

Abstract Submitted
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Microstrip SQUID amplifiers for quantum information science M.P. DEFEO, B.L.T. PLOURDE, Syracuse University — Recent progress in SQUID amplifiers suggests that these devices might approach quantum-limited sensitivity in the microwave range, thus making them a viable option for measurement of superconducting quantum systems. In the microstrip SQUID amplifier configuration, gains of around 20dB are possible at frequencies of several hundred MHz, and the gain is limited by the maximum voltage modulation available from the SQUID. One route for increasing the voltage modulation involves using larger resistive shunts, however maintaining non-hysteretic device operation requires smaller junction capacitances than is possible with conventional photolithographically patterned junctions. Operating at higher frequencies requires a shorter input coil which reduces mutual inductance between the coil and washer and therefore gain. We have fabricated microstrip SQUID amplifiers using submicron Al-AlO_x-Al junctions and large shunts. The input coil and SQUID washer are optimized for producing high gain at frequencies in the gigahertz range. Recent measurements of gain and noise temperature will be discussed as well as demonstrations of these devices as a first stage of amplification for a superconducting system

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