

start ::= qreg(n)

qreg(n) ::= creg(n)

for each i in qreg(n):

qubit\_i ::= 1\_q\_op | 2\_q\_op | 3\_q\_op | general\_op

1\_q\_op ::= HGATE | IGATE | PHASEGATE | RXGATE | RYGATE | RZGATE | SGATE |  
SDGGATE | SXGATE | SXDGGATE | TGATE | TDGGATE | UGATE | U1GATE | U2GATE |  
XGATE | YGATE | ZGATE | NOGATE

2\_q\_op ::= CHGATE | CPHASEGATE | CRXGATE | CRYGATE | CRZGATE | CSGATE |  
CSDGGATE | CSXGATE | CUGATE | CXGATE | CYGATE | CZGATE | DCXGATE |  
ISWAPGATE | RXXGATE | RYYGATE | RZZGATE | SWAPGATE

3\_q\_op ::= CCXGATE | CCZGATE | CSWAPGATE

4\_q\_op ::= C3XGATE | RCCCXGATE

general\_op ::= diagonal | permutation | ...

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\*Validity determined by OpenQASM 2.0 intermediary for ZX-Calculus application

Unsupported operations:

- RGATE
- ECRGATE
- RYYGATE
- RZXGATE
- XXMinusYYGate
- XXPlusYYGate
- C3SXGate
- RCCXGate
- C4XGate

Unapplicable operations:

- U3GATE was replaced by UGATE
- CU1GATE was replaced by CPHASEGATE
- CU3GATE was replaced by CUGATE