QIn: Enabling Formal Methods to Deal with Quantum Circuits

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Benefits:

• Fully automatic

• Integrated analysis approach for host language and quantum circuits

• Flexible: Any analysis tool for the host language can be applied

Generate equivalent Java Program

• Represent state as arrays of floats

• Measurements deterministic: use most likely outcome

• State transitions: spelled out matrix multiplications

Apply analysis tools

• Use different tools on the same translation

• Different methodologies e.g. Tests vs. Verification vs. Bugfinding supported

Analysis tools

JUnit
JBMС

JBMC