

Abstract Submitted
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Development of a Tunnel Diode Resonator technique for magnetic measurements in Electrostatic Levitation chamber¹ N.S. SPYRISON, P. PROMMAPAN, H. KIM, J. MALONEY, G.E. RUSTAN, A. KREYSSIG, A.I. GOLDMAN, R. PROZOROV, Department of Physics and Astronomy, ISU, Ames, IA 50011, USA — The incorporation of the Tunnel Diode Resonator (TDR) technique into an ElectroStatic Levitation (ESL) apparatus was explored. The TDR technique is known to operate and behave well at low temperatures with careful attention to coil-sample positioning in a dark, shielded environment. With these specifications a frequency resolution of 10^{-9} in a few seconds counting time can be achieved.² Complications arise when this technique is applied in the ESL chamber where a sample of molten metal is levitating less than 10 mm from the coil in a large electrostatic field. We have tested a variety of coils unconventional to TDR; including Helmholtz pairs and Archimedean spiral coils.

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²C. V. Degrift, “Tunnel diode oscillator for 0.001 ppm measurements at low temperatures,” Rev. Sci. Instrum. **46**, 599 (1975).

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