Abstract Submitted
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Out-of-Equilibrium Dynamics of a Strongly Correlated Electron System in Two Dimensions[1] DRAGANA POPOVIĆ, National High Magnetic Field Laboratory (NHMFL) and Department of Physics, Florida State University (FSU), JAN JAROSZYŃSKI, NHMFL, FSU — Slow, nonexponential relaxations of conductivity $\sigma(t)$ have been studied in a strongly disordered two-dimensional electron system (2DES) in Si MOSFETs in the vicinity of the metal-insulator transition (MIT). The 2DES is excited far from equilibrium by a rapid change of carrier density n_s at low temperatures T. The dramatic and precise dependence of $\sigma(t)$ on n_s and T shows that (a) the equilibration time diverges exponentially as $T \to 0$, suggesting a glass transition at $T_g = 0$, and (b) the Coulomb interactions between 2D electrons play a dominant role in the observed out-of-equilibrium dynamics [1]. The scaling of $\sigma(t, T)$ is also consistent with $T_g = 0$. These results support conclusions based on earlier noise measurements [2] that, in a 2DES in Si, the glass transition occurs in the metallic phase as a precursor to the MIT.

[1] J. Jaroszyński and D. Popović, Phys. Rev. Lett. **96**, 037403 (2006).
[2] S. Bogdanovich and D. Popović, Phys. Rev. Lett. **88**, 236401 (2002); J. Jaroszyński, D. Popović, and T. M. Klapwijk, Phys. Rev. Lett. **92**, 226403 (2004).

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