Charles University
Faculty of Mathematics and Physics

Cordially invites you to

27th Strouhal's Lecture

LIGHT ENTERS ELECTRON MICROSCOPY

Given by

doc. RNDr. Martin Kozák, Ph.D.
(Department of Chemical Physics and Optics,
Faculty of Mathematics and Physics,
Charles University)

On Wednesday, 28 February 2024 at 2 p.m.

The lecture will be held in
the Strouhal´s auditorium (F1),
Prague 2, Ke Karlovu 5

The lecture will be also streamed at:

Zoom Meeting ID: 931 0057 6443
Passcode: 814627

click here

doc. RNDr. Martin Kozák, Ph.D. is an Associate Professor at the Department of Chemical Physics and Optics, MFF UK. He studied his master and doctoral degrees at MFF UK in the field of quantum optics and optoelectronics. In 2015-2017 he spent three years as a postdoctoral fellow at the FAU Erlangen-Nürnberg in Germany. After returning to MFF UK he received PRIMUS grant and Junior research project supported by Czech Science Foundation. He was awarded by the ERC Starting Grant (2023-2027) focused on investigation of electron beam shaping by light for advanced electron microscopy. His research interests further include ultrafast electron dynamics and attosecond science in condensed matter. In 2023 he received the Neuron prize for young scientists in the field of physics.

Abstract
Electron microscopy is one of a few methods allowing us to observe and image the fundamental building blocks of matter, individual atoms and molecules in solid state structures. Besides static imaging and spectroscopy of materials, there is a large demand for techniques allowing to capture dynamical evolution of electronic, vibrational and other excitations in a sample brough out of equilibrium by external stimulus. This talk will review recent developments in the field of time-resolved electron microscopy and diffraction, which utilizes femtosecond laser pulses to reach both atomic spatial and sub-picosecond time resolutions. It will be discussed how the interaction between coherent light and freely propagating electrons can be applied in future in advanced imaging methods and in the next generation aberration corrected electron optics.