



Vortrag im Rahmen des Tenure-Verfahrens (Status Assessment)

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Modeling and design of unconventional laser sources for innovative applications

Ort: Stammgelände der TUM, Lehrstuhl für Nanoelektronik,
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Abstract: Lasers play a central role for many applications in metrology and sensing, biomedical optics, materials processing, as well as communications. The advancement in these fields is directly linked to the emergence of novel laser sources with unconventional properties. For the further development of these sources, reliable simulation models are needed, allowing for an improved understanding of the operating principles and systematic design optimization. In this talk, I will discuss multidomain simulation approaches for quantum cascade lasers, which are nanostructured semiconductor lasers for the terahertz and mid-infrared regime, enabling innovative applications in metrology and sensing. Furthermore, I will address the modeling of Fourier domain mode-locked lasers, which are rapidly and widely wavelength-swept fiber laser sources for high-speed retinal imaging and dynamic sensing.