Design and Experimental Evaluation of SQIF Arrays with Linear Voltage Response

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Abstract - Differential circuits consisting of two series arrays of 10-junction parallel SQIFs were developed, designed and fabricated with 4.5 kA/cm^2 Nb HYPRES process. The differential voltage response evolution with applied magnetic field providing opposite frustration of the serial arrays was analyzed in detail. Linear differential response with amplitude as high as 22 mV was observed for the serial arrays of 108 parallel SQIFs. It was shown that the response linearity is kept within some range of the applied frustrating magnetic field.

Index Terms - Josephson junctions, SQIF, differential circuit, voltage response, high linearity.

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