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**A Josephson Junction based SPDT switch** HELIN ZHANG, NATHAN EARNEST, YAO LU, RUICHAO MA, SRIVATSAN CHAKRAM, DAVID SCHUSTER, Univ of Chicago — RF microwave switches are useful tools in cryogenic experiments, allowing for multiple experiments to be connected to a single cryogenic measurement chain. However, these switches dissipate a substantial amount of heat, preventing fast switching. Josephson junction (JJ) are a promising avenue for realizing millikelvin microwave switching[1,2]. We present a JJ based single-pole-double throw (SPDT) switch that has fast switching time, no heat dissipation, large on/off contrast, and works over a wide bandwidth. The switch can be used for real-time switching between experiments, routing single photons, or even generating entanglement. We will describe the design of the switch and present experimental characterization of its performance.

Benjamin J. Chapman, Bradley A. Moores, Eric I. Rosenthal, Joseph Kerckho, K. W. Lehnert *General purpose multiplexing device for cryogenic microwave systems*, Appl. Phys. Lett. 108, 222602 (2016)

O. Naaman, J. A. Strong, D. G. Ferguson, J. Egan, N. Bailey, R. T. Hinkey *Josephson junction microwave modulators for qubit control*, arXiv:1610.07987v1

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