Abstract Submitted
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Superconductivity in the ordered limit[1] VLADIMIR CVETKOVIC, Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD 21218 — A novel mechanism for superconductivity is proposed based on the duality in the quantum elasticity. Using a charge crystal as a starting point, these superconductors can be viewed as liquid crystal phases of charge in sense that the broken translational symmetries are restored by the Bose condensation of dislocation defects. Although the crystalline correlations are lost at long distance, the order (and the shear rigidity of the solid) persists at scales large comparable to the lattice spacing. This leads to a host of unconventional properties predicted for this 'ordered' superconductor: Meissner effect with oscillating currents, overscreening of Coulomb force, long-range topological order, and the presence of a new excitation in the dynamical electric response. The origin of this excitation lies in the short range shear rigidity, i.e., transient order of a solid. Therefore, an experiment designed to measure the presence of the predicted excitations in the cuprate superconductors could be used to unambiguously (dis)prove the existence of fluctuating stripes.

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