

### TG Optical Simulations Overview

<b>TG Leader</b>	Gudrun Wanner
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#### TG Activities

- Networking on the topic of optical simulations, i.e. exchange on simulation tasks and methods, professional software and self-written algorithms, limitations and current work on pushing boundaries, on ways to improve precision and speed of an algorithm, and of course scientific findings.
- Regular video conferences where members can introduce their work, used methods, obstacles in current tasks, and findings.

#### TG Competences/Services

- Optical simulations in a multitude of different backgrounds and applications.

#### Involved QF Members

Members	Institution	Relevant Expertise
Gudrun Wanner, Leader	AEI	Optical Simulations; Space based gravitational wave detection; Precision Interferometry
Gerhard Heinzl	AEI	Laser Gradiometers; Optical Simulations
Marie-Sophie Hartig	AEI	Optical simulations; Space-based gravitational wave detection; Optical Cross Talk
Megha Dave	AEI	Optical simulations; Space-based gravitational wave detection; Diffraction; Optical Cross Talk
Rodrigo García Álvarez	AEI	Optical simulations; Space-based gravitational wave detection; Imaging Optics
Tim Haase	AEI	Optical Simulations; IfoCAD; Source Code Management (Git/GitLab)
Harald Lück	AEI	Next Generation Gravitational Wave Observatories; Sub-Standard Quantum Limit Interferometry
Sean Leavey	AEI	Optical and electrical simulations; Ground-based gravitational wave detection; Sub-standard quantum limit interferometry
Vitali Müller	AEI	Laser Ranging Interferometry for Gravimetric Missions, GRACE Follow-On Data Analysis, Optical Simulations
Michèle Heurs	AEI	Sub-Standard Quantum Limit Interferometry; Non-classical Light; Interferometric Gravitational Wave Detection; Backaction-evading Techniques; Quantum Optomechanics

Mariia Matushechkina	AEI	Micro-optomechanical resonators; Scattering processes in metamaterial structure; Optical vortex beam
David Wu	AEI	Ground based gravitational wave detectors; Sub-standard quantum limit interferometry; Optical simulations; Noise modelling
Gael Kermarrec	LUH / GIH	Terrestrial Laser Scanner; atmospheric correlation;
Boris Chichkov	LUH / IQ	Nanoscale Materials Processing
Ernst Rasel	LUH / IQ	Quantum Gravimeters; Atom-Chip Based Gravimeters and Inertial Sensors
Kai Frye	LUH / IQ	Ultracold atoms; Atom interferometry
Naceur Gaaloul	LUH / IQ	Quantum Gases, Atom Interferometry; Inertial Sensing; Atom-Light Interactions
Stefan Seckmeyer	LUH / IQ	Atom Interferometry; Atom-Light Interactions; Wavefront Aberrations
Fei Ding	LUH / FKP	semiconductor optical structures
Jingzhong Yang	LUH / FKP	Nano- and Micro- structure simulation; optical simulation; Quantum optics; Semiconductor
Chenxi Ma	LUH / FKP	Quantum dot based single photon emitter; Lumerical FDTD
Constantin Schmidt	LUH / FKP	Semiconductor waveguides, nanofabrication; optical simulations (Lumerical)
Carl-Frederik Grimpe	LUH / FKP	Quantum dot based single photon emitter; Circular Bragg Gratings; Ansys Lumerical FDTD
Dietmar Kracht	LZH	Advanced Light Sources; Precision Additive Manufacturing of Quantum Sensors; High power solid-state single frequency amplifiers
Peter Weißels	LZH	Advanced Light Sources, Laser Development for next-generation GWDs
Sergii Iakushev	LZH	Laser Development and Stabilisation for next-generation GWDs
Alexander Kuhl	PTB	Optical Clock Networks; Free-Space Frequency Transfer



Thomas Waterholter	PTB	Optical Clock Networks; Frequency Transfer Techniques
Stefanie Kroker	PTB / TUBS	Waveguides and Waveguide Arrays, Optical and Optomechanical Metasurfaces, Machine Learning, Multiphysics Simulations, Multiscale Aspects
Anastasiia Sorokina	TUBS	Optical simulations, waveguides, light-outcoupling systems, optics for ion traps quantum computers
Liam Shelling Neto	TUBS	Metasurfaces, Machine Learning, Ultrafast Surface Dynamics, Electron Diffraction
Mayra Garcés-Schröder	TUBS	Light/particle interaction at the micro and nano scale; Light emission from micro LEDs; Microlens simulation;
Vladislav Agluschewitsch	TUBS	Light/particle interaction at the micro and nano scale; Light emission from micro LEDs; Microlens simulation;
Zhe Liu	TUBS	Lumerical FDTD; electron energy loss spectrum; plasmon mode excitation of nanoparticles