

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Spinless charges on the triangular lattices in the strong repulsion limit: possibility of a new charge ordered liquid NOBUO FURUKAWA, CHISA HOTTA, Dept. Physics, Aoyama Gakuin Univ. — We propose a new type of charge ordered liquid state in the spinless fermion system on a triangular lattice under strong inter-site Coulomb interactions, V . In the absence of fermion hoppings, the ground state is disordered due to geometrical frustration. Introduction of hopping terms lifts the degeneracy and drives the system to a metallic state with possible partial charge orders, which we call a “pinball liquid”. There, a gapless charge liquid component moves around a possible long range ordered Wigner crystal solid component. This liquid state is dominant over wide range of filling, $n = 1/3 \sim 2/3$. When an anisotropy in V exceeds its critical value at half-filling $n = 1/2$, an metal-insulator transition accompanied by another charge order with a different periodicity is induced. Relevance to the organic conductors θ -ET₂X which show novel nonlinear transport properties is discussed.

REFERENCES:

cond-mat/0605045, cond-mat/0607181, cond-mat/0607717.

Nobuo Furukawa
Dept. Physics, Aoyama Gakuin Univ.

Date submitted: 18 Nov 2006

Electronic form version 1.4