

Linear Bi-SQUID Arrays for Electrically Small Antennas

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Abstract - Recently we proposed so-called bi-SQUID based on a 3-junction SQUID circuit capable of providing highly linear voltage response. In this report, we present the experimental evaluation of series arrays of 20 and 128 bi-SQUIDs fabricated with a 4.5 kA/cm² Nb process as well as a prototype of an active electrically small antenna based on series array of 12 bi-SQUIDs. Both the origins of imperfections of the observed response linearity and the possible ways of the linearity improvement are discussed. Index Terms—Josephson junctions, SQUID, bi-SQUID, SQIF, voltage response, high linearity, electrically small antenna.

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