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Charge dynamics in frustrated charge ordered system with strong electron correlation MAKOTO NAKA, SUMIO ISHIHARA, Department of Physics, Tohoku University — Electronic ferroelectricity is known as phenomena where the electric polarization is caused by the electronic charge order without inversion symmetry. This is seen in some transition metal oxides, e.g. LuFe_2O_4 , and charge transfer organic salts. It is suggested from the theoretical works [1,2] that large charge fluctuation and frustration are responsible for the electric polarization. This charge fluctuation is expected to govern dynamical properties and external field effects. Actually, the relaxer like large dielectric fluctuation in some electronic ferroelectricity is observed. Motivated by these experimental and theoretical results, we study charge dynamics in charge ordered fermion system on the layered triangular lattice. We adopt the V-t model where the inter-site electron transfers and the inter-site Coulomb interactions are taken into account. We analyze this model by utilizing the exact diagonalization method and focus on effects of frustration in the charge dynamics. In the 3-fold charge ordered phase associated with the electric polarization, the optical conductivity shows multiple-peak structure in a wide energy range. In the non-polar 2-fold charge ordered phase, a precursor of the 3fold charge order appears in the low energy charge fluctuation around the phase boundary. [1] A. Nagano et al. Phys. Rev. Lett. **99** 217202. [2] M. Naka et al. Phys. Rev. B. **77** 224441.

Makoto Naka
Department of Physics, Tohoku University

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