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**From Coulomb Fluid to Self-Generated Charge Glass due to Long-Range Interactions and Geometric Frustration** SAMIYEH MAHMOUDIAN, National High Magnetic Field Laboratory and Florida State University, LOUK RADEMAKER, Kavli Institute for Theoretical Physics, University of California Santa Barbara, ARNAUD RALKO, SIMONE FRATINI, Institut Néel-CNRS and Université Joseph Fourier, VLADIMIR DOBROSAVLJEVIĆ, National High Magnetic Field Laboratory and Florida State University — We show that introducing long-range Coulomb interactions immediately lifts the massive ground state degeneracy induced by geometric frustration for electrons on quarter-filled triangular lattices in the semi-classical regime. This produces not only a stripe-ordered (global) crystalline ground state, but also very many low-lying metastable states with amorphous "stripe-glass" spatial structure. At intermediate temperatures, such a frustrated Coulomb liquid shows remarkably slow (viscous) dynamics, with very long relaxation times growing in Arrhenius fashion upon cooling, as typical of "strong glass formers." On shorter time scales, the system falls out of equilibrium and displays the "aging" phenomena characteristic of supercooled liquids around the glass transition. Our results, which are obtained using mean field theory, classical Monte Carlo simulations and exact diagonalization, show remarkable similarity with the recent observations of charge-glass behavior in ultra-clean triangular organic materials $\theta$-RbZn and $\theta$-CsZn.[1]

[1]F. Kagawa *et al.*, Nat. Phys. **9**, 419-422, (2013)

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