Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

RF Amplifiers Based on DC SQUID for 3-4 GHz Band[1] G.V. PROKOPENKO, K.D. OSBORN, National Inst. of Standards and Tech. - Boulder, S.V. SHITOV, Inst. of Radio Engineering and Electronics, Moscow, Russia. Natl. Astronomical Observatory of Japan, Mitaka, Japan., M. MAEZAWA, Natl. Inst. of Advanced Industrial Science and Technology, Tsukuba. , A.J. SIROIS, K. CICAK, R.W. SIMMONDS, National Inst. of Standards and Tech. - Boulder — DC SQUID based RF Amplifiers (SRFAs) are known to dissipate very little power and can be integrated on-chip with existing micro-fabricated circuits for low-noise, low temperature measurements. The SRFA chip has 4 independent channels, which amplify at different signal frequencies and have integrated output filters, which prevent the leakage of high frequency resonances associated with the Josephson frequency. A compact two-layer input signal coil is integrated with the washer of the SQUID (L=20 pH) and planar capacitors for tuned frequency and impedance matching. The input reflected power is further reduced using proven balanced configuration on the SQUID. The shunt resistors are made from a multilayer film Ti(2 nm)/Pd(55 nm)/Ti(2 nm), which allow the SRFA to operate down to 0.4 K. Low-noise SRFAs have been tested with an operating frequency range of 3-4 GHz.

[1]This work was supported by ARDA through Grant No. MOD717304

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Date submitted: 30 Nov 2005 Electronic form version 1.4