

Abstract Submitted
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Novel qubit test platform FABIO DA SILVA, University of Colorado Denver, DALE LI, NIST Boulder, DANIELLE BRAJE, MIT Lincoln Laboratories, RAYMOND SIMMONDS, NIST Boulder, THOMAS OHKI, BBN Technologies, DAVID PAPPAS, NIST Boulder — Current research linking superconducting qubit coherence to materials composition motivates the exploration of novel media for qubit circuit fabrication. However, in an integrated measurement structure, any changes in the qubit materials invariably affect the design, processing, operation, and yield of the supporting measurement circuitry. We address this problem by splitting the qubit circuit, namely, the qubit loop and the excitation/ measurement circuitry. We achieve this by fabricating the qubit on a separate chip, flipping it over, and precision aligning it to the measurement circuitry chip. This allows us to use any material and processing for the qubit. We show that the excitation/measurement chip works robustly (it can be used multiple times with different qubit chips), is reliable (typical qubit measurements were successfully performed), and flexible (allows for the control of different coupling strengths to the qubit). [This work was supported by IARPA and other grants by the U.S. Government.]

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