

# Seminar on Condensed Matter Theory

Group of Theoretical Physics at the Department of Condensed Matter Physics of Charles University has a pleasure to invite you to attend the seminar

**on 25 March 2021 at 13:00  
as an online webinar**

Contact K. Carva ([carva@karlov.mff.cuni.cz](mailto:carva@karlov.mff.cuni.cz)) for the online access information.



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## Terahertz spintronics in MAGNETICALLY ORDERED METALS

After the recent progress in fields of ultrafast demagnetization and generation of intense terahertz (THz) pulses [1, 2], the THz time-domain spectroscopy (TDS) has found its way to explore ultrafast spintronic phenomena. By covering energies from 0.4 to 200 meV, it complements optical pump-probe techniques by resonant probing of various excitations in solid states, such as electron scattering rate, spin-orbit interaction or antiferromagnetic resonance. In this talk, we will show how TDS can provide new insight into well established spintronic phenomena like anisotropic and spin-Hall magnetoresistance [3], ultrafast demagnetization and ultrafast spin currents [4], or spin Hall and Seebeck effects [5,6,7].

- [1] T. Seifert et al., *Nature Phot.* 10, 483 (2016).
- [2] P. Němec et al., *Nature Physics* 14, 229 (2018).
- [3] L. Nádvorník et al., *arXiv:2010.06280* (2020).
- [4] D. Yagodkin, *2D Mater.* 8, 025012 (2021).
- [5] L. Nádvorník et al., *Scientific Reports* 6, 22901 (2016).
- [6] T. Seifert et al., *Nature Communications* 9, 2899 (2018).
- [7] O. Gueckstock et al., *Adv. Mater.* 2006281 (2021).

