

Abstract Submitted
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Multi-mode superconducting circuit implementing all-to-all longitudinal coupling in a five qubit system MADHAVI CHAND, SUMAN KUNDU, TANAY ROY, SUMERU HAZRA, MEGHAN P. PATANKAR, R. VIJAY, Tata Institute of Fundamental Research — Recently, we introduced a new multi-mode quantum device called the “trimon” to implement three transmon-like qubits with pairwise longitudinal coupling. Here, we extend that idea to a superconducting circuit with five normal modes and show the experimental characterization of the resulting five qubits. We will present data confirming their transmon-like properties and viable coherence times. We will also characterize the coupling of these modes to one another and to their environment. We will discuss the possibility of constructing circuits with larger number of normal modes and a general formalism to theoretically analyse such systems. We will conclude by discussing potential applications in quantum information processing. Reference: arXiv: 1610:07915.

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