

ABSTRACT

Title : Fabrication and characterization of high- T_C optional SQUID array

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In this work, the optional series array of Superconducting Quantum Interference Devices (SQUIDs) made from high- T_C superconducting $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ (YBCO) films grown on SrTiO_3 substrates was fabricated. The optional series array has 95 elements, of each the voltage-current (V - I) and voltage-field (V - B) curves of series arrays were characterized by using the measurement system consisting of the homemade 93-switching-channel cryostat, the measurement electronics, and the self-developed data acquisition software. The measurement results showed that although the critical-current spread is large for the SQUIDs fabricated on a chip, the optional design makes it possible to find out the elements with a similar critical current to form the series array. The voltage and normal state resistance of the formed series array was found to be the sum of individual elements. The optional-element design can improve the fabrication yield of series SQUID array.