Global COE program “Electronic Devices Innovation” Global Seminar

Detection of nuclear magnetic resonance in the microtesla range using a high Tc dc-SQUID

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Speaker

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Abstract

We have carried out nuclear magnetic resonance experiments in microtesla range. The free induction signal was recorded using a high Tc dc-SQUID. The measurement was performed in a home-made shielding room. Resonance spectra of ^{1}H from a sample of 15ml tap water were obtained in the field range from 7-70μT, corresponding to resonance frequency 300-3kHz. The signal to noise ratio in a single-shot measurement is around 4, which would be increased to about 40 after 100 times averaging. The effect of residual magnetic field in the shielding room, pre-polarization time and data acquisition time was investigated.

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