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Improving measurement protocols for fast readout and high fidelity in a multi-qubit device JOSE CHAVEZ-GARCIA, ANTONIO CORCOLES, NATASJA JOVANOVIĆ, NICHOLAS BRONN, SCOTT LEKUCH, KEN INOUE, MARKUS BRINK, BALEEGH ABDO, JERRY CHOW, JAY GAMBETTA, IBM T.J. Watson Research Center — Fast qubit and cavity reset is an integral part of implementing the surface code and performing iterative algorithms. In combination with a Purcell filter and a Josephson Parametric Converter, we optimize cavity parameters and electronics for fast readout and fidelity. With this ability, we present some demonstrations of multi-qubit quantum information processing architectures.

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