

Abstract Submitted  
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**Readout** **of**  
**superconducting qubits with a Josephson photomultiplier<sup>1</sup>** CALEB HOW-  
INGTON, MATTHEW HUTCHINGS, Syracuse University, GUILHEM RIBEILL,  
ROBERT MCDERMOTT, University of Wisconsin, Madison, B.L.T. PLOURDE,  
Syracuse University — A Josephson photomultiplier (JPM) formed from a current-  
biased Josephson junction is the centerpiece of an alternative method for measuring  
the state of a superconducting qubit in a microwave cavity compared to conventional  
linear amplification followed by heterodyne readout. This approach, which involves  
mapping the qubit state onto the cavity photon occupation followed by photon de-  
tection with the JPM, reduces the requirements on bulky microwave hardware and  
amplifiers in the cryostat. We will discuss the implementation of superconducting  
microwave cavities and transmon qubits tailored for this readout technique. Fur-  
thermore, we will present steps towards the readout of multiple qubits in a common  
cavity with the JPM-based protocol.

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Caleb Howington  
Syracuse Univ

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