Einladung zum Kolloquium

Ort: Universität zu Köln
II. Physikalisches Institut, Seminarraum 201

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Thema: The novel phase transitions of Pyroxene NaTiSi$_2$O$_6$,
Spinel Oxide MgTi$_2$O$_4$, Hollandite K$_2$V$_8$O$_{16}$,
Perovskite CaCrO$_3$, and a layer compound Na$_9$V$_{14}$O$_{35}$

I will present the novel phase transitions of some transition metal oxides. I have searched the material with the unusual physical properties for more than 10 years, for example superconducting behavior, metal-insulator transition, charge ordering, orbital ordering, spin gap behavior, and so on. About 10 years ago, we found a phase transition of NaV$_2$O$_5$. This material is very attractive. The phase transition is still discussed by many people.

Recently we have researched Ti$^{3+}$ compounds. In NaTiSi$_2$O$_6$ and MgTi$_2$O$_4$ we observed the phase transition newly. In these transitions, the orbital ordering maybe plays an important role. Last year we obtained the interesting materials K$_2$V$_8$O$_{16}$ and CaCrO$_3$ by high pressure synthesis. K$_2$V$_8$O$_{16}$ shows a metal-insulator transition. In CaCrO$_3$, we observed a magnetic transition accompanied by a structural change. Also this year I start to study the layer compound Na$_9$V$_{14}$O$_{35}$, again. Because it was reported that this compound shows the charge ordering transition last year.

Gez. Prof. M. Braden