

Abstract Submitted  
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**Xmons: Transmon qubits for a scalable architecture** RAMI BARENDS, J. KELLY, D. SANK, J. BOCHMANN, B. CAMPBELL, Y. CHEN, B. CHIARO, E. JEFFREY, M. MARIANTONI, A. MEGRANT, J. MUTUS, C. NEILL, P. O'MALLEY, S. OHYA, P. ROUSHAN, A. VAINSENER, J. WENNER, T. WHITE, A.N. CLELAND, J.M. MARTINIS, UC Santa Barbara — We have developed a new type of transmon qubit, the Xmon, which shows long coherence, allows for straightforward coupling to multiple elements, and has a low parasitic coupling. The Xmon is UCSB's building block for a superconducting multiqubit processor. The Xmon easily couples to four elements and is dispersively read out, making it compatible for use in a surface code quantum processor. At present, we are experimentally testing multiqubit chips for demonstrating single and two qubit state preparation and gates with high fidelity.

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