

Abstract Submitted
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Quantum walk on a circle in phase space via superconducting circuit quantum electrodynamics¹ BARRY SANDERS, PENG XUE, University of Calgary, ALEXANDRE BLAIS, KEVIN LALUMIERE, University of Sherbrooke — We show how a quantum walk, with a single walker and controllable decoherence, can be implemented for the first time in a quantum quincunx created via superconducting circuit quantum electrodynamics (QED). Two resonators are employed to provide simultaneously fast readout and controllable decoherence over a wide range of parameters. The Hadamard coin flip is achieved by directly driving the cavity, with the result that the walker jumps between circles in phase space but still exhibits quantum walk behavior over 15 steps.

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