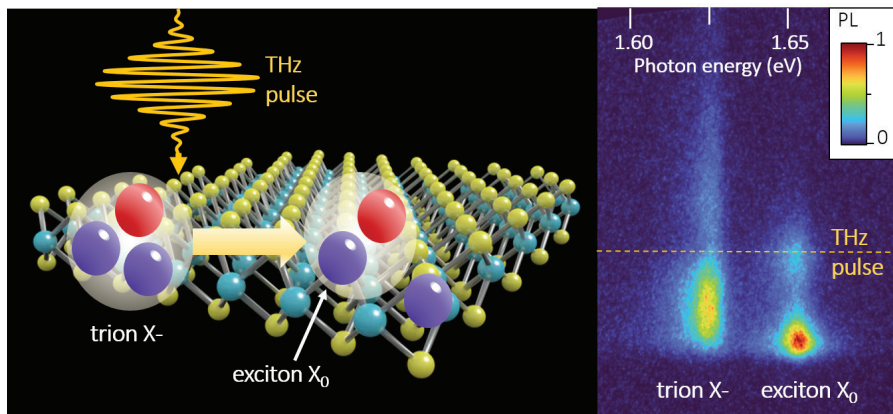


<https://uni-due.zoom-x.de/j/64228670246?pwd=RjVQeFNIUkRKkRkpiNVpKYXhJaFNLdz09> (gilt für alle Vorträge)

Terahertz free-electron laser for solid state spectroscopy – with two examples from exciton physics



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I will introduce the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) with its two accelerator-based THz sources, the free-electron laser FELBE and the superradiant source TELBE [1]. Then I will discuss two examples of nonlinear spectroscopy of excitons: the first one is the observation of the Autler-Townes splitting of an intra-excitonic 1s-2p transition in InGaAs quantum wells, an experiment more than a decade old, but still one of my favorites [2]. The second deals with the very recent observation of the THz induced photodetachment of trions in the 2D material MoSe₂, i.e. the conversion of a trion (a charged exciton) into an exciton plus an electron

[3]. Finally I will discuss the shortcomings of our present THz facilities, leading to the ideas for a successor facility, the Dresden Advanced Light Infrastructure DALI.

[1] M. Helm et al., Eur. Phys. J. Plus 138, 158 (2023).

[2] M. Wagner et al., Phys. Rev. Lett. 105, 167401 (2010); M. Teich et al., New J. Phys. 15, 065007 (2013); M. Teich et al., Phys. Rev. B 89, 115311 (2014).

[3] T. Venanzi et al., Nature Photonics 18, 1344 (2024).