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Title: **Mott transition in triangular-lattice organics - from spin liquid to superconductivity**

Mott transition is a metal-insulator transition induced by electron-electron Coulomb interaction and essentially a phenomenon in the charge degrees of freedom. In the vicinity of the transition, however, novel states with the spin degrees of freedom involved are emergent. My presentation here is on the experimental study of correlated electrons in (anisotropic) triangular-lattice organic conductors, k-$(ET)_2X$, where the bandwidth and the Coulomb repulsive energy are comparable. The Mott insulator, k-$(ET)_2Cu_2(CN)_3$, which is a half-filled band system with nearly isotropic triangular lattice, shows no indication of magnetic ordering down to 30 mK. The spins are likely in a quantum liquid state. However, the nature of the spin liquid is controversial; the measurements of specific heat and NMR relaxation rate point to the gapless feature of elementary excitations, while thermal conductivity suggests the gapped excitations. It is noted that the Wilson ratio estimated from the low-temperature values of spin susceptibility and specific heat coefficient is 1-2, which implies that the spin objects follow the degenerate Fermi statistics irrespective of the insulating state.

In this workshop, I show other interesting properties such as a magnetic and thermodynamic anomaly around 5-6 K and its possible relationship to superconductivity appearing under pressure above 0.3 GPa, and the absence of pseudopgap in the metallic phase neighboring the spin liquid. In addition, I show the anomalous magnetic and transport properties of the doped triangular-lattice systems, k-$(ET)_4Hg_{3-d}X_8$ [X=Br, Cl].

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