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**Transport and Noise Properties of High Temperature Superconductor Nanostructures** D.S. CAPLAN, X. ZHAI, J.N. ECKSTEIN, D.J. VAN HARLINGEN, University of Illinois at Urbana-Champaign — The study of transport and noise properties of high-$T_c$ superconductor nanostructures provides a sensitive probe of their local electronic structure and may give insight into the proposed mechanisms for the superconductivity and the nature of the anomalous normal phases. We discuss a novel technique for fabricating nanostructures based on the growth of cuprate films on substrates pre-patterned by Focused Ion Beam etching. We report measurements in underdoped YBCO and BSCCO nanostructures fabricated by this technique that are designed to understand anomalous switching noise observed in the pseudogap phase above $T_c$. Our goal is to test if these signal show the existence of dynamical domains characterized by inhomogeneous conductivity or by anisotropic charge stripes.

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