

# CURRICULUM VITAE

## PROF. JUERGEN CZARSKÉ

Full Professor and Head of Laboratory of Measurement and Sensor Systems Engineering (MST), Faculty of Electrical and Computer Engineering, School of Engineering, TU Dresden, Helmholtz Str. 18, 01069 Dresden, Germany  
Born: December 20, 1962 in Bad Segeberg, Germany  
Married, one daughter



### PROFESSIONAL CAREER

- Member of Senate of TUD, since 12/2019
- Director of Center Biomedical Computational Laser Systems of TUD, since 7/2019
- Affiliated Investigator of the Excellence Cluster “Physics of Life” of TUD: since 1/2019
- Director of Institute of Circuits and Systems of TUD: since 1/2016
- Head of Key-Lab of Computational Adaptive Metrology of TUD: since 1/2011
- Head of Key-Lab of Digital Metrology in Harsh Environments of TUD: since 1/2007
- Full Professor (C4) of measurement systems engineering, MST Lab, TU Dresden (TUD): since 12/2004
- LZH e. V. (Laser Center Hannover, industry-oriented private research institute); last position: head of department of measurement technique, Hannover: 10/1995 - 12/2004
- Dr.-Ing. habil., venia legendi in measurement systems engineering, Leibniz University: 10/2003
- Visiting Scholar: NTT Labs, Nippon Telegraph and Telephone Corporation, Ibaraki-ken, Japan; 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
- Leibniz University, Scientific Member of the Institute of Measurement Systems: 10/1991 – 5/1996
- Ph.D. degree in engineering with distinction (summa cum laude), Leibniz University: 2/1995
- Siemens AG, Munich (part time, research student, consultant and Siemens Scholarship): 1986-1991
- Study electrical engineering and physics at Leibniz University of Hannover: until 9/1991
- AEG Telefunken AG & Deutsche Bahn AG, Neumünster (part time): 1983-1985

### AWARDS, PRIZES AND HONORS INCLUDE (PARTIAL LIST)

- “SPIE Community Champion for outstanding volunteerism”, by SPIE President, Arizona, USA 1/2020
- *Joseph Fraunhofer Award and Robert M. Burley Prize of the Optical Society (OSA)*, recognizing research accomplishments in optical engineering, [www.osa.org](http://www.osa.org) (awarded in Washington, DC, USA), 9/2019
- Best Paper Awards, 2<sup>nd</sup> and 3<sup>rd</sup>, OSA Imaging and Applied Optics Congress, Orlando, FL, USA, 6/2018
- Member of Saxon Academy of Science, Leipzig, 3/2018
- Fellow, EOS (European Optical Society), Joensuu, Finland (awarded in Berlin), 8/2016
- Fellow, SPIE (International Society for Optics and Photonics), (awarded in San Francisco, USA), 12/2015
- Fellow, OSA (The Optical Society), Washington, DC (awarded in San Jose, USA), 10/2015
- Outstanding Paper Award: Precision Measurement, Meas. Sci. Technol., IOP, Bristol, UK, 6/2015
- Senior Member, IEEE (Institute of Electrical and Electronics Engineers), New York City, USA, 6/2015
- *Reinhart Koselleck Project in systems engineering*, German Research Foundation, Bonn, 7/2014
- Selected paper - “Highlights of 2013”, Journal of Physics D - Applied Physics, UK, 1/2014
- Excellent paper, awarded at 33. Annual meeting of the Japan Laser Society, Tokyo, Japan, 5/2013
- ASME Turbo Expo, Award of Controls, Diagnostics and Instrumentation, Vancouver, Canada, 6/2011
- *International Berthold Leibinger Innovation Prize*, see [en.wikipedia](http://en.wikipedia.org), awarded in Ditzingen, 9/2008
- Highly commended article of Measurement Science and Technology (MST), Bristol, UK, 12/2001
- *Measurement Technique Prize of the Association of the University Professors, TU Munich*, 9/1996
- Honor of the Leibniz University for an outstanding doctorate, Hannover, 12/1995
- Scholarship and Stipend of Siemens AG, Munich, 1986-1991; Young Researcher Prize, Kiel, 4/1984

### **ORGANIZATION OF CONFERENCES INCLUDE (PARTIAL LIST)**

- Planned conference in Dresden: ICO-25-OWLS-16, "Progress of society with light", International Commission for Optics, ICO ("Umbrella Organization" of Optics and Photonics)
- Recently organized conference: 118<sup>th</sup> Annual Meeting Society of Applied Optics, Dresden, 2017
- Memberships of advisory boards or program committee include: Photonics Europe, SPIE, Strasbourg, France; Photonics West, SPIE, San Francisco, USA; Iberoamerican Optics Meeting (RIO), Cancún, México; ICO-Meeting on Optics & Applications to Sustainable Development, Carthage, Tunisia; Information Photonics, Japan; Optical Technology and Measurement for Industrial Appl., SPIE, Yokohama, Japan; Opt. Meas. Syst. for Inspection SPIE; European Optical Society, Delft, NL; Symp. Appl. of Laser Techn. Fluid Mechanics, Lisbon, Portugal; icOPEN, Singapore; OSA Opt. Sensors, Barcelona, Spain; Optomechatronic Technologies, Seattle, USA; Optoelectronic Technology, Beijing, China

### **ELECTED MEMBERSHIPS INCLUDE (PARTIAL LIST)**

Scientific Society for Laser Technology (WLT e.V.); Board of German Society of Applied Optics (DGaO) - The German Branch of the European Optical Society (EOS); Board of German Association of Laser Anemometry (GALA); Committee of COST BioBrillouin (European Cooperation in Science and Technology, Brussels); etc.

### **TEACHING INCLUDES (PARTIAL LIST)**

Measurement and Sensor Engineering, Laser Sensor Technique (over 15 000 exams within last 15 years)

### **ORGANIZATION OF JOINT PROJECTS INCLUDES (PARTIAL LIST)**

DACH Project with TU Graz, AIF Project with Fuel Center Duisburg, Joint Projects with HZDR, DLR, CRTD, Biotec, MPI, TU Berlin, PTB, Keio University, Tsinghua University, etc.

### **EDITORIAL BOARDS INCLUDE (PARTIAL LIST)**

Techn. Measurements (Walter de Gruyter), Photonics, Light: Advanced Manufacturing (Nature Publishing), Open Journal of Fluid Dynamics, Journal of the European Optical Society - Rapid publications, etc.

### **SERVICE AS REVIEWER - SCIENTIFIC JOURNALS - INCLUDES (PARTIAL LIST)**

Optics Express, Optics Letters, IEEE Trans. on Instrumentation and Measurement, Optica, etc.

### **SERVICE AS CONSULTANT AND ADVISOR INCLUDES INCLUDES (PARTIAL LIST)**

Review Board of German Research Foundation (2012-2020); Committee of Nanyang Techn. University Singapore; Development Bank Thüringen, The Netherlands Scientific Organization, Israel Science Foundation, King Faisal Foundation Saudi Arabia, NSF, Advisor of Student Chapter TU Dresden of SPIE, etc.

### **RESEARCH**

The research aims on the universal control and application of coherent waves (light and ultrasound) using computational systems engineering. Juergen Czarske is known for unconventional optical imaging with wavefront shaping, computational real-time holography, advanced biomedical imaging and non-intrusive precision measurements at harsh environments. His research is focused on advances in application areas including: "Information technologies and internet" (deep learning, physical layer security, multimode fiber transmission), "energy and process technique" (real-time monitoring with Doppler sensors), and "health and biophotonics" (lensless needle-size fiber endoscopes, mechanical mapping of biological tissues using spontaneous and stimulated Brillouin scattering, digital holography in optogenetics for iPSC-derived neural networks, zebrafish studies with smart microscopes using adaptive lenses). Over 50 prizes and honors were awarded to the students and members of his laboratory MST within the last 10 years (donation up to 15 000 €), e.g. Prize of Sick AG, RWB Stephens Prize, Siegfried Werth Foundation Prize, OSA Best Paper Award, DGaO Young Investigators Award, Bertha Benz-Prize of the Daimler and Benz foundation.

### **PUBLICATIONS AND TALKS**

In total over 800 publications and talks, including more than 100 invited talks, more than 20 patents and more than 200 papers in renowned peer reviewed journals: Optics Express, Scientific Reports, Advanced Functional Materials, Optics Letters, Optics and Lasers in Engineering, IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, IEEE Transactions on Industrial Electronics and IEEE Access, etc.

## SELECTION OF 10 ARTICLES, PUBLISHED IN PEER REVIEWED INTERNATIONAL SCI JOURNALS

- H. Radner, J. Stange, L. Büttner, **J. Czarske**, „Field programmable system-on-chip based control system for real-time distortion correction in optical imaging“, *Transactions on Industrial Electronics of IEEE* (2020)
- S. Rothe, N. Koukourakis, H. Radner, A. Lonnstrom, E. Jorswieck, **J. Czarske**, “Physical Layer Security in Multimode Fiber Optical Networks”, *Scientific Reports* 10(1), 1-11 (2020)
- F. Bürkle, F. Moyon, L. Feierabend, J. Wartmann, A. Heinzl, **J. Czarske**, L. Büttner, “Investigation and Equalisation of the Flow Distribution in a Fuel Cell Stack”, *Journal of Power Sources* (2020)
- S. Rothe, Q. Zhang, N. Koukourakis, **J. Czarske**, “Deep Learning for Computational Mode Decomposition in Optical Fibers”, *Applied Sciences* 10(4), 1367 (2020)
- K. Philipp, F. Lemke, S. Scholz, U. Wallrabe, M.C. Wapler, N. Koukourakis, **J.W. Czarske**, “Diffraction-limited axial scanning in thick biological tissue employing an aberration correcting adaptive lens”, *Scientific Reports* 9, 9532 (2019)
- Azaam Aziz, ..., **Jürgen W. Czarske** and Oliver G. Schmidt, “Real-time IR tracking of single reflective micromotors through scattering tissues,” *Advanced Functional Materials* (2019)
- Benedikt Krug, Nektarios Koukourakis, and **Juergen W. Czarske**, "Impulsive stimulated Brillouin microscopy for non-contact, fast mechanical investigations of hydrogels," *Opt. Express* 27, 26910-26923 (2019)
- J Lich, T Wollmann, A Filippatos, M Gude, **J Czarske**, R Kuschmierz, “Diffraction-grating-based in situ displacement, tilt, and strain measurements on high-speed composite rotors,” *Applied optics* 58 (29), 8021-8030 (2019)
- R. Schlüßler, ..., **J. Czarske**, J. Guck, “Mechanical Mapping of Spinal Cord Growth and Repair in Living Zebrafish Larvae by Brillouin Imaging”, *Biophysical Journal* (2018)
- R. Kuschmierz, E. Scharf, N. Koukourakis, **J. Czarske**, “Self-calibration of a lensless holographic endoscope using programmable guide stars”, *Optics Letters* (2018)

## SELECTION OF 3 PATENTS

- Richard Nauber, **Jürgen 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, Japan and USA Patent, 2018
- L. Büttner, **J. Czarske**, M. Teich, N. Koukourakis, „Arrangement and method for disturbance correction for imaging flow measurement methods“, Patent, 2017

April 27, 2020