

DRESDNER PROMOTIONSPREIS PHYSIK 2024

- Program:*
- Opening: Dean of the Faculty of Physics, Prof. Dr. Gesche Pospiech
 - Laudations: Chair of the Prize Committee, Prof. Dr. Roland Ketzmerick
 - Laureate Lectures: Dr. Benedikt Placke and Dr. Lukas Körber
 - Reception with drinks and small snacks (Rechnagel-Bau, wing C, foyer of C213)

Time and Tuesday, December 3, 2024, **2:50 pm** – hybrid event

Place: **The colloquium will be held in REC/C213.**

Online participation possible:

Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe24

<https://tu-dresden.zoom-x.de/j/63138178900?pwd=E3UjrdyvlnABCPExxEhG5XErr7Cv5B.1>

Lectures: **Dr. Benedikt Placke: Fractons and Exotic Gauge Fields in a Simple Lattice Model**

One of the central concepts in condensed matter physics is the idea that the low energy excitations of a system are weakly interacting particlelike objects called quasiparticles. In general, these quasiparticles are capable of independent motion, allowing energy inserted locally into the system to spread out, thus allowing equilibration. Fractons are quasiparticles outside this paradigm, being completely immobile when isolated and hence precipitating complex dynamics. Here, we present a simple lattice model in two dimensions realising a magnetic ‘liquid’ of Fractons, with mobility constraints arising as the consequence of an exotic emergent gauge theory.



Dr. Lukas Körber: Spin waves in curved magnetic shells

Modifications to the topology, symmetry, or, more generally, geometry induced by surface curvature can lead to various emergent phenomena in condensed matter systems. For example, in spin waves, the low-energy excitations in ferromagnets can experience curvature-induced chiral symmetry-breaking, resulting in an asymmetric spin-wave dispersion, nonreciprocal mode hybridization, or even entirely unidirectional propagation. Aided by developing a novel finite-element-based method, published in the open-source package TetraX and tailored to efficiently study spin-wave spectra in various geometries, this thesis explores multiple geometrical aspects of spin-wave dynamics in curved magnetic shells.



Gefördert von:

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



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