Noise Properties of Directly-coupled Single-layer High-T_c 2nd-order SQUID Gradiometer

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We have fabricated planar-type single-layer second-order high-Tc SQUID gradiometer. The device consisted of symmetrically designed three parallel-connected square pickup loops that were directly coupled to the step-edge junction SQUID. The SQUID gradiometer was designed to effectively cancel the uniform magnetic field that was generated by a 250 mm × 25 mm square coil wound on a grooved garolite tube. $YBa_2Cu_3O_7$ thin film was deposited on $SrTiO_3$ substrate by using PLD system and the device was patterned by photolithography with ion milling technique. The noise of the SQUID was measured inside and outside a magnetic shielded room. Also, we have fabricated the bicrystal junction SQUID gradiometer and measured the noise property. Details of the results will be discussed.

keywords : 2nd-order SQUID gradiometer, YBCO