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Theory of Quantum Matter unit

Seminar Announcement

Searching for novel compounds in the strongly correlated electron system

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Date : Tue 8th January
Time : 10:00 am - 11:00 am
Venue : Seminar Room C209, Center Building

Abstract:

The remarkable discovery of high-Tc superconductivity in copper oxides in 1986 and the following enthusiastic research on the strongly correlated electron system (SCES) have clearly exemplified the importance of finding new materials that would give a great impact on the progress of solid state chemistry and physics. Now related topics are spreading over not only superconductivity but also unusual metallic behavior near the metal-insulator boundary or insulating states with spins on specific lattices. I believe that for the next decade it will become more important to explore novel physics through searching for new materials.

Transition-metal oxides are one of the well-studied SCESs where the Coulomb interaction plays a critical role on their magnetic and electronic properties. Especially interesting is what is expected when electrons localized due to strong Coulomb repulsion start moving by changing the bandwidth or the number of carriers. One anticipates there dramatic phenomena governed by quantum fluctuations. On the other hand, once electrons are completely localized, the spin degree of freedom plays a role. The quantum spin system in various lattices based on triangle geometry has attracted many researchers, because magnetic frustration tends to suppress ordinary long-range order and may lead to an unusual spin liquid ground state.
In my talk, I will try to give an introduction to the SCES from materials point of view to the audience and would like to convince them how interesting it is.

For more information : Theory of Quantum Matter Unit :
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