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**Scanning Tunneling Potentiometry for Nanoscale Transport Studies** MICHAEL ROZLER, M.R. BEASLEY, Stanford University — We have developed a scanning tunneling potentiometry (STP) system for study of electrical transport on nanometer length scales. A novel biasing scheme is used to achieve electrochemical potential resolution at the theoretical limits of this measurement - the thermal noise of the tunnel junction. We apply this technique to several materials in order to explore the capabilities of the instrument. These include thin films of Au, the "bad metal" $SrRuO_3$ and amorphous indium oxide. Homogeneity of transport in these systems is discussed. Work supported initially by the AFOSR and currently by the NSF.

Michael Rozler
Stanford University

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