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Terahertz Electron Paramagnetic Resonance Ellipsometry characterization of Quantum Defects in Semiconductors

ABSTRACT

Electron paramagnetic resonance (EPR) has evolved significantly since its first observations in the 1940s in the Soviet Union, becoming a well-established field. However, there remains much to explore, particularly in high-frequency EPR. THz EPR ellipsometry has emerged as a promising front-runner in this domain, offering access to a great frequency range with unparalleled spectral resolution. So far, THz EPR ellipsometry has been performed on point defects in GaN and Ga2O3, yielding a new understanding of these defect's properties within wide-bandgaps semiconductors. In this seminar, we will explore the impact of conducting EPR in the frequency domain, discuss the models we employ for the frequency-dependent magnetic permeability tensor, and consider potential future directions for advancing this innovative technique.

BIO

Viktor Rindert is a Ph.D. candidate in Physics, specializing in developing terahertz EPR ellipsometry theory and instrumentation. His research journey began two years ago at Lund University, where he laid the groundwork for his current work. Viktor is now expanding his expertise as a visiting researcher in Mathias Schubert's group.

Viktor holds a Master's in Engineering Physics from Lund University, earned in 2021. During his master's studies, he researched quantum transport simulations, which led to the publication of an article on terahertz quantum cascade lasers. Today, Viktor's research continues within the field of terahertz technology, developing both theory and experimental techniques to push the boundaries of terahertz magnetic spectroscopy.

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