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**RC Transmission Line Characterization of Organic Thin Film Transistors** DANIEL LENSKI, ADRIAN SOUTHARD, MICHAEL S. FUHRER, Department of Physics and Center for Superconductivity Research, University of Maryland, College Park, MD 20742, USA — The transport properties of organic semiconductors are typically measured in a field-effect transistor geometry with DC gate and drain bias. We have developed a novel method of characterizing organic thin films using a 2- or 3-contact transmission line configuration, in which an AC voltage is applied to the thin film and the phase and magnitude of the current are measured. This method can determine both sheet resistance and contact resistance. Additionally, this method may reveal inherent frequency-dependent transport properties of organic semiconductors, which may be significant for future applications of these materials. We present the results of transmission line measurements of pentacene thin films, and compare them to transport data obtained from FET characterization. This work has been supported by the Laboratory for Physical Sciences.

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