

Abstract Submitted
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Construction of Tunnel Diode Oscillator for AC Impedance Measurement J.H. SHIN, E. KIM, KAIST — We construct a tunnel diode oscillator (TDO) to study electromagnetic response of a superconducting thin film. Highly sensitive tunnel diode oscillators allow us to detect extremely small changes in electromagnetic properties such as dielectric constant [1], ac magnetic susceptibility [2] and magnetoresistance [3]. A tunnel diode oscillator is a self-resonant oscillator of which resonance frequency is primarily determined by capacitance and inductance of a resonator. Amplitude of the signal depends on the quality factor of the resonator. The change in the impedance of the sample electromagnetic coupled to one of inductors in the resonator alters impedance of the inductor, and leads to the shift in the resonance frequency and the change of the amplitude.

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