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Wavefront Shaping in Biophotonics

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Recent advances in optical wavefront shaping techniques using digital holographic cameras and spatial light modulators are addressed. Light transport in complex disordered media is a fundamental phenomenon and plays an important role in biophotonics. Wavefront shaping allows imaging through and into biological tissue, which is important for the stimulation of neurons by optogenetics. Optogenetics is expected to help understand, alleviate or even treat neurodegenerative diseases. Furthermore, novel approaches to the photon-phonon interaction (Brillouin scattering) using pulsed lasers are presented.

Prof. Jürgen Czarske (Fellow of OSA, SPIE, EOS, Senior Member of IEEE) holds a Ph.D. (1995) and a Venia Legendi (2003) from Leibniz University of Hannover. Since 2004 he is full professor at TU Dresden. Since January 2016, he is Director of Institute of Circuits and Systems. His awards include the 1996 AHMT Measurement Technique Prize, a 2008 international Berthold Leibinger Innovation Prize, and a 2014 Reinhart Koselleck Award. He is an elected member of Wissenschaftliche Gesellschaft für Lasertechnik (WLT), COST BioBrillouin (EU, Brussels) and Saxon Academy of Sciences in Leipzig. Jürgen has published over 150 international papers in peer-reviewed journals, has presented over 100 invited talks and holds over 15 Patents. He is the general chair of ICO-25, 2020, in Dresden. The International Commission for Optics (ICO) is an umbrella organization for optics and photonics, incorporating over 50 national territories and academic societies such as European Optical Society (EOS), The Optical Society (OSA), International Society on Optics Within Life Sciences (OWLS), Institute of Electrical and Electronics Engineers (IEEE), and the International Society for Optics and Photonics (SPIE).