Seminar on Computational Laser Systems
(Measurement Systems Seminar/BIOLAS), WS 2024/2025

Date: **Tuesday, 4. DS., 13:00 – 14:30, BAR 218** (regular seminar, extra dates are in red)

Date	CW	Lecturer	Topic
07 Oct 16:30 (BAR 17)	41	Jonas Kreissl	Entwicklung und Validierung eines Software-Frameworks zur Modellierung medizinischer Roboter *(DA Defense, deveritec, TG)*
Wed. 09 Oct. 17:00	41	Fang Lyu	Hardware-based system integration to improve the SNR of ultrasound measurements *(SA Defense, HE)*
Mon., 14 Oct. 13:00	42	Hannes Bischoff Hasan Shakir	Designing a compressive waveguide for single channel ultrasound imaging "Classification and Analysis of Postural abnormalities using CNN" Application presentation ultrasound
15 Oct.	42	Dr. Johannes Gürtler, Dr. Lars Büttner	Introduction to Seminar & Presentation of Topics for Students
Mon., 21 Oct. 14:00	43	Ziyuan Liu	"Quantitative Bone Ultrasound" Application presentation ultrasound
22 Oct.	43	Arjun Ananth	Singular value decomposition for operational condition compensation of water monitoring of fuel cells *(SA Defense, ZD)*
24 Oct. 9:20 BAR 17	43	Jiali Sun	Transfer learning based physics-informed neural networks for phase retrieval of multimode fibers *(DA Defense, QZ)*
28 Oct., 13:00 ZOOM*		**Jiawei Sun China**	Artifical Intelligence for optical imaging and manipulation *(ZOOM only; see link below*)*
29 Oct.	44	Vireak Dam Rongfei Hou	Reinforcement learning based axial scanning *(DA intermediate report, KS)* Fiber-endoscopic imaging restoration using generative adversarial network *(DA Defense, TW)*
05 Nov.	45	Leon Stiffel Robert Wendland	Tomographic reconstruction of flames using neuronal networks with physical loss function *(DA intermediate report, JG)* Optogenetic control of cardiomyocytes *(DA Defense, FS)*
12 Nov.	46	Niklas Weise	Process Chain Implementation of laser ablation at multi-Core fibers *(SA Defense, JD)*
19 Nov.	47	Dr. Lars Büttner	Laser Safety & Hazardous Substances Briefing (only for MST members)
26 Nov.	48	Dr. Anna Taubenberger BIOTEC	S1 Biosafety Briefing (only for MST members)

Date	Wk	Speaker	Title
03 Dec.	49	– no show –	(JC: absence)
10 Dec.	50	Zixuan Cai	Diffusorbasierte Faserendoskopie mit End-to-End Optimierung durch physikbasierte neuronale Netze *(DA Intermediate Report, TG)*
13 Dec., 8:30, BAR172	**50**	**Wenfeng Xia (King's College London)**	**Photoacoustic imaging for surgical guidance (JD)**
16 Dec., 9:20, BAR17	51	Jie Zhang Wenhao Ma	Scanning tomography towards label-free 3D imaging *(DA Intermediate Report, DK)* 3D Localization Microscopy using Deep Learning *(SA Defense, FS)*
16 Dec, 10:30 (tbd), BAR 17		Tim Schneider	Implementation of Microwave and Optical Control for Qubit Transduction with Rare-Earth Ions
16 Dec, 14:00, BAR 17		Chuan Shi	ODNN for multiplexing and demultiplexing orbital angular momentum modes *(DA Defense, QZ)*
16 Dec, 15:00-16:00, BAR 17	51	John Böhm	Digital optical phase conjugation with second-harmonic guide stars *(DA Defense, NK)*
	52	– no show –	Christmas vacation
	1	– no show –	Christmas vacation
07 Jan. 13:00-14:00, BAR218	**2**	**Prof. Roman Schnabel (IQP Uni Hamburg)**	"From interferometers using squeezed states of light to the generation of microscopic Schrödinger cat states"
14 Jan. 10:00 BAR 17		Leon Stiffel	Optische Vermessung von Flammen und tomografische Rekonstruktion durch Neuronale Netze mit physikalischer Verlustfunktion *(DA Defense, JG)*
14 Jan.	3	Eric Lischinski Jakob Müller Mike Ly Husan Mohamed	Generative Adversarial Network for agricultural segmentation *(DA Intermediate Report, TW)* AI-assisted endoscopic tissue differentiation in neurosurgery *(OPMT, JD)*
21 Jan.	4	Dominic Fröming Dominic Fröming Dongrui Lou	Reservoir Computing for Mode Decomposition in Multimode Fibers *(OS, DP)* Parameter Extraction of Spectroscopic Ultrasound-RF-Data for Flotation *(PMST, HE)* Parameter study for physics-informed neural network image reconstruction in diffuser endoscopy *(OPMT, TG)*
28 Jan.	5	– no show –	(conference)

04 Feb.	6	– no show –	(conference) – *end of semester* –
?		Vireak Dam	Reinforcement learning based axial scanning *(DA Defense, KS)*
11 Feb. 15:00		Veronika Volkova	Characterization of Modified Multi-Core Fibers *(DA Intermediate Report, KI)*
13 Feb. 15:00		Jingchun Hua Phillip Henning Ayham Raee Duc Hai Ngyuen	Fiber imaging using autoencoders *(DA Intermediate Report, TW)* Optical diffractive deep neural network-based light manipulation *(OPMT/PMST, QZ)*
17 Feb. 15:00			student defenses

*ZOOM room:
https://tu-dresden.zoom.us/j/89265210633?pwd=Mm82TWdRQmFoeUdSVXFYKy84QmZmZz09#success

External lecturers are shown in bold, in green are checks and in red are changes. Attention: The seminar plan can be subject to short-term changes, see Internet. The slides should be written in English. The lectures can be presented either in German or English (save the slides in the intranet). Organization: Dr. L. Büttner, BAR 28, Tel. 463-35314

Structure of the talks: 1) Scientific Question; 2) State of the art / literature survey; 3) Problem / Hurdles; 4) Hypotheses / Methods / Advantages and Disadvantages; 5) Transfer to real-world applications / Requirement for implementation in applications; 6) Vision