

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Superconductivity and polar charge fluctuation in low dimensional organic salts SUMIO ISHIHARA, AKIHIKO SEKINE, JOJI NASU, Department of Physics, Tohoku University — Organic conductors are one of the families in which exotic superconductivities have been examined intensively. Recently, dielectric anomaly is reported in one of the κ -type BEDT-TTF salts, κ -(BEDT-TTF)₂Cu₂(CN)₃. A dielectric anomaly is observed in the temperature dependence of the dielectric constant around 30K. These experimental results trigger reinvestigations of the electronic structure in the dimer-Mott insulating systems, and a mechanism of the superconductivity. Superconductivity and polar charge fluctuation are studied in an organic conductor where the dimer-molecule degree of freedom exists. The two-types of the extended Hubbard models, where the intra- and inter-dimer Coulomb interactions are taken into account, are analyzed by the random-phase approximation and the fluctuation-exchange approximation. The superconductivity appears in a vicinity of the charge-density wave (CDW) phase where the electronic distributions are polarized inside dimers. The extended s-wave type pairing is favored and is cooperative with the d_{xy}-type pairing due to the spin fluctuation. This superconductivity is compared with that realized near the CDW phase where the charge is not polarized inside dimers.

Sumio Ishihara
Department of Physics, Tohoku University

Date submitted: 08 Nov 2012

Electronic form version 1.4