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**Progress towards a microwave-based high-fidelity Toffoli gate with superconducting qubits** CHAD RIGETTI, JERRY CHOW, ANTONIO CORCOLES, JIM ROZEN, GEORGE KEEFE, MARY BETH ROTHWELL, JACK ROHRS, MARK BORSTEMANN, DAVID DIVINCENZO, MARK KETCHEN, MATTHIAS STEFFEN, IBM Research — We describe recent progress at IBM towards a microwave-based implementation of the Toffoli gate using three capacitively shunted flux qubits dispersively coupled to a resonator. We discuss the device architecture and the microwave protocol, along with expected limits to gate fidelity and scaling.

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