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HoMMage



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Hysteresis Design of Magnetic Materials for Efficient Energy Conversion

Tuesday, 05 July 2022, 9:00 s.t., UDE, Zoom



Prof. Dr. Ulrich Nowak

Physics Department,
University of Konstanz

Zoom information:
Meeting-ID: 225 349 6215
[https://uni-
due.zoom.us/j/2253496215](https://uni-due.zoom.us/j/2253496215)

Spin dynamics and the transfer of spin angular momentum to the lattice

Abstract:

The transfer and control of angular momentum is a key aspect for spintronic applications. While the focus has long been on spin-polarized electrons to carry the angular momentum, newer lines of research include the magnonic spin as angular momentum carrier, opening perspectives for insulator spintronics. However, recent work on ultrafast demagnetization in ferromagnets has demonstrated that angular momentum can also be transferred from the spin system to the lattice on sub-picosecond time scales [1].

In this talk I will give an introduction into the multi-scale modelling of spin dynamics. I will discuss applications of the stochastic Landau-Lifshitz-Gilbert equation in the context of ultrafast magnetic phenomena including the interplay between spin angular momentum and the angular momentum of polarized phonons.

[1] Tauchert et al., Nature 602, 73 (2022).

About the speaker:

Academic education and degrees

10/1982 – 01/1989 Physics Diploma studies, Gerhard-Mercator-Universität Duisburg

01/1989 – 12/1992 PhD in Physics, Gerhard-Mercator-Universität Duisburg

Supervisor: Prof. Dr. K. D. Usadel

2000 Habilitation in Theoretical Physics, Gerhard-Mercator-Universität Duisburg

Career progression

12/1992 – 08/2001 PostDoc, later Scientific Assistant at the Gerhard-Mercator-Universität in

09/2002 – 02/2003 Visiting Scientist at Seagate Research, Pittsburgh, PA, USA

02/2003 – 01/2005 Scientific Assistant at the Universität Duisburg-Essen

03/2005 – 09/2007 Lecturer in the Department of Physics, University of York, UK

10/2007 – 06/2008 Reader in the Department of Physics, University of York, UK

since 07/2008 Full Professor for Theoretical Physics, Universität Konstanz

10/2010 – 09/2014 Elected member of the senate of Universität Konstanz

since 2013 Senior Member of the IEEE Magnetic Society

2016 and 2019 LUKS awards for best teaching at Universität Konstanz

11/2018 – 10/2020 Head of Department of Physics

Research interest

- condensed matter theory
- computer simulation and multi-scale modelling
- magnetic material properties
- spintronics
- ultra-fast phenomena and opto-magnetic effects
- topological spin textures

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