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## HTSC Josephson junctions and dc SQUIDs on SrTiO<sub>3</sub> bicrystal substrates grown by floating zone method

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The new approach to the fabrication SrTiO<sub>3</sub> bicrystal substrates based on the technology of growing by floating zone method natural SrTiO<sub>3</sub> bicrystals with misorientation angles 24° and 37° has been developed. Thin film YBCO Josephson junctions and dc SQUIDs on SrTiO<sub>3</sub> bicrystal substrates were fabricated and studied at T=77 K. The critical current density  $j_c$  and  $I_c R_n$  product for the junctions with misorientation angle  $\alpha = 24^\circ$  was about  $2 \times 10^4$  A/cm<sup>2</sup> and 190-260  $\mu$ V respectively, while for  $\alpha = 37^\circ$  it was found that  $j_c \approx 2 \times 10^3$  A/cm<sup>2</sup> and  $I_c R_n \approx 90$ -120  $\mu$ V. dc SQUIDs were made with typical inductances 20-80 pH, critical currents of 20-150  $\mu$ A and resulting voltage modulation 10-40  $\mu$ V. Noise measurements performed at 77 K revealed low 1/f noise with cut-off frequency about 10 Hz.

## The nature of stabilization of superconductivity by phase-slip centers in a narrow channel

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The Ticecks hypothesis for the effect of Josephson radiation of phase slip centers on critical current in a superconducting channel is tested. It is found that the resistive states of superconducting channels with electromagnetic field applied are more stable to current than without any field. This phenomena is observed beginning with irradiation frequencies of the order of the inverse charge imbalance relaxation time.