Universität Münster

Fachbereich Physik

# Allgemeines Physikalisches Kolloquium

## Donnerstag, 16.11.2023 - 16 Uhr c.t.


## Dr. Dima Afanasiev

Faculty of Science, Radboud Universiteit


### Light-driven ultrafast magnetism

For centuries, the central goal of condensed matter physics has been to understand and describe naturally occurring phenomena, both in macroscopic and microscopic terms. Over the past few decades, a new paradigm has emerged: to experimentally realize and control new states of matter that are not found in nature. In addition to answering fundamental scientific questions, the control and knowledge of potential 'exotic' phases also hold the promise of creating a new and radically different generation of functional devices.

Ultrashort pulses of light are particularly appealing in this context as they allow us to create strongly nonequilibrium transient states of matter with properties that are often not even attainable in equilibrium. Some examples include light-induced superconductivity, metal-to-insulator transitions, and light-driven Floquet engineering. In this discussion, I will explore how light can be used to control magnetism, encompassing fundamental magnetic interactions, magnetic phase transitions, and highly nonlocal spin dynamics. I will particularly focus on nonthermal methods for controlling magnetism when the photon energy of light is precisely tuned in resonance with elementary excitations, such as lattice vibrations, orbitals, or electron excitations, which have a direct impact on the ordered spins.

wissen.leben

Kolloquiums-Kaffee ab 16 Uhr vor dem Hörsaal

Institutsgruppe 1 – HS 2
Wilhelm-Klemm-Str. 10