

# CURRICULUM VITAE

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## 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 (TUD), Helmholtz Str. 18, 01069 Dresden, Germany  
Born: December 20, 1962 in Bad Segeberg, Germany  
Married, one daughter



### PROFESSIONAL CAREER AND PROFESSIONAL ACTIVITIES

- Co-opted Professor for Applied Physics, School of Natural Sciences, TU Dresden, since 11/20
- Member of Award Jury of The Optical Society - OSA, Washington DC, USA, since 7/2020
- "SPIE Community Champion for outstanding volunteerism", awarded by SPIE President, USA, 1/2020
- Member of Senate of TUD, since 12/2019
- Director of Competence Center Biomedical Computational Laser Systems of TUD: since 7/2019
- Affiliated Investigator of the Excellence Cluster "Physics of Life" of TUD: since 1/2019
- BrainLinks-BrainTools Excellence Cluster, Freiburg, Scientific Advisory Board Member, since 1/2019
- Elected Member of Saxon Academy of Science, Leipzig, 3/2018
- 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, 4/2017
- Fellow, EOS (European Optical Society), Joensuu, Finland, awarded in Berlin, 8/2016
- Board of German Society of Applied Optics - The German Branch of EOS, since 6/2016
- Director of Institute of Circuits and Systems of TUD: since 1/2016
- 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
- Board of German Association of Laser Anemometry (GALA), since 9/2015
- Senior Member, IEEE (Institute of Electrical and Electronics Engineers), New York City, USA, 6/2015
- Full Professor (C4) of measurement systems engineering, MST, 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
- 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, 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
- Honor of the Leibniz University for an outstanding doctorate, Hannover, 12/1995
- Ph.D. degree in engineering with distinction (*summa cum laude*), Leibniz University: 2/1995
- Leibniz University, Scientific Member of the Institute of Measurement Systems: 10/1991 – 5/1996
- Siemens AG, Munich (part time, research student, consultant and Siemens Scholarship): 1986-1991
- Study of electrical engineering and physics at Leibniz University of Hannover, Germany: until 9/1991
- AEG Telefunken AG/Deutsche Bahn AG, Neumünster (part time): 1983-1985

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

- Laser Instrumentation Award of IEEE Photonics Society, recognizing key contributions to the development of laser-based and electro-optical instruments, IEEE, New York City, USA, 7/2020
- Joseph Fraunhofer Award and Robert M. Burley Prize of OSA, 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
- Best Paper Prize of the 118th Annual Conference of the DGaO, 6/2017
- Best Paper Prize of the 18th VDI / ITG Symposium Sensors and Measuring Systems, Nuremberg, 5/2016
- Precision Measurement Paper Award of Institute of Physics - IOP, London, UK, 6/2015
- Reinhart Koselleck Project in systems engineering, 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
- ASME Best Paper Award of Controls, Diagnostics and Instrumentation, Vancouver, Canada, 6/2011
- International Berthold Leibinger Innovation Prize, see en.wikipedia, awarded in Ditzingen, 9/2008
- Highly commended article of Measurement Science and Technology (MST), IOP, Bristol, UK, 12/2001
- Measurement Technique Prize of Association of the University Professors - AHMT, TU Munich, 9/1996
- Young Researcher Prize, awarded by the education minister Peter Bendixen, Kiel, 4/1984

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

- Planned general world congress ICO-25-OWLS-16, "Advancing 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)**

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

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

Sensor technology, Laser Measurements, Biophotonic Metrology (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; Light: Advanced Manufacturing (Nature Publishing); Journal of Fluid Dynamics; Journal of the European Optical Society - Rapid publications

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

Optics Express, Optics Letters, IEEE Transactions, Biomedical Optics Express, Optica, JEOS:RP

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

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

#### **RESEARCH**

The research aims on the universal control and application of coherent waves (light and ultrasound) using computational systems engineering. Juergen Czarske's research is focused on advances in application areas including: "Information technologies and internet" (deep learning), "energy and process technique" and "health and biophotonics" (Brillouin microscopy, holographic optogenetics, etc.). Early Career Support and fostering of young talents. Over 70 prizes and honors were awarded to the students and members of MST including: RWB Stephens Prize; Siegfried Werth Foundation Prize; Best Paper Awards of OSA Conferences; DGaO Young Investigators Award; Bertha Benz-Prize (10 000 €) of the Daimler and Benz foundation for female engineering scientists who have achieved social added value with their dissertation.

#### **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, 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)
- L. Büttner, M. Thümmel, **J. Czarske**, “Velocity measurements with structured light transmitted through a multimode optical fiber using digital optical phase conjugation”, *Opt. Express* 28, 8064-8075 (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, ..., **J.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 **J.W. Czarske**, "Impulsive stimulated Brillouin microscopy for non-contact, fast mechanical investigations of hydrogels," *Opt. Express* 27, 26910-26923 (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, **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, Japan and USA, 2018
- L. Büttner, **J. Czarske**, M. Teich, N. Koukourakis, „Arrangement and method for disturbance correction for imaging flow measurement methods“, Patent, US Patent App. 16/628,391, 2017

October 31, 2020