

Abstract Submitted
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3D integration of superconducting qubits with bump bonds: Part 2 JULIAN KELLY, J. MUTUS, E. LUCERO, Google, Santa Barbara, B. FOXEN, UC Santa Barbara, R. GRAFF, P. KLIMOV, Google, Santa Barbara, Z. CHEN, B. CHIARO, A. DUNSWORTH, C. NEILL, C. QUINTANA, J. WENNER, UC Santa Barbara, JOHN. M. MARTINIS, Google, Santa Barbara UC Santa Barbara, GOOGLE QUANTUM HARDWARE TEAM TEAM — Planar superconducting qubits have recently made great strides in coherence and control, securing them as a contender for practical computing applications. However, single-layer geometries restrict the routing of wiring elements used for control and readout, hampering the development of complex architectures with high connectivity. Here, we demonstrate the successful integration of superconducting Xmon transmon qubits with superconducting bump bonds in a flip-chip architecture, and report on development of the necessary integration technology for scalable two-dimensional arrays of qubits.

Julian Kelly
Google, Santa Barbara

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