

Abstract Submitted
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Determination of the Transition Temperature of a Superconducting Nanowire through its kinetic inductance by coupling to 3D Microwave Cavity Resonator JASEUNG KU, ALEXEY BEZRYADIN, Univ of Illinois at Urbana-Champaign — A thin superconducting nanowire exhibits a broad resistive transition, due to the thermal fluctuations of the superconductor order parameter, namely Little's phase slips. The transition temperature, T_c , extracted from resistive measurements vary depending on the model used, e.g., the LAMH model versus the Little model. We have demonstrated a new method to determine the transition temperature, utilizing a 3D cavity resonator and the property of the wire kinetic inductance to saturate at T_c . A MoGe nanowire was placed in the microwave cavity and the transmission characteristics were probed as a function of temperature and microwave power. The transition temperatures obtained by this method were compared with DC transport data and confirmed that Little's model provides more accurate predictions for the T_c compared to LAMH.

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