CURRICULUM VITAE

PROF. JUERGEN CZARSKE

Full Chair Professor for Electrical Engineering and Physics, Head and Founder of Laboratory for Measurement and Sensor Systems (MST) / CzarskeLab, Director of Institute for Circuits and Systems, Director of Competence Center for Biomedical Computational Laser Systems (BIOLAS), Faculty Electrical and Computer Engineering and co-opted Professor of Applied Physics, TU Dresden (TUD), Helmholtz Str. 18, 01069 Dresden, Germany
Married, one daughter

Photo from Award Ceremony, San Diego

PROFESSIONAL CAREER AND PROFESSIONAL ACTIVITIES

- Selected as Nominator for the Nobel Prize in Physics, The Royal Swedish Academy of Sciences, Stockholm, 11/2023
- Co-Organization of Conference on Quantum Technology together with Nobel Laureate Anton Zeilinger, 11/2023
- Certificate of Appreciation for Cooperation and Student Exchange, Tsinghua University, China, August 16, 2023
- Elected Member of the Editorial Board of Light Science and Application of Nature, Changchun, August 14, 2023
- Co-Chair of SPIE Conf. Digital Optical Technology (with Google director AR, Dr B. Kress), Munich, 6/2023
- Call to a full chair Professorship at University Rostock (W3), (rejected after negotiation), 6/2023
- Advisor of Optica-SPIE-Student Chapter of TU Dresden, dresdenoptik.de, since 3/2022
- Selected as outstanding editor for *Light: Advanced Manufacturing* (LAM) of Nature Publishing, China, 2/2022
- Curator and member of Fraunhofer society, appointed for Institute Photonics Microsystems (IPMS), since 1/2022
- Vice President of International Commission for Optics, ICO, Umbrella Organization for optics and photonics with over 50 territorial members and 7 organizations, PALAISEAU, Paris, France and Miami, Florida, USA, 9/2021
- Affiliated Investigator of Else Kröner-Fresenius Center for Digital Health (EKFZ), since 02/2021
- Co-opted Professor for Applied Physics, School of Sciences, TUD, since 11/2020
- Member of Award Committee of The Optical Society – OSA/OPTICA, Washington DC, USA, since 7/2020
- Member of Senate of TU Dresden, since 12/2019
- Recognition of OSA/OPTICA for commitments in reviewing scientific papers, Washington DC, USA, 12/2019
- Director of Center Biomedical Computational Laser Systems (BIOLAS), TUD, since 7/2019
- Affiliated Investigator of the Excellence Cluster "Physics of Life" of TUD, since 1/2019
- BrainLinks-BrainTools Excellence Cluster, SAB-Scientific Advisory Board Member, Freiburg, since 1/2019
- Elected Member of Saxon Academy of Science, Leipzig, since 3/2018
- Successful Transfer of Innovations into the Market (>1 MEUR volume), Company ILA, Jülich, 2018
- Advisor of SPIE Student Chapter of TU Dresden, dresdenoptik.de, since 7/2017
- Elected Member of Scientific Society for Laser Technology (WLT e.V.), Erlangen, since 4/2017
- Board of German Society of Applied Optics - The German Branch of EOS, Ilmenau, 6/2016 to 9/2022
- Director of Institute of Circuits and Systems of TUD, since 1/2016
- Elected Member of Board of German Association of Laser Anemometry (GALA), Karlsruhe, since 9/2015
- Senior Member, IEEE (Institute of Electrical and Electronics Engineers), New York City, USA, 6/2015
- Founding the Key Laboratory of Computational Interferometry and Holography, TUD, since 1/2010
- Full Professor (C4) at Faculty Electrical and Computer Engineering, TUD, since 12/2004
- LZH e. V. (Laser Center Hannover, private research institute, Industry-relationship, under supervision of Andreas Tuennermann et al.); last position: head of department of measurement technique, Hannover, 10/1995 - 12/2004
- Promotion to Professor, venia legendi in measurement systems, Leibniz University, 10/2003
- Visiting Scholar with short-term missions in Japan and USA: NTT Labs, Nippon Telegraph and Telephone Corporation, Ibaraki-ken, JP; Bell Labs, Holmdel, NJ; MIT, Cambridge, MA; NASA Research, Langley, VA; Caltech, Pasadena, CA; Stanford, Palo Alto, CA; Virginia Tech, Blacksburg, VA; part time, 1996 - 2001
- Prize of the Leibniz University for an outstanding doctorate with scl, Hannover, 12/1995
- Ph.D. degree in engineering with distinction (summa cum laude, F. Hock, H. Welling), Leibniz University, 2/1995
- Leibniz University, Assistant of Professor, Institute of Measurement Systems, 10/1991 – 5/1996
- Siemens AG, Munich (part time work, consultant and Siemens Scholarship), 1986-1991
- Study of electrical engineering and physics, Leibniz University of Hannover, Germany, until 9/1991
- Study of Electrical Engineering/Photonics, Open University Hagen, until 1987
- AEG Telefunken AG/Deutsche Bahn AG, Neumünster (part time), 1983-1985

AWARDS, PRIZES AND HONORS INCLUDE (PARTIAL LIST)

- Honorary Speaker Award for 23rd StarRiver Talk, Shanghai AI Lab, Nov 2023
- Elected as Distinguished Lecturer of IEEE Photonics Society 2024 (6 Lecturers from 6 Countries), 11/2023
- 70th Qinghe Seminar Award, Chinese Academy of Sciences, Shanghai, August 11, 2023
- ***SPIE Chandra S Vikram Award in Optical Metrology, awarded in San Diego, CA, USA, 8/2022***
- Fellow Award (FInstP) of Institute of Physics (IOP), London, UK, 7/2022
- Fellow Award of Institution of Engineering and Technology (IET), formerly IEE, London, UK, 7/2021

- SPIE Community Champion 2020, highlighted by SPIE Director Nelufar Mohajeri, WA, USA, 5/2021
- ***Inaugural Laser Instrumentation Award of IEEE Photonics Society, IEEE, New York City, USA, 7/2020***
- SPIE Community Champion 2019 for outstanding volunteerism, awarded by SPIE President, Arizona/USA, 1/2020
- ***OPTICA Joseph Fraunhofer Award / Robert M. Burley Prize, awarded in Washington D.C., USA, 9/2019***
- Best Paper Awards, 2nd and 3rd, Imaging and Applied Optics Congress of OSA, Orlando, FL, USA, 6/2018
- Best Paper Prize of the 118th Annual Conference of DGaO-German Branch of EOS, 6/2017
- Fellow Award, EOS (European Optical Society), Joensuu, Finland, awarded in Berlin, 8/2016
- Best Paper Prize of the 18th VDI / ITG Symposium Sensors and Measuring Systems, Nuremberg, 5/2016
- Fellow Award, SPIE - The International Society for Optics and Photonics, San Francisco, USA, 12/2015
- Fellow Award, OSA (The Optical Society), Washington, DC, awarded in San Jose, USA, 10/2015
- Award on Precision Measurement of Institute of Physics - IOP, London, UK, 6/2015
- Reinhart Koselleck Excellence Project (1.2 Mio €), German Research Foundation, DFG, Bonn, 7/2014
- Selected paper - Highlights of 2013, Journal of Physics D - Applied Physics, IoP, Bristol, UK, 1/2014
- Excellent paper, awarded at 33. Annual meeting of the Japan Laser Society, Tokyo, Japan, 5/2013
- Best Paper Award Instrumentation of American Soc. of Mech. Engineers, Vancouver/Canada, 6/2011
- Nomination Award for Kaiser-Friedrich-Research-Prize-2009 (final three), Goslar, 9/2009
- ***International Berthold Leibinger Innovation Prize, awarded at Trumpf Laser, Ditzingen, 9/2008***
- Highly commended article of Measurement Science and Technology (MST), IoP, Bristol, UK, 12/2001
- ***Measurement Technique Prize of Association of University Professors (AHMT), awarded at TU Munich, 9/1996***
- Young Researcher Prize, awarded by the education minister Peter Bendixen, Kiel Castle, Kiel, 4/1984

ORGANIZATION OF CONFERENCES INCLUDE (PARTIAL LIST)

World General Congress ICO-25-OWLS-16-2022, International Commission for Optics (ICO), Umbrella Organization for Optics and Photonics, Dresden, 2022 (2 postponements), 118th Annual Meeting Society of Applied Optics, Dresden, 2017. Memberships of advisory boards/program committee include (>50): Photonics Europe/SPIE, Strasbourg, France; Photonics West, SPIE, San Francisco, USA; Iberoamerican Optics Meeting (RIAO), Cancún, México; ICO-Meeting on Optics & Applications, Carthage, Tunisia; Information Photonics, Japan; Optical Technology and Measurement, Yokohama, Japan; Optical Methods for Inspection, Characterization, and Imaging of Biomaterials; European Optical Society, Delft, NL; Symp. Appl. of Laser Techn. Fluid Mechanics, Lisbon, Portugal; icOPEN, Singapore; OSA Opt. Sensors, Barcelona, Spain; Optomechatronic, Seattle, USA; Optoelectronic Technology, Beijing, China, etc

ELECTED MEMBERSHIPS INCLUDE (PARTIAL LIST)

BioBrillouin (COST, EU Brussels), Faculty Council, Study and PhD committee and Senate of TU Dresden, …

TEACHING INCLUDES (PARTIAL LIST)

Metrology and Sensors, Laser Measurement Technique, Biophotonics, Fiber Techn. (over 15 000 exams within last 15 years)

ORGANIZATION OF JOINT PROJECTS INCLUDES (PARTIAL LIST)

DACH Projects with TU Graz, AIF Projects with Fuel Center Duisburg, Joint Projects with HZDR, DLR, CRTD, Biotec, MPI, TU Berlin, PTB - Physikalisch-Technische Bundesanstalt, Keio University, Tsinghua University, …

EDITORIAL BOARDS INCLUDE (PARTIAL LIST)

Technical Measurements (Walter de Gruyter); Photonics (MDPI); Light: Advanced Manufacturing; Journal of Fluid Dynamics; Journal of the European Optical Society-Rapid publications, Light Science Applications (Nature Publishing), …

SERVICE AS REVIEWER FOR SCIENTIFIC JOURNALS INCLUDES (PARTIAL LIST)

Nature Photonics, Biomedical Optics Express, Optica, Nature Communications, Science, Light Science Applications, …

SERVICE AS CONSULTANT AND ADVISOR INCLUDES (PARTIAL LIST)

Review Board of DFG Systems Engineering 2012-20; Nanyang Techn. Univ, Singapore; Dev. Bank Thüringen, Netherlands Scientific Org., Israel Science Foundation, Foundation Saudi Arabia, Imperial College UK, NSF, …

RESEARCH

The Czarske Lab aims on computational adaptive metrology to take advantage with the universal control of coherent waves towards real-world applications including: “Information technologies” (quantum technology, multimode fiber communication), and biophotonics (optogenetics, micro-robots, stem-cell-derived organoids, wavefront shaping in microscopy, physics-informed neural networks). Project funding >1 MEUR/year (DFG, AIF, SAB, BMBF, industry). Early Career Support of young talents includes: Student Chapter of SPIE/OPTICA (talent cultivation) / honors and awards (>110 in total), including Bertha Benz-Prize of the Daimler & Benz foundation for female students (10k€)

PUBLICATIONS AND TALKS

In total, over 1000 publications and talks, including over 150 invited talks, over 30 patents, over 500 reviewed papers with over 250 papers in renowned journals: Scientific Reports, Advanced Functional Materials, Light: Science and Applications

SELECTION OF 10 ARTICLES AS SENIOR AUTHOR, RECENTLY PUBLISHED IN PEER REVIEWED INTERNATIONAL SCI JOURNALS (TOTAL OVER 250)

- Sun, J., Yang, B., Koukourakis, N., Guck, J., **Czarske, JW**, AI-driven projection tomography with multicore fibre-optic cell rotation. Nature Communications 15, 147 (2024)
- S. Rothe, KL Besser, D Krause, …, **JW Czarske**, "Securing Data in Multimode Fibers by Exploiting Mode-Dependent Light Propagation Effects", Research, https://doi.org/10.34133/research.0065 (2023)
- Jiawei Sun, Juergen W. Czarske, "Compressive holographic sensing simplifies quantitative phase imaging", Light: Science & Applications of Nature (2023)
- J. Wu, T. Wang, O. Uckermann, R. Galli, G. Schackert, L. Cao, **J. Czarske**, and R. Kuschmierz, "Learned end-toend high-resolution lensless fiber imaging towards real-time cancer diagnosis," Sci Rep 12(1), 18846 (2022).
- J Sun, …, L Cao, R Kuschmierz, **J Czarske**, "Real-time complex light field generation through a multi-core fiber with deep learning", Scientific Reports - nature.com, (2022)
- Qian Zhang, Stefan Rothe, Nektarios Koukourakis, **Juergen Czarske**, "Learning the matrix of few-mode fibers for high-fidelity spatial mode transmission", APL Photonics, (2022)
- Jiawei Sun, Jiachen Wu, Song Wu, Ruchi Goswami, Salvatore Girardo, Jochen Guck, Liangcai Cao, and Nektarios Koukourakis, **Jürgen Czarske**, "Quantitative phase imaging through an ultra-thin lensless fiber endoscope", Light: Science and Applications of Nature Publishing (2022)
- Schmieder, F., Busskamp, V, **Czarske, J.**, "Tracking connectivity maps in human stem cell–derived neuronal networks by holographic optogenetics", *Life Sci. Alliance* **5**, e202101268 (2022).
- S. Rothe, Q. Zhang, N. Koukourakis, **J. Czarske**, "Intensity-only Mode Decomposition on Multimode Fibers using a Densely Connected Convolutional Network", *IEEE/OSA Journal of Lightwave Technology*, DOI: 10.1109/JLT.2020.3041374 (2021)
- Azaam Aziz, …, **J.W. Czarske** and Oliver G. Schmidt, "Real-time IR tracking of single reflective micromotors through scattering tissues," *Advanced Functional Materials* (2019)

SELECTION OF PATENTS (GRANTED OR SUBMITTED, TOTAL OVER 30, MORE THAN 5 LIZSENSED AND TRANSFERRED)

- L. Büttner, **J. Czarske**, Method for non-intrusive optical measurements of the fluid temperature, DE 10 2019 103 882 B4, 11.08.2022, registered and licensed patent, 2022
- **Jürgen Czarske**, Nektarios Koukourakis, „Method for determining the position of micro- or nanorobots in a biological tissue, micro- or nanorobots as well as measuring arrangement", Patent Application, 10 2021 118 082.1, 2021
- Stefan Rothe, Qian Zhang, Nektarios Koukourakis, Robert Kuschmierz, **Jürgen Czarske**, „Reference-free mode decomposition with a neural network with multimode fibers based on real-valued intensity distributions", Granted Patent, 2020
- Richard Nauber, **J. Czarske**: "Calibration method of multimode waveguides for imaging with ultrasound endoscopes", Patent, 2019
- R. Kuschmierz, **J. Czarske**: "Method and endoscopic fiber optic system for illuminating and detecting an object with light", European Patent, Granted Patent in Japan and USA, 2018
- L. Büttner, **J. Czarske**, M. Teich, N. Koukourakis, „Arrangement and method for disturbance correction for imaging flow measurement methods", Granted EU Patent, US Patent App. 16/628,391, 2017

March 29, 2024