

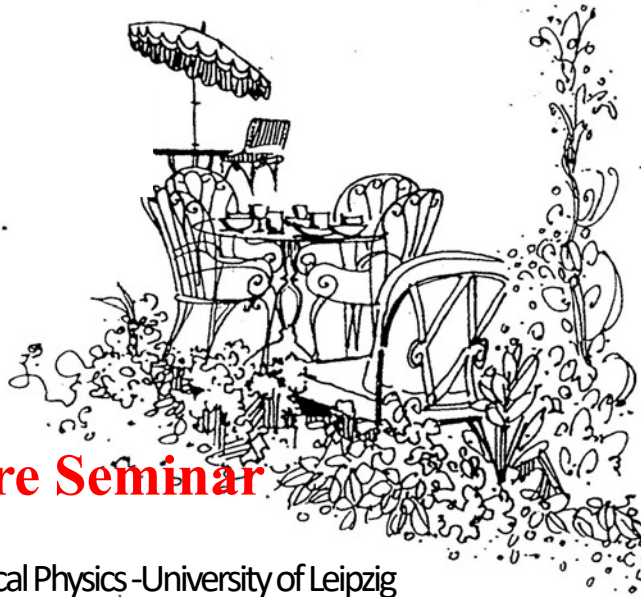
Chez Pierre

Presents ...

Monday, September 20, 2021

12:00pm Noon

Virtual Chez Pierre Seminar



Inti Sodemann – Institute for Theoretical Physics -University of Leipzig
and Max-Planck Institute for the Physics of Complex Systems in Dresden, Germany

"Pseudo-scalar U(1) spin liquids in α -RuCl₃."

In this talk, we will discuss the notion of “pseudo-scalar U(1) spin liquids” which are candidates to explain the spin liquid state in α -RuCl₃ inspired by the recent observation of quantum oscillations of the thermal conductivity in this material. These pseudo-scalar spin liquids can feature a form of “Landau quantization without a Hall effect” allowing to explain why the quantum oscillations of the longitudinal thermal conductivity seen in experiments can coexist with vanishing thermal Hall effect. This is ultimately possible because in these pseudo-scalar spin liquids certain crystalline symmetries act as a particle-hole conjugation on the spinons and as a consequence the emergent magnetic field can have different transformation laws from those of the ordinary magnetic fields in traditional Maxwell electrodynamics. This allows for the magnetic field to be non-zero even when the material has for example a spatial mirror symmetry that forbids the Hall effect.