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Superconducting parametric amplifiers for detector array readout

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Superconducting parametric amplifiers based on nonlinear kinetic inductance are well suited for use as readout amplifiers for low temperature detector technologies involving frequency domain multiplexing at GHz frequencies. These paramps can have very wide instantaneous bandwidth and large enough dynamic range to handle thousands of signals at typical levels for superconducting detectors. The measured noise is very close to the quantum limit and is thus a factor of several lower than the best transistor amplifiers. We present progress toward realizing superconducting paramps with well behaved gain characteristics and low noise and discuss examples of the use of these amplifiers for detector array readout applications.

Less than 5 years of experience since completion of Ph.D

N

Student (Ph.D., M.Sc. or B.Sc.)

N

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