

Title: Technology Dependent Quantum Logic Synthesis and
Compilation

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Abstract: Much research has been dedicated to developing reversible logic for use in quantum circuitry. The final products of these synthesis procedures, however, are often technology independent implementations of algorithms that are not specific to a target technology. In this work, a synthesis and compilation tool that maps technology independent forms of quantum circuitry to a QASM description intended for a physical implementation is discussed. This tool produces quantum circuits, or programs, that accommodate to the design constraints that characterize a specific technology. The IBM Q platform is the example target technology used in this study.