

Abstract Submitted  
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**Magneto-transport Measurements of Electrostatically Tuned Disordered In<sub>2</sub>O<sub>3</sub> Films near the Superconductor-Insulator Transition<sup>1</sup>**

YEONBAE LEE, University of Minnesota, AVIAD FRYDMAN, Bar Ilan University, Israel, ALLEN GOLDMAN, University of Minnesota — We have used an electric double layer transistor configuration employing an ionic liquid to modify the carrier density and resultant properties of disordered In<sub>2</sub>O<sub>3</sub> films near the superconductor-insulator (SI) transition. By carrier density modulation up to  $7 \times 10^{14}$  carriers-cm<sup>-2</sup>, we have been able to traverse the SI transition as well as significantly alter the strength and location of the large magnetoresistance peak found in the insulating regime. We have also been able to correlate the magnetic length associated with the largest magnetoresistance peak with a length scale for granularity of the film obtained from a spectral analysis of surface profile data obtained using atomic force microscopy. The latter suggests that film morphology may play an important role in the peak.

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