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Strouhal's Lecture

CURRENT CHALLENGES OF LOW-DIMENSIONAL MAGNETISM

AKTUÁLNÍ VÝZVY NÍZKODIMENZIONÁLNÍHO MAGNETISMU

Given by

Prof. RNDr. Jana Kalbáčová Vejpravová, Ph.D.
(Department of Condensed Matter Physics,
Faculty of Mathematics and Physics,
Charles University)

On Wednesday, 3 March 2021 at 2 p.m.

The lecture will be held online

Zoom Meeting ID: 922 6355 8960
Passcode: 887832

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Jana Kalbáčová Vejpravová (*1980) is a group leader at the Department of Condensed Matter Physics (DCMP) of FMP, with part-time engagement in the Department of Inorganic Chemistry, Faculty of Science. She earned her M.Sc. (with honors) in "Chemistry" in 2003 and graduated with Ph.D. in "Condensed Matter Physics and Materials Research" from FMP in 2007. After her sabbatical leave in 2010 (Hasselt University and National Institute for Materials Research, Tsukuba), she worked as a senior scientist & head of the department in the Institute of Physics, CAS. In 2017, she returned to the DCMP and established a research group thanks to the ERC Starting grant TSuNAMI (2016). Her current research interests cover experimental physics of magnetic nanoparticles, molecules, and two-dimensional materials. Her work was already supported by ~ 15 national and EU projects as PI and received multiple recognitions, including Scopus/ Elsevier Award (2010), Otto Wichterle Award (2014), and F. Behounek Award (2019).

Abstract
The research on two-dimensional (2D) materials is a strikingly developing area of condensed matter physics with an unceasing surprise reservoir. In 2019, the discovery of exotic phenomena in a twisted graphene bilayer stimulated a new research direction known as twistronics, although the graphene seemed to reveal all its secrets already. Recently, close-to-atomically thin magnets emerged as fundamentally exciting objects with great promises in the spin- and magnon-based concepts for information technologies. This talk will review exciting new developments in low-dimensional magnetism with links to the 2D materials research and point to the most critical challenges in the field – imaging of magnetic moments and quasiparticles in these exciting materials. It will also be outlined how this research area may reveal the general link between magnetism, chiral light, and living matter.