

Abstract Submitted
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Electron spin resonance measurements using on-chip cavities at low temperature¹ MATT MARTENS, KYLE SERNIK, Florida State University, SYLVAIN BERTAINA, IM2NP-CNRS (UMR 7334) and Universite Aix-Marseille, IRINEL CHIORESCU, Florida State University, GROUP OF PROFESSOR IRINEL CHIORESCU TEAM — We describe an Electron Spin Resonance (ESR) measurement technique utilizing a balanced bridge, similar to a “magic-T,” in conjunction with a lock-in detector. The setup uses a microstrip line, since this type of approach is highly sensitive and has been gaining more and more interest as of late. We describe the functioning principle and demonstrate that the setup has a high sensitivity, with a low noise baseline. ESR measurements were performed on a $s=1/2$ DPPH sample at room temperature. Electronic spin excitation of the sample was achieved through use of an “omega” shaped microstrip cavity with resonant frequency of 17.4 GHz. Signal detection was done with a homemade heterodyne detector with and without the magic-T bridge and lock-in detector. For comparison, direct measurements were performed using a fast digital acquisition card.

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