Seminar on Condensed Matter Theory

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

on 17 December 2020 at 13:00
as an online webinar

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

Dr. Jan Kuneš

Institute of Solid State Physics, Vienna University of Technology, Austria

Thermal damping of spinful excitons in LaCoO3: theory and experiment

LaCoO3 is a classic material that has been studied since 1950's and still hosts new surprises. Recent RIXS experiments, which allowed for the first time a direct observation of so called intermediate spin (IS) excitations, revealed their unexpectedly large mobility. Repeated RIXS measurements with the state-of-art energy resolution allowed us not only to map out the IS dispersion more precisely, but also to study the damping of IS excitations at elevated temperatures. I will derive an effective strong-coupling model of LaCoO3 and present its treatment using bosonic dynamical mean-field theory (B-DMFT). To account for the local hard-core constraints on the bosonic particles we have introduced HB-DMFT (DMFT for hard-core bosons) approach, which is analogous to the concept of extremely correlated Fermi liquid introduced by Shastry to treat the fermionic t-J model. I will discuss possible further developments of the method and its potential to answer the remaining open questions concerning LaCoO3.

For more information follow: theory.kfkl.cz/seminars.php
If you wish to receive regular updates on fothcoming seminars, contact K. Carva (carva@karlov.mff.cuni.cz).