

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2026/27

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 14:15 Uhr im Röntgen-Hörsaal** des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg **und online via Zoom** statt.

Zugangsdaten siehe <https://www.physik.uni-wuerzburg.de/aktuelles/veranstaltungen-aus-der-physik/physikalisches-kolloquium/>

09.11.2026

Prof. Dr. Mikhail Lemeshko
Institute of Science and Technology Austria

Molecules in Fields and Solids: Topology, Control, and Many-Body Physics

Abstract

I am going to tell you about new physical phenomena emerging in molecules interacting with fields, with one another, and with a solid-state environment.

First, I will show how topological physics can emerge even in a single diatomic molecule periodically driven by a laser pulse [1]. This paves the way to studying controllable topological physics in gas-phase experiments with small molecules as well as to classifying dynamical molecular states by their topological invariants.

Second, I will present our recent progress on interaction of molecules and clusters with light carrying orbital angular momentum [2], with applications to precision spectroscopy, rotational control and chiral discrimination of molecules.

Finally, I will present our recent attempts develop simple models to describe soft semiconductors containing rotating molecules, such as lead-halide perovskites known for their outstanding photovoltaic properties [3]. Turns out, a lot of physics observed in such complex materials can already be captured by very simple lattice models.

- [1] V. Karle, A. Ghazaryan, M. Lemosko, Phys. Rev. Lett. 130, 103202 (2023)
[2] M. Maslov, G. M. Koutentakis, M. Hrast, O. H. Heckl, M. Lemosko, Phys. Rev. Research 6, 033277 (2024)
[3] F. Kluibenschedl, G. M. Koutentakis, R. Alhyder, M. Lemosko Phys. Rev. Lett. 134, 096302 (2025)

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Trauzettel, Dr. Ünzelmänn, Hr. Müller