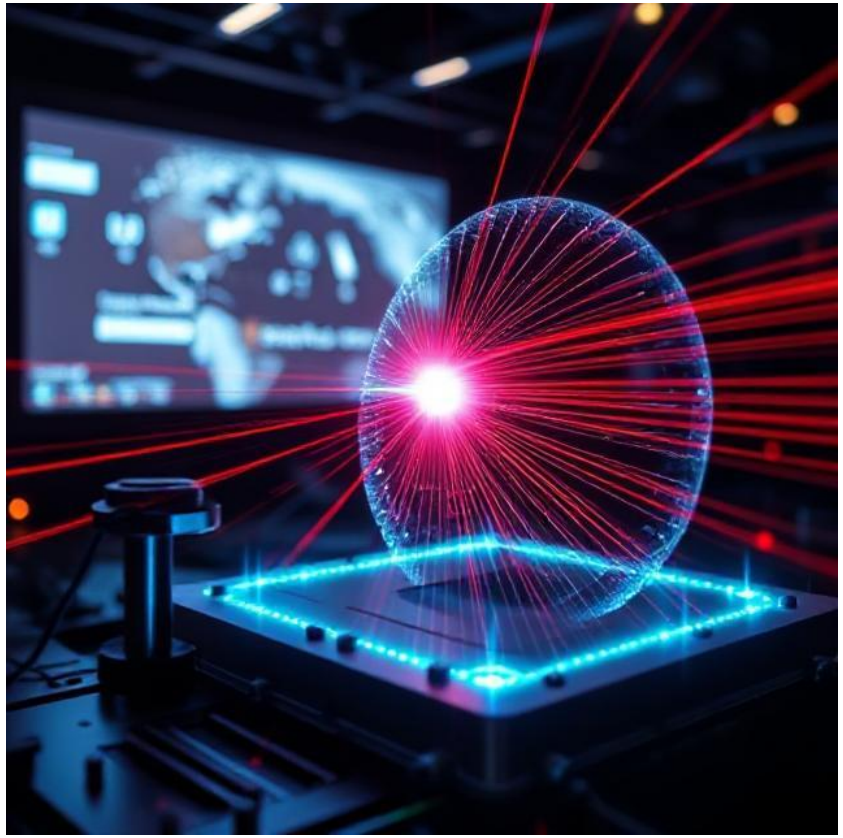
Lecture (2/1/0) - summer semester 2025

Laser Metrology and Quantum Technology

Nichtphysikalische Ergänzung Master Physik: Computational Laser Metrology



- **The lecture covers the fundamentals of laser measurement techniques and quantum technology for a variety of applications, such as biomedicine, micro- and nanoelectronics and communication systems.**
- Fundamentals: Wave equation, gaussian beam, jones Formalism, beam parameter product, abbe limit, coherence and interference, Fourier optics and diffraction
- Sources: Laserdiodes, fiber lasers, mode coupling, frequency combs, fs-lasers
- Fiber optics: intrinsic and extrinsic fiber sensors for temperature, strain and electrical current, fiber Bragg gratings, Rayleigh, Raman and Brillouin fiber sensors
- Interferometry: Michelson and Sagnac interferometers, gravitational wave detection, Fabry Perot interferometer, holography
- Quantum Technology of Second Generation: Quantum Imaging, Quantum Communication, teleportation, entangled photons

TECHNISCHE UNIVERSITÄT DRESDEN

MST Professur für Mess- und Sensorsystemtechnik

Laboratory for Measurement and Sensor System Technique