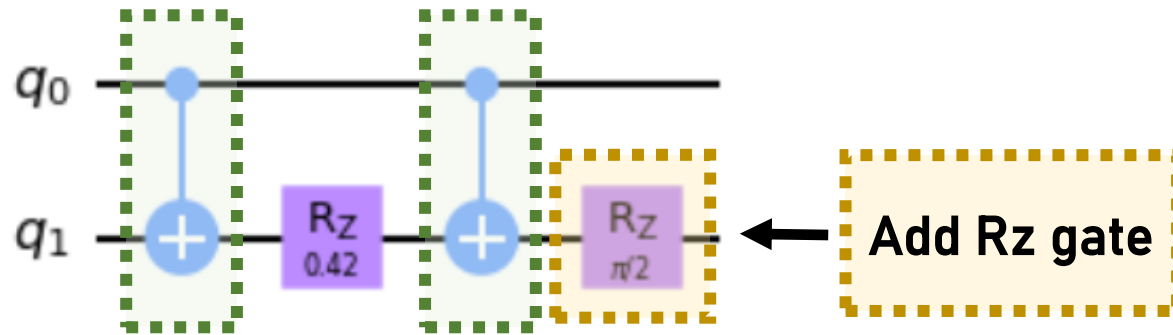
- Goal of 'TemplateOptimization': Makes more efficient circuit for hardware using known templates.

Template Optimization

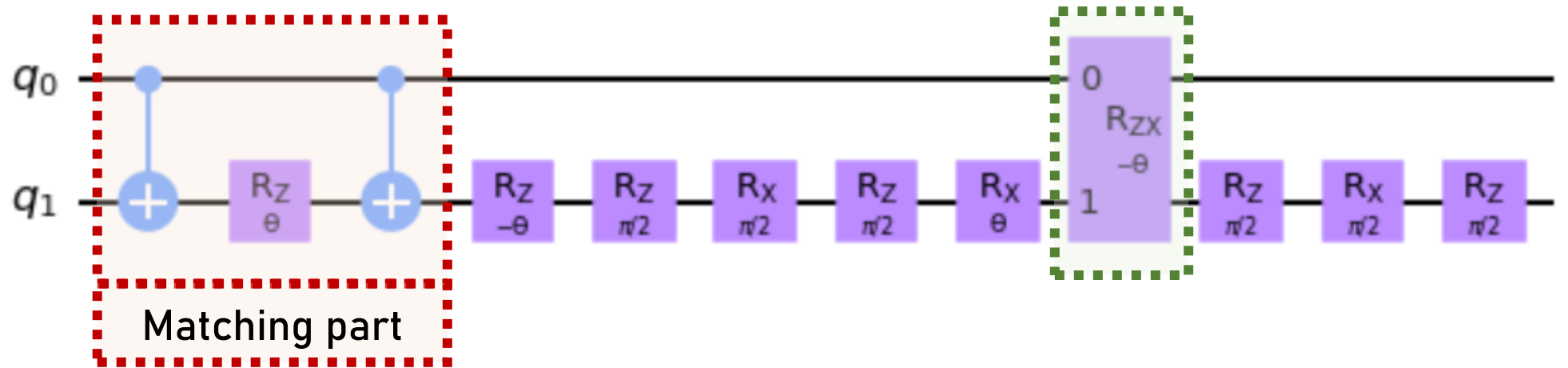


Bug

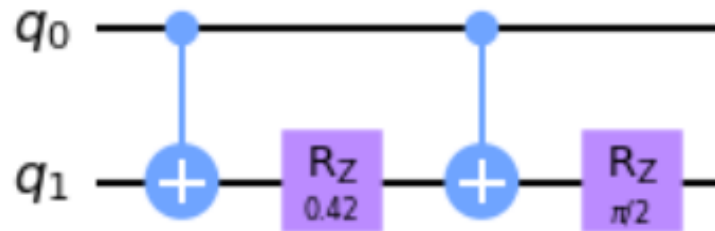
Input
Circuit :



Template 3 :



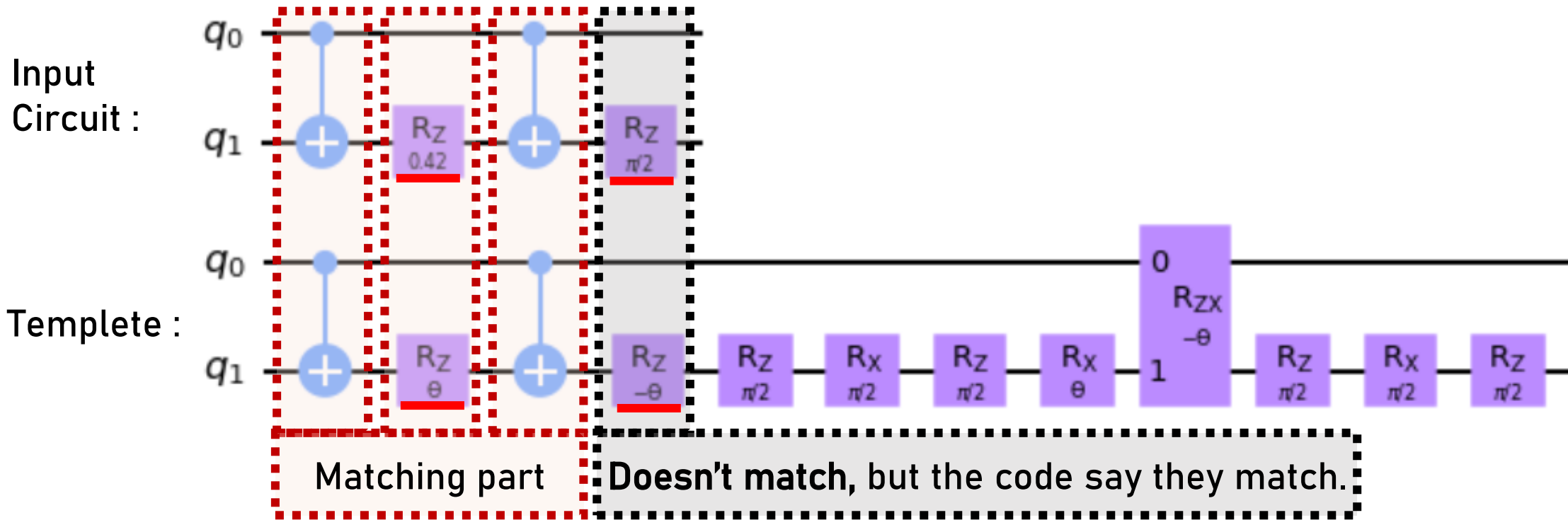
Output
Circuit :



A bug is happening

(Issue : [Qiskit/qiskit-terra#6974](https://github.com/Qiskit/qiskit-terra/issues/6974))

Error Analysis & Debugging



- **Cause of Error :**

- ‘TempleteOptimization’ doesn’t consider parameters of gates while finding list of matching part

- **Debugging Direction :**

- compare parameters of gates while finding list of matching parts.