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Relevance of the THz range to the study of superconductors

10/6/2024 h. 15, Via Vito Volterra 62, Aula Multimediale (3rd floor)
Streaming Teams: <https://tinyurl.com/RomaTre-THz-Kadlec>

In this talk, I will introduce time-domain terahertz spectroscopy and optical pump-THz probe measurements. I will present the experimental setups we have at the Institute of Physics in Prague. I will take some examples of measurements we have done on NbN thin films [1]. Then, I will introduce frequency-domain magneto-spectroscopy. I will describe our attempts to determine the mass of vortice in high-temperature superconductors (YBCO) using THz circularly polarized light [2].

- [1] M. Šindler, F. Kadlec, and C. Kadlec, *Onset of a superconductor-insulator transition in an ultrathin NbN film under in-plane magnetic field studied by terahertz spectroscopy*, *Phys. Rev. B* **105**, 014506 (2022).
[2] R. Tesař, M. Šindler, C. Kadlec, P. Lipavský, L. Skrbek, and J. Koláček, *Mass of Abrikosov vortex in high-temperature superconductor YBa₂Cu₃O_{7-δ}*, *Sci. Rep.* **11**, 21708 (2021).

Eng. Christelle Kadlec is with the Institute of Physics of the Czech Academy of Sciences, within the Terahertz Spectroscopy group. Her current research fields includes the study of phase transitions in bulk ferroelectrics and relaxors and the investigation of terahertz (THz) properties of metamaterials, thin films and superconductors, also as P.I. for various related research projects.