

Abstract Submitted  
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**Broadband Coupling of Microwave Signals to Thin Conductors in Cryogenic Systems**<sup>1</sup> SCOTT DIETRICH, WILLIAM MAYER, JESSE KANTER, Graduate Center, City University of New York, New York 10016, USA, SERGEY VITKALOV, CUNY-CCNY — Three techniques are used to determine the microwave (MW) coupling through semi-rigid coaxial lines to samples installed on stages at the bottom of long probes ( $\approx 1m$  or longer) placed in a liquid Helium cryostat. Samples are mounted between the MW delivery line and ground and are placed in parallel with a  $50\Omega$  impedance-matching terminal resistor. One method to determine the delivery of MW signal uses bolometric measurements of the MW power dissipated at the terminal resistor. Another method employs reflection measurements to obtain the reflection coefficient  $\Gamma$  of the sample stage, which is sensitive to variations in sample resistance. A third method initially uses the sample itself as a detector of a small, amplitude-modulated MW signal; the resulting variations of sample resistance are then applied as a calibration factor. Each method appears to reliably measure the actual MW signal delivered to the sample. The presented studies focus on two different electronic systems: *GaAs* quantum wells and *La<sub>(2-x)Sr<sub>x</sub>CuO</sub>* superconducting films.

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