

Seminar on Condensed Matter Theory

Group of Theoretical Physics at the Department of Condensed Matter Physics of Charles University has a pleasure to invite you to attend the seminar

**on 8 April 2021 at 13:00
as an online webinar**

Contact K. Carva (carva@karlov.mff.cuni.cz) for the online access information.



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From triangular lattice antiferromagnet to frustrated lattice of magnetic and electric dipoles

Frustrated magnetism attracts much attention due to the competition between various magnetic states including the quantum spin liquid state, a disordered magnetic state with quantum entanglement. I will first discuss the physics of triangular lattice antiferromagnets with strong spin-orbit coupling based on recent and ongoing studies on KCeS_2 . Then I will introduce our project on the study of frustrated lattices of both electric and magnetic dipoles. Concretely we plan the single crystal growth and characterization by thermodynamic and microscopic measurements of the members of a family of such compounds: the hexaaluminates $\text{LnMgAl}_{11}\text{O}_{19}$ (Ce, Pr, Nd, Sm, Eu, Gd) and $\text{EuAl}_{12}\text{O}_{19}$ and hexagallates $\text{LnMgGa}_{11}\text{O}_{19}$ (Ce, Pr) and $\text{EuGa}_{12}\text{O}_{19}$. A particular attention will be given to the nature of the ground state of these compounds and to the coupling between the electric, magnetic and structural properties in these materials. This research is expected to lead to the discovery of new multiferroic phases and of new magnetoelectric glassy or quantum liquid phases.

