Fabrication and evaluation of the superconducting d-dot device manufactured with the $Y_{0.9}La_{0.1}Ba_{1.9}Cu_3O_y$ thin film by a DC Sputtering method

MASAHIDE NISHIYAMA, Osaka Pref. Univ. & JST-CREST, HIROAKI SATO, Osaka Pref. Univ., MASUO YAMAMOTO, Osaka Pref. Univ. & JST-CREST, SEIJI ADACHI, HIROHORI WAKANA, KEICHI TANABE, SRL-ISTEC, TAKAKAZU ISHIDA, Osaka Pref. Univ. & JST-CREST — The d-dot device is composed of a square shaped d-wave superconductor buried into a s-wave superconductor thin film. The internal phase difference at neighboring square side junction causes a half-quantum-flux at each corner of square of d-wave superconductor. We have developed the method for preparing the d-dot with YBCO thin film by PLD method previously. In the present work, we employed a DC sputtered $Y_{0.9}La_{0.1}Ba_{1.9}Cu_3O_y$ thin film with ramp edge, which is a well-established standard process for fabricating high-$T_c$ single flux quantum (SFQ) device of SRL-ISTEC. Evaluations of this d-dot device are performed by I-V and R-T measurements. The magnetic flux structure has been investigated by a scanning SQUID microscope.