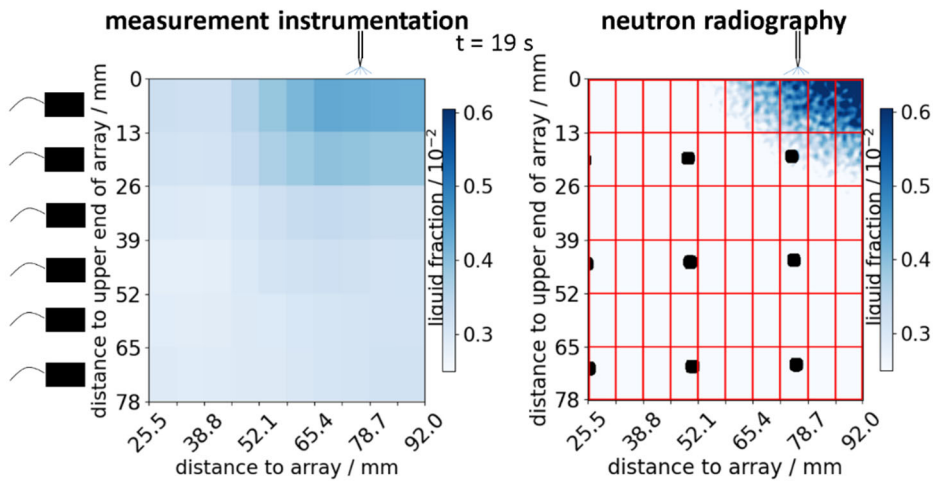


01/2023

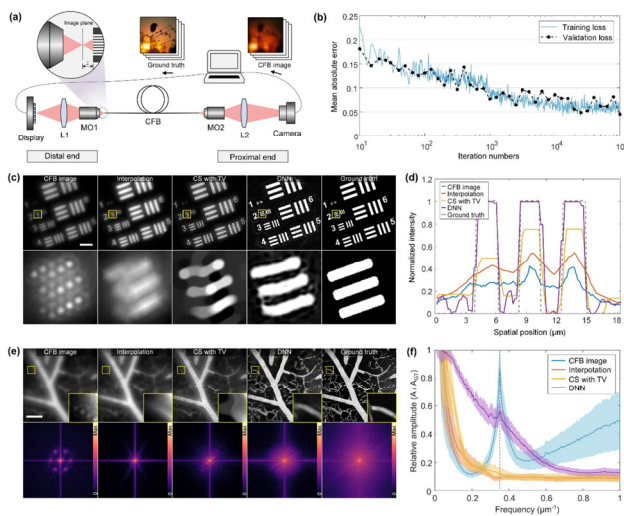
H. Emmerich, L. Knüpfer, S. Heitkam, E. Starke, P. Trtik, L. Schaller, D. Weik, J. Czarske, "Ultrasound imaging of liquid fraction in foam," IEEE Transactions on Instrumentation and Measurement 72 (2023), 6500211.



<https://doi.org/10.1109/TIM.2022.3228582>

11/2022

J. Wu, T. Wang, O. Uckermann, R. Galli, G. Schackert, L. Cao, J. Czarske, and R. Kuschmierz, "Learned end-to-end high-resolution lensless fiber imaging towards real-time cancer diagnosis," Sci Rep 12(1), 18846 (2022).



<https://www.nature.com/articles/s41598-022-23490-5>

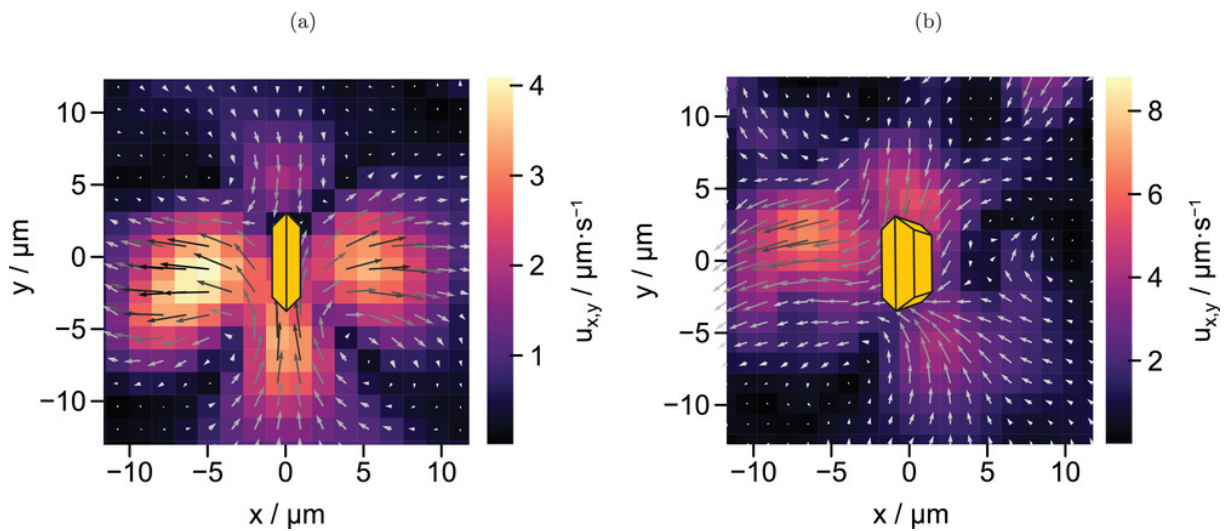
10/2022

K. Schmidt, N. Koukourakis, J.W. Czarske, "Assignment of Focus Position with Convolutional Neural Networks in Adaptive Lens Based Axial Scanning for Confocal Microscopy", *Appl. Sci.* Vol (12), 661 (2022)

<https://doi.org/10.3390/app12020661>

07/2022

S. Heckel, C. Bilsing, M. Wittmann, T. Gemming, L. Büttner, J. W. Czarske, J. Simmchen, "Beyond Janus Geometry: Characterization of Flow Fields around Nonspherical Photocatalytic Microswimmers", *Advanced Science*, 9, 2105009 (2022)



<https://onlinelibrary.wiley.com/doi/10.1002/adv.202105009>

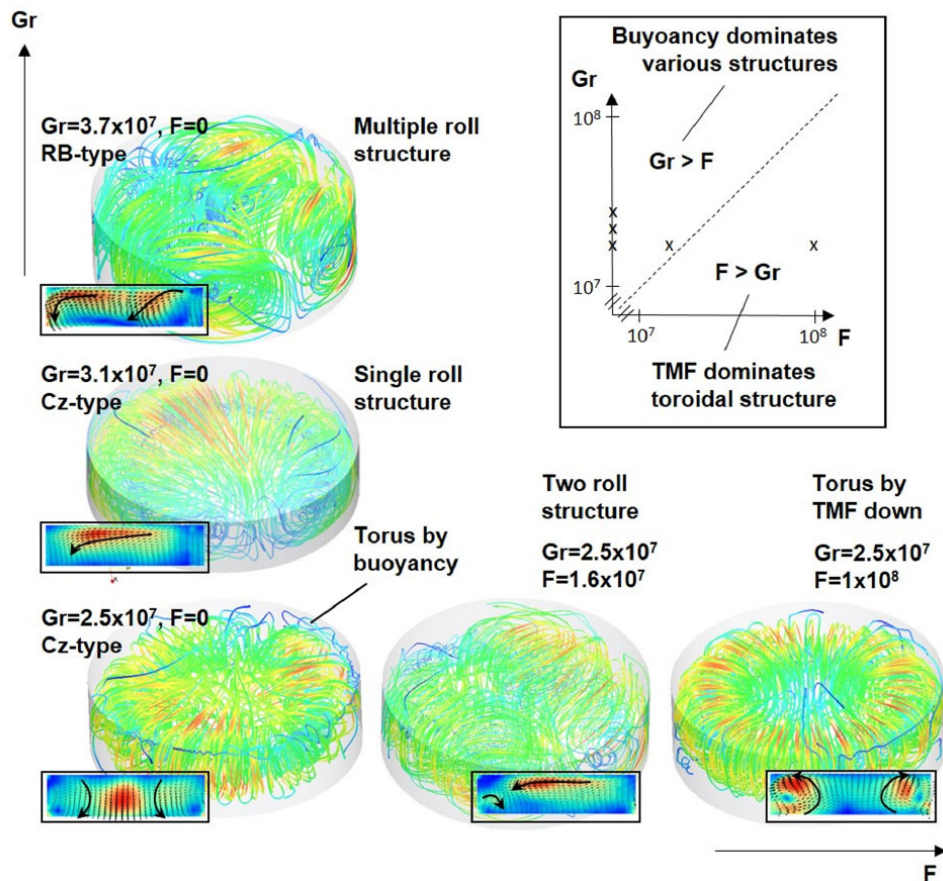
07/2022

J. Sun, J. Wu, S. Wu, R. Goswami, S. Girardo, J. Guck, L. Cao, N. Koukourakis, J. Czarske, "Quantitative phase imaging through an ultra-thin lensless fiber endoscope", *Light: Science and Applications of Nature Publishing* (2022)

<https://doi.org/10.1038/s41377-022-00898-2>

06/2022

O. Pätzold, K. Dadzis, C. Kirmse, D. Weik, L. Büttner, J. Czarske, A. Charitos, "Model experiments for melt flow in Czochralski growth of silicon", Journal of Crystal Growth 588 (2022), 126656.



<https://doi.org/10.1016/j.jcrysgro.2022.126656>

06/2022

Q. Zhang, S. Rothe, N. Koukourakis, J. Czarske, "Learning the matrix of few-mode fibers for high-fidelity spatial mode transmission", APL Photonics, 2022

<https://doi.org/10.1063/5.0088605>

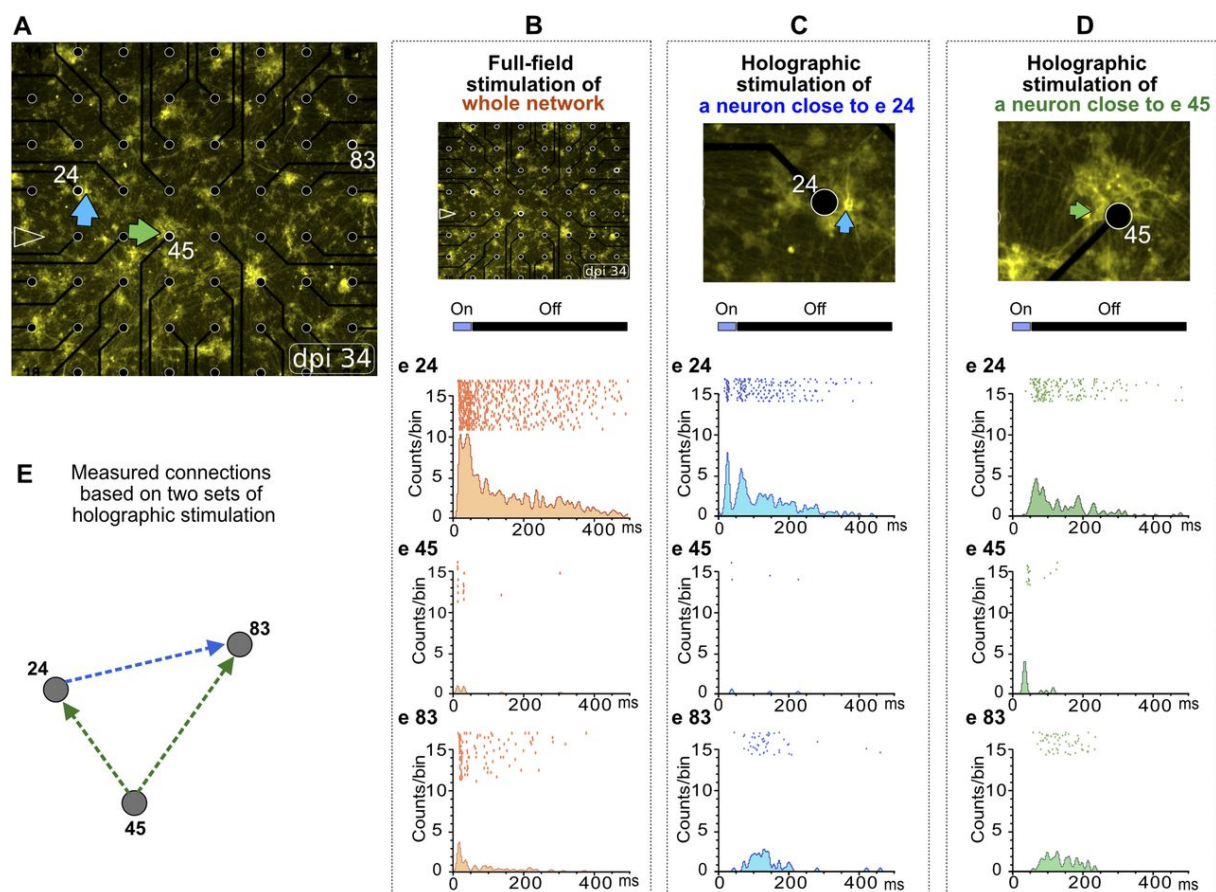
05/2022

J. Sun, J. Wu, N. Koukourakis, L. Cao, R. Kuschmierz, J. Czarske, „Real-time complex light field generation through a multi-core fiber with deep learning”, Scientific Reports, volume 12, 7732 (2022)

<https://doi.org/10.1038/s41598-022-11803-7>

04/2022

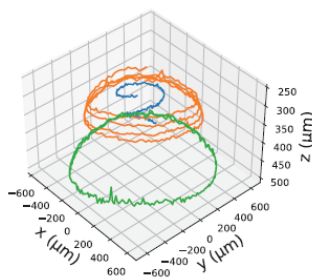
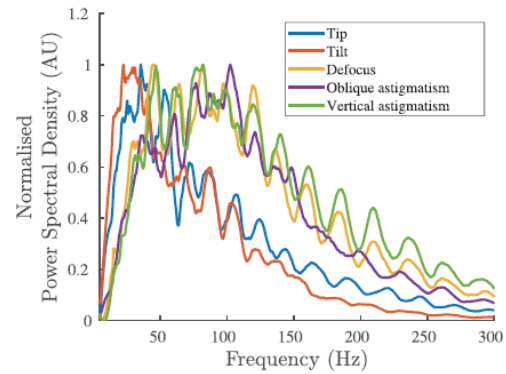
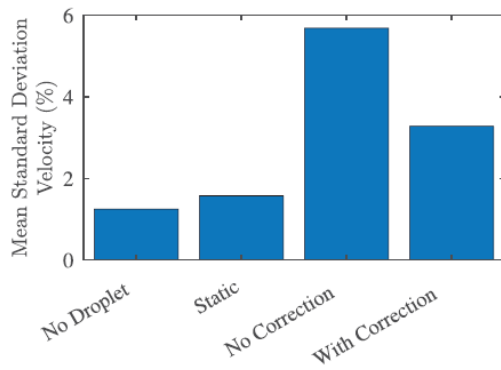
F. Schmieder, R. Habibey, J. Striebel, L. Büttner, J. Czarske, V. Busskamp, “Tracking connectivity maps in human stem cell–derived neuronal networks by holographic optogenetics”, Life Science Alliance5(7):e202101268, 2022



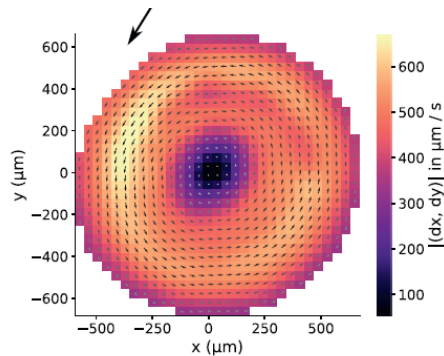
<https://www.life-science-alliance.org/content/5/7/e202101268>

03/2022

C. Bilsing, H. Radner, S. Burgmann, J. Czarske, L. Büttner, "3D Imaging with Double-Helix Point Spread Function and Dynamic Aberration Correction Using a Deformable Mirror", *Optics and Lasers in Engineering* 154, 107044 (2022)



(a) Selection of measured particle trajectories. Different colours represent separate trajectories.



(b) xy-flow profile in the droplet. The arrow indicates the direction of air flow. Immobile particle on the floor were removed.

<https://www.sciencedirect.com/science/article/abs/pii/S0143816622000999>

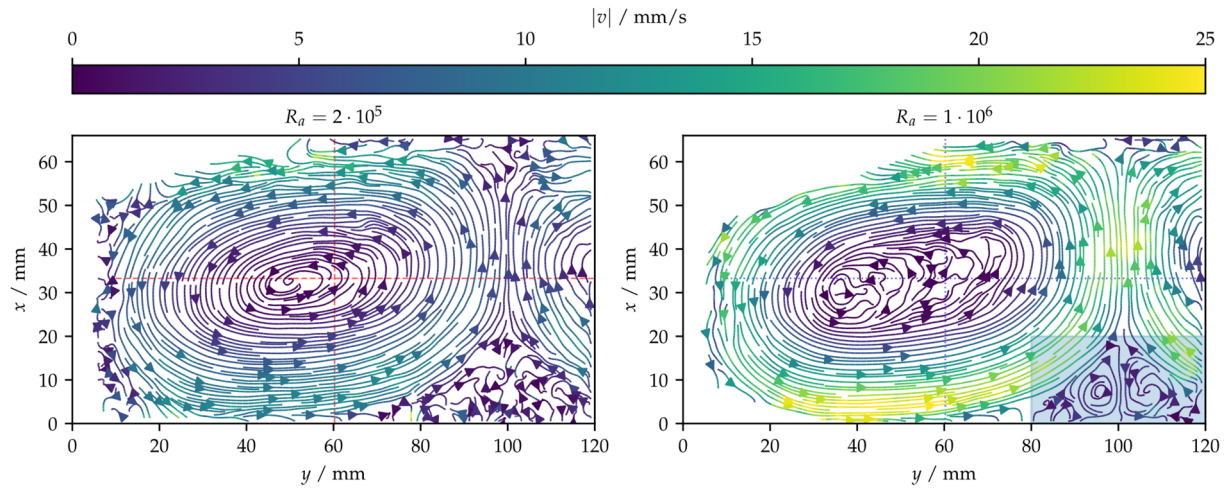
03/2022

N Koukourakis, F Wagner, S Rothe, MO Karl, JW Czarske, "Investigation of human organoid retina with digital holographic transmission matrix measurements," *Light: Advanced Manufacturing* 3 (1), 1-15, (2022)

<https://doi.org/10.37188/lam.2022.023>

03/2022

D. Weik, L. Grüter, D. Rübiger, S. Singh, T. Vogt, S. Eckert, J. Czarske, L. Büttner, "Ultrasound Localization Microscopy in Liquid Metal Flows", Applied Sciences 12.9 (2022), 4517.



<http://dx.doi.org/10.3390/app12094517>

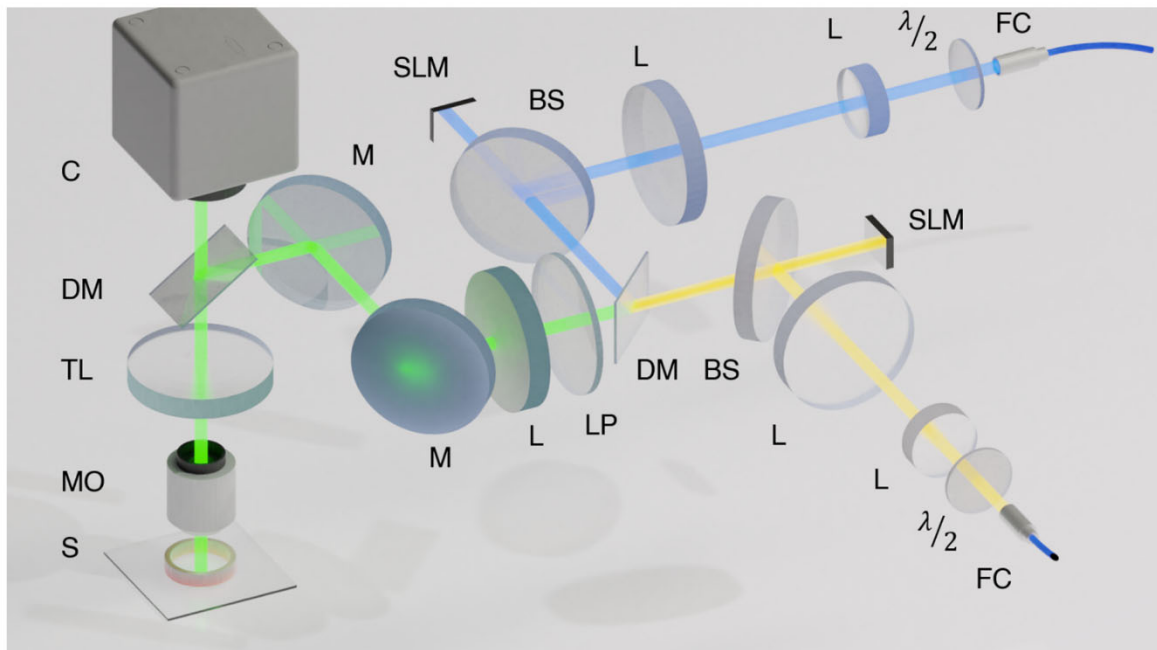
02/2022

Dennis Pohle, Stefan Rothe, Nektarios Koukourakis, Juergen W Czarske, "Surveillance of few-mode fiber-communication channels with a single hidden layer neural network", Optics Letters, Vol. 47 No. 3 (2022)

<https://doi.org/10.1364/OL.445885>

02/2022

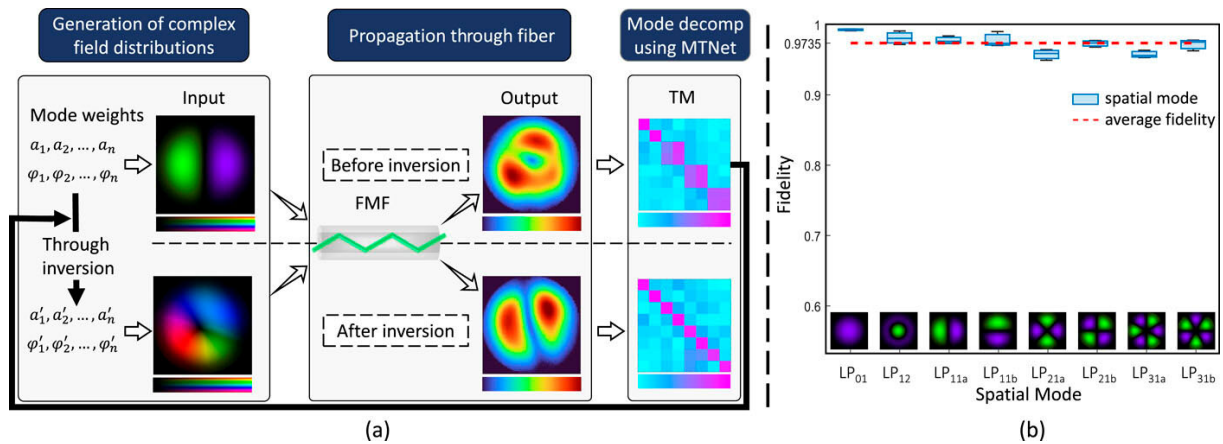
F. Schmieder, L. Büttner, T. Hanitzsch, V. Busskamp, J. Czarske, "Two-Wavelength Computational Holography for Aberration-Corrected Simultaneous Optogenetic Stimulation and Inhibition of In Vitro Biological Samples" Applied Science 12, 2022



<https://www.mdpi.com/2076-3417/12/5/2283>

02/2022

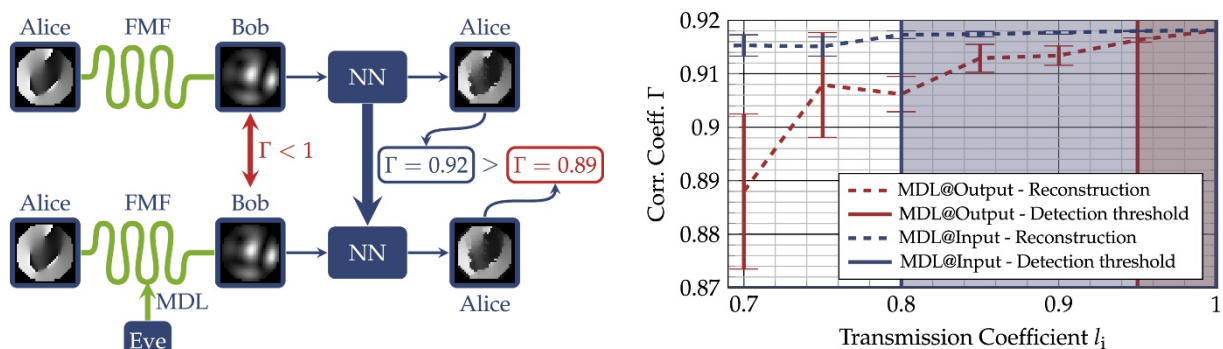
Zhang, Q., Rothe, S., Koukourakis, N., Czarske, J. (2022). Learning the matrix of few-mode fibers for high-fidelity spatial mode transmission. *APL Photonics*, 7(6), 066104.



<https://doi.org/10.1063/5.0088605>

01/2022

Pohle, D., Rothe, S., Koukourakis, N., & Czarske, J. (2022). Surveillance of few-mode fiber-communication channels with a single hidden layer neural network. *Optics Letters*, 47(5), 1275-1278.



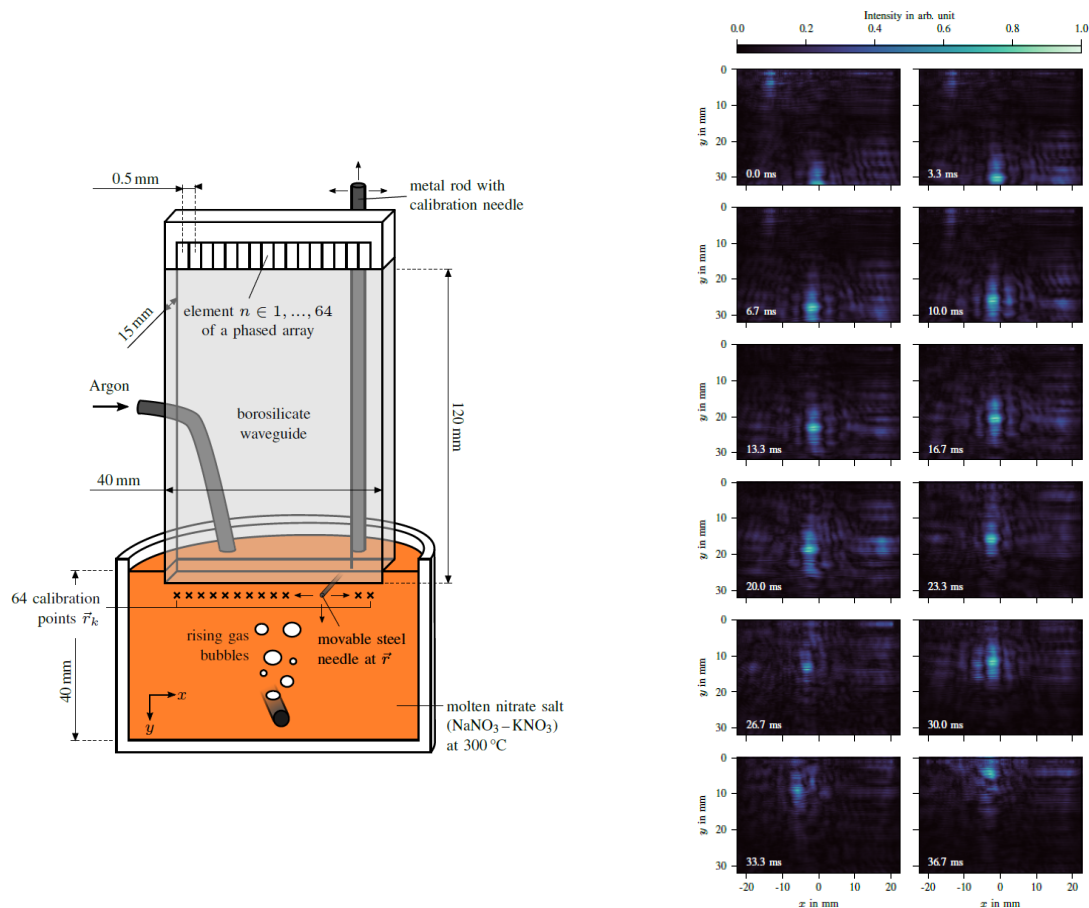
<https://doi.org/10.1364/OL.445885>

01/2022

B Krug, N Koukourakis, J Guck, J Czarske, „Nonlinear microscopy using impulsive stimulated Brillouin scattering for high-speed elastography,“ *Optics Express* **30** (4), 4748-4758 (2022).
<https://doi.org/10.1364/OE.449980>

01/2022

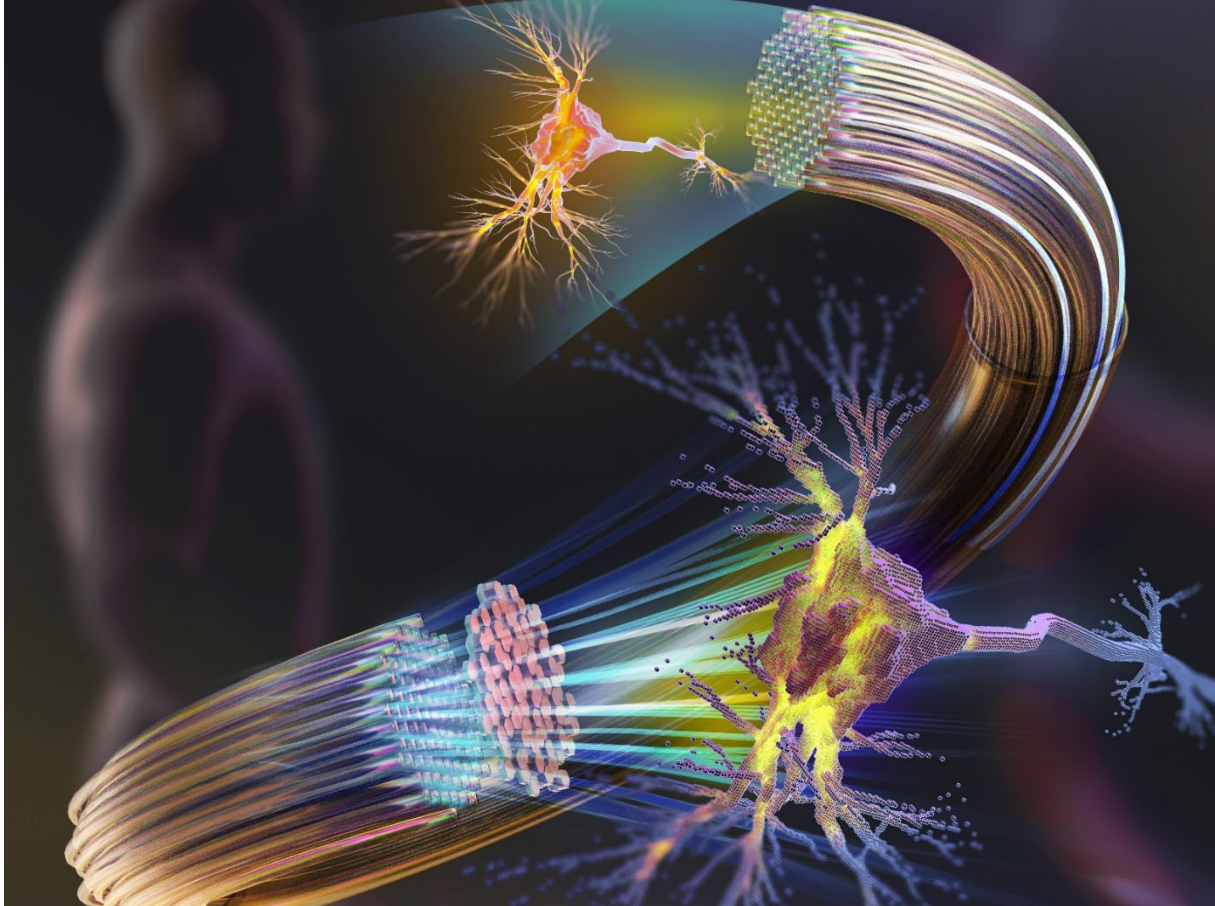
L. Grüter, R. Nauber, J. Czarske, "Ultrasonic Bubble Imaging in Molten Salt Using a Multi-Mode Waveguide and Time Reversal," *IEEE Transactions on Instrumentation and Measurement* **71** (2022), 4501810.



<https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9686753>

12/2021

R. Kuschmierz, E. Scharf, D. F. Ortégón-González, T. Glosemeyer, J. Czarske. Ultra-thin 3D lensless fiber endoscopy using diffractive optical elements and deep neural networks, *Light: Advanced Manufacturing of Nature Publishing*. 2(4) 415-424 (2021)

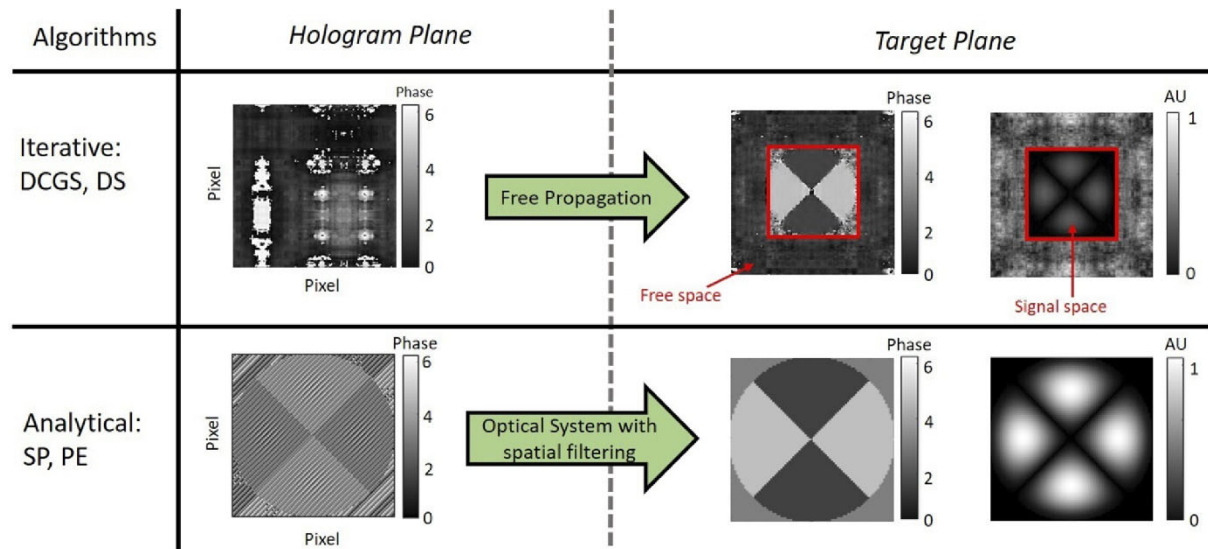


<https://www.light-am.com/en/article/doi/10.37188/lam.2021.030>

<https://doi.org/10.37188/lam.2021.030>

10/2021

Rothe, S., Daferner, P., Heide, S., Krause, D., Schmieder, F., Koukourakis, N., & Czarske, J. W. (2021). Benchmarking analysis of computer generated holograms for complex wavefront shaping using pixelated phase modulators. *Optics Express*, 29(23), 37602-37616.



<https://doi.org/10.1364/OE.434842>

10/2021

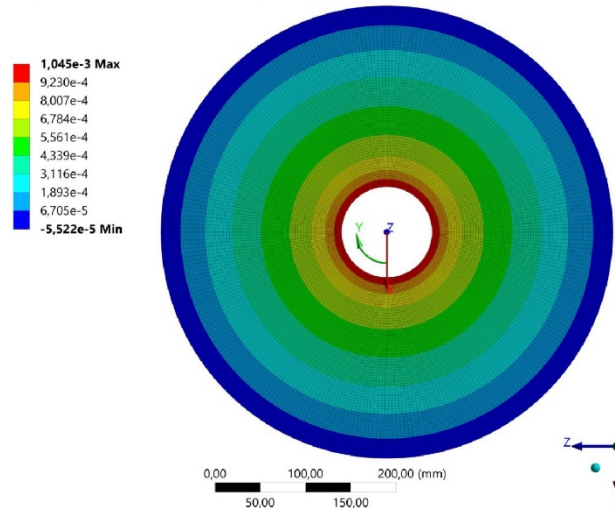
Rothe, Stefan, Philipp Daferner, Sebastian Heide, David Krause, Felix Schmieder, Nektarios Koukourakis, and Jürgen W. Czarske. "Benchmarking analysis of computer generated holograms for complex wavefront shaping using pixelated phase modulators." *OPTICA Optics Express* 29(23), 37602-37616 (2021)

<https://doi.org/10.1364/OE.434842>

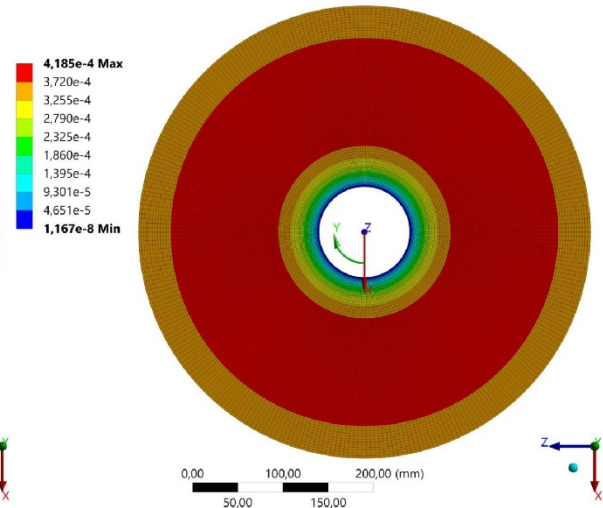
09/2021

A. Filippatos, B. Grüber, J. Lich, T. Wollmann, B. Zhou, R. Kuschmierz, E. Koch, J. Czarske, M. Gude, "Design and testing of polar-orthotropic multi-layered composites under rotational load", *Materials & Design*, Vol. 207, 2021,

(a) Radial Strain on Top Layer



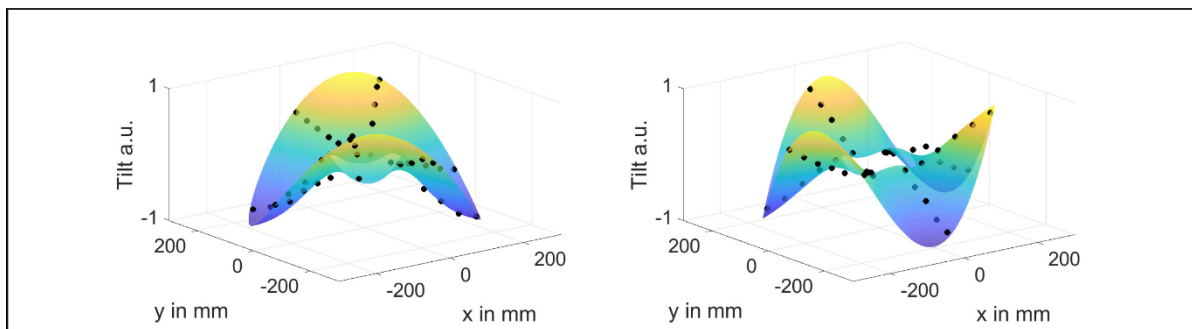
(b) Tangential Strain on Top Layer



<https://www.sciencedirect.com/science/article/pii/S0264127521004068>

07/2021

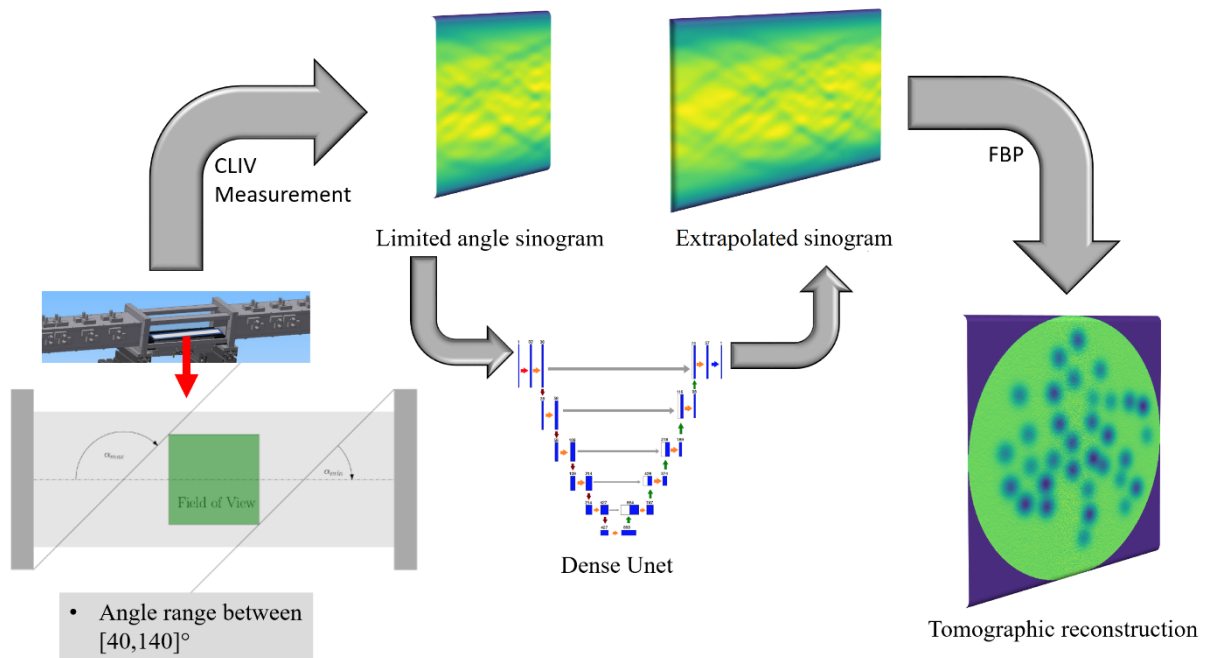
J. Lich, T. Wollmann, A. Filippatos, M. Gude, J. Czarske, R. Kuschmierz, "Spatially Resolved Experimental Modal Analysis on High-Speed Composite Rotors Using a Non-Contact, Non-Rotating Sensor." *Sensors* 21.14 (2021)



<https://www.mdpi.com/1424-8220/21/14/4705>

05/2021

O Rothkamm, J Gürtler, J Czarske, R Kuschmierz, „Dense U-Net for Limited Angle Tomography of Sound Pressure Fields“, Applied Sciences 11 (10), 4570,



<https://www.mdpi.com/2076-3417/11/10/4570>

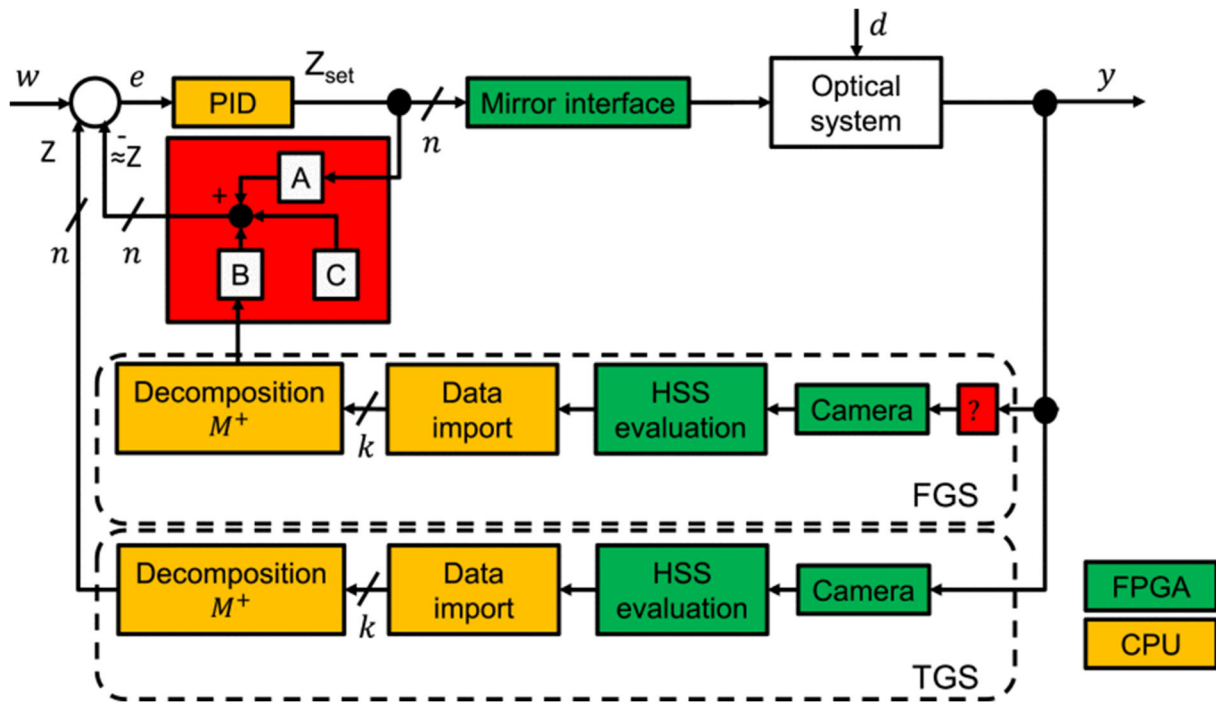
05/2021

J. Sun, N. Koukourakis, J. Guck, J. Czarske, "Rapid computational cell-rotation about arbitrary axes in 3D with multi-core fiber", OSA Biomed. Opt. Express 12, 20213423-3437 (2021)

<https://doi.org/10.1364/BOE.423035>

04/2021

H. Radner, J. Stange, L. Büttner, J. Czarske, "Field programmable system-on-chip based control system for real-time distortion correction in optical imaging", IEEE Transactions on Industrial Electronics 68(4), 3370-3379, 2021



<https://ieeexplore.ieee.org/document/9037191>

<https://doi.org/10.1109/TIE.2020.2979557>

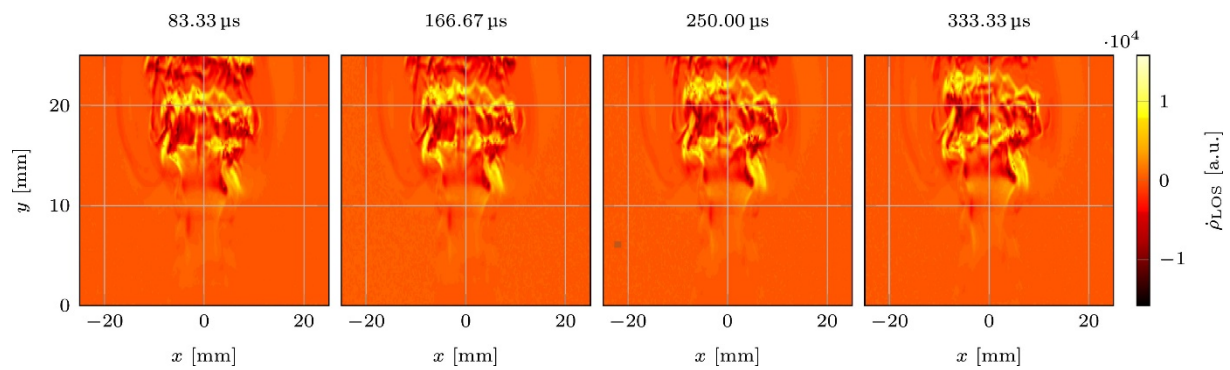
04/2021

J. Sun, N. Koukourakis, J. Czarske, "Complex Wavefront Shaping through a Multi-Core Fiber", Applied Sciences 11(9):3949. (2021)

<https://doi.org/10.3390/app11093949>

04/2021

J. Gürtler, F. Greiffenhagen, J. Woisetschläger, R. Kuschmierz, J. Czarske, "Seedingless measurement of density fluctuations and flow velocity using high-speed holographic interferometry in a swirl-stabilized flame", *Optics and Lasers in Engineering*, 2020



<https://www.sciencedirect.com/science/article/pii/S0143816620319199>

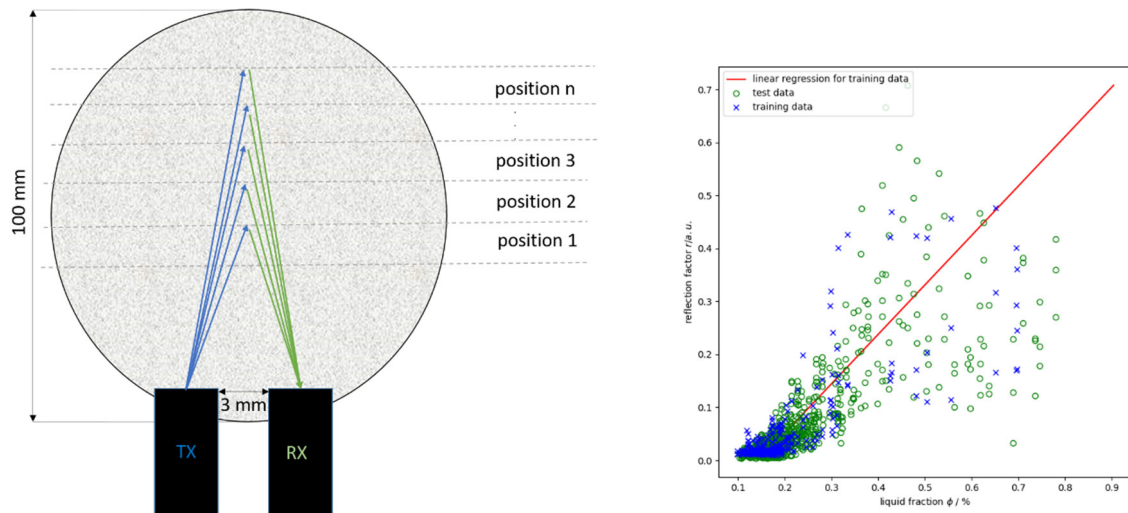
03/2021

S. Rothe, Q. Zhang, N. Koukourakis, J. Czarske, "Intensity-only Mode Decomposition on Multimode Fibers using a Densely Connected Convolutional Network", *OSA/IEEE Journal of Lightwave Technology*, DOI: 10.1109/JLT.2020.3041374, 2021

<https://ieeexplore.ieee.org/document/9273214>

03/2021

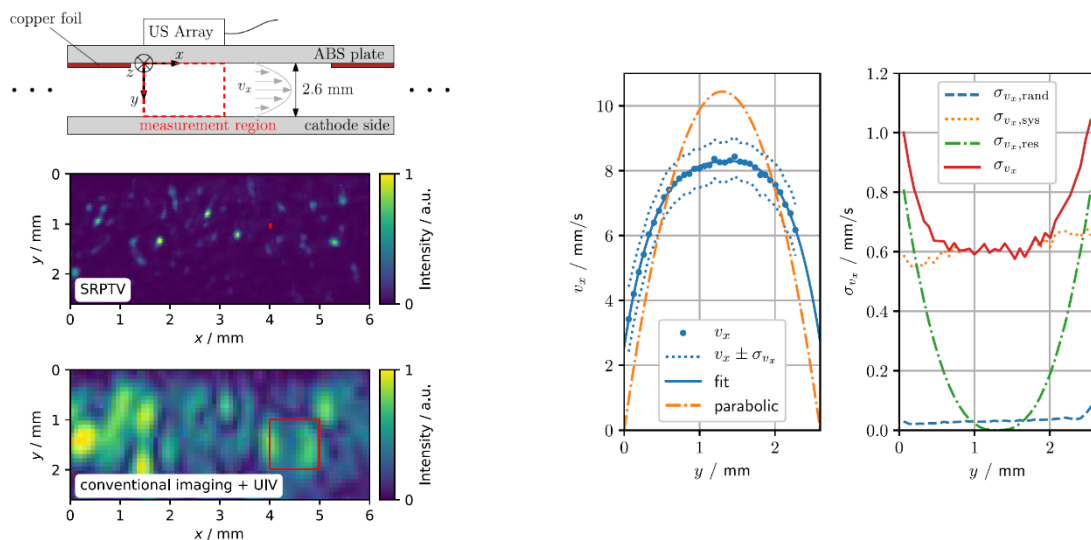
H. Emmerich, L. Schaller, R. Nauber, L. Knüpfer, S. Heitkam, J. Czarske, L. Büttner, "Linear, spatio-temporally resolved ultrasound measurement of the liquid fraction distribution in froth", *tm-Technisches Messen* 88.9 (2021), 562-570.



<https://doi.org/10.1515/teme-2021-0047>

03/2021

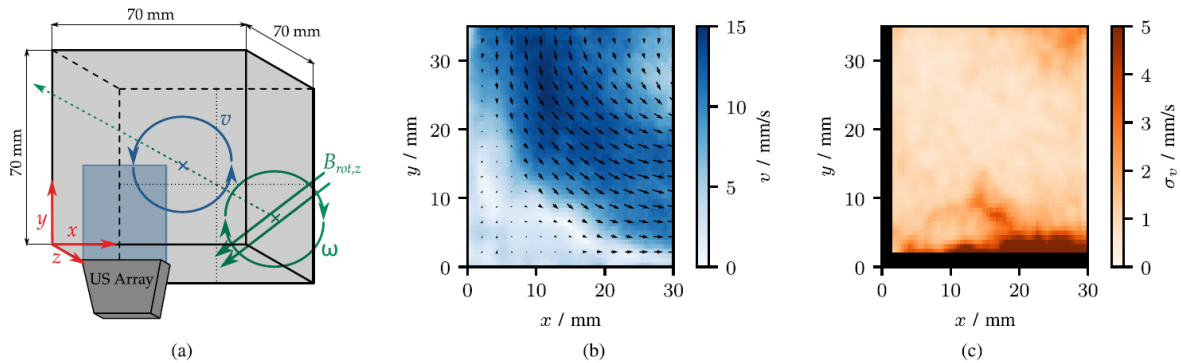
C. Kupsch, L. Feierabend, R. Nauber, L. Büttner, J. Czarske, "Ultrasound Super-Resolution Flow Measurement of Suspensions in Narrow Channels," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 68.3 (2021), 807-817.



<https://ieeexplore.ieee.org/document/9133566>

03/2021

D. Weik, R. Nauber, C. Kupsch, L. Büttner, J. Czarske, "Uncertainty Quantification of Ultrasound Image Velocimetry for Liquid Metal Flow Mapping," IEEE Transactions on Instrumentation and Measurement 70 (2021), 1006211.



<https://doi.org/10.1109/TIM.2021.3065433>

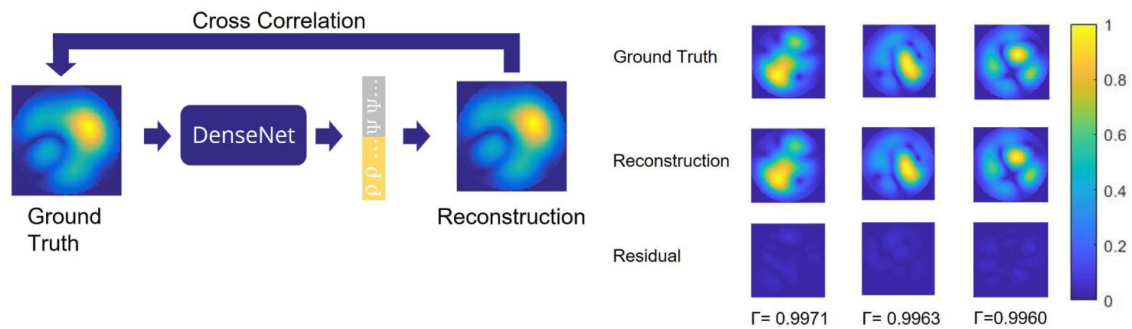
01/2021

Kayvan Forouhesh Tehrani, Nektarios Koukourakis, Jürgen Czarske, Luke J Mortensen, "In situ measurement of the isoplanatic patch for imaging through intact bone", Journal of Biophotonics, e202000160, "cover page of the journal", 2021

<https://pubmed.ncbi.nlm.nih.gov/32844561/>

11/2020

Rothe, S., Zhang, Q., Koukourakis, N., & Czarske, J. (2021). Intensity-only mode decomposition on multimode fibers using a densely connected convolutional network. *Journal of Lightwave Technology*, 39(6), 1672-1679.



<https://doi.org/10.1364/JLT.39.001672>

09/2020

Aziz, Azaam; Pane, Stefano; Iacovacci, Veronica; Koukourakis, Nektarios; Czarske, Jürgen; Menciassi, Arianna; Medina-Sánchez, Mariana; Schmidt, Oliver, "Medical Imaging of Microrobots: Towards In Vivo Applications", *ACS Nano* **14**, 9, 10865–10893 (2020)

<https://doi.org/10.1021/acsnano.0c05530>

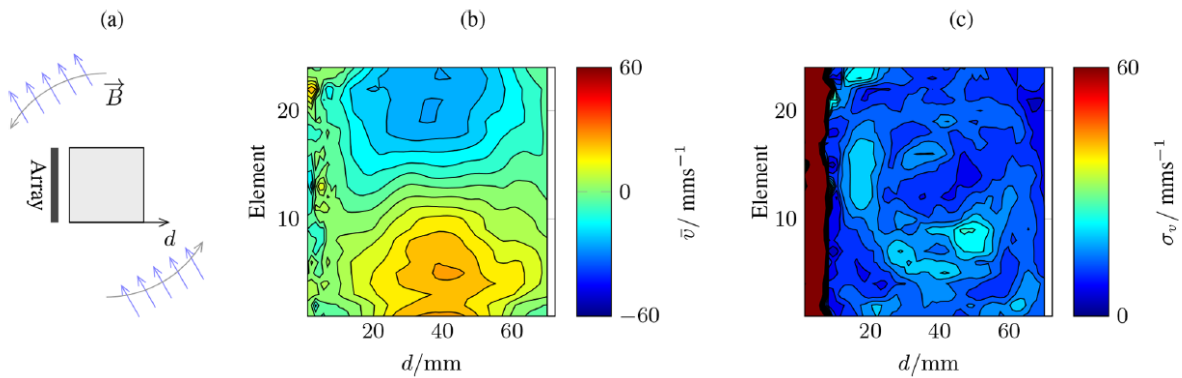
07/2020

Lemke, Florian; Weber, Pascal; Philipp, Katrin; Czarske, Juergen; Koukourakis, Nektarios; Wallrabe, Ulrike; Wapler, Matthias, "Piezo-actuated adaptive prisms for continuously adjustable bi-axial scanning", *Smart Materials and Structures*, 2020

<https://doi.org/10.1088/1361-665X/ab8a00>

07/2020

R. Nauber, L. Büttner, J. Czarske, "Measurement uncertainty analysis of FPGA-based realtime signal processing for ultrasound flow imaging", *Journal of Sensors and Sensor Systems* 9 (2020), 227-238.

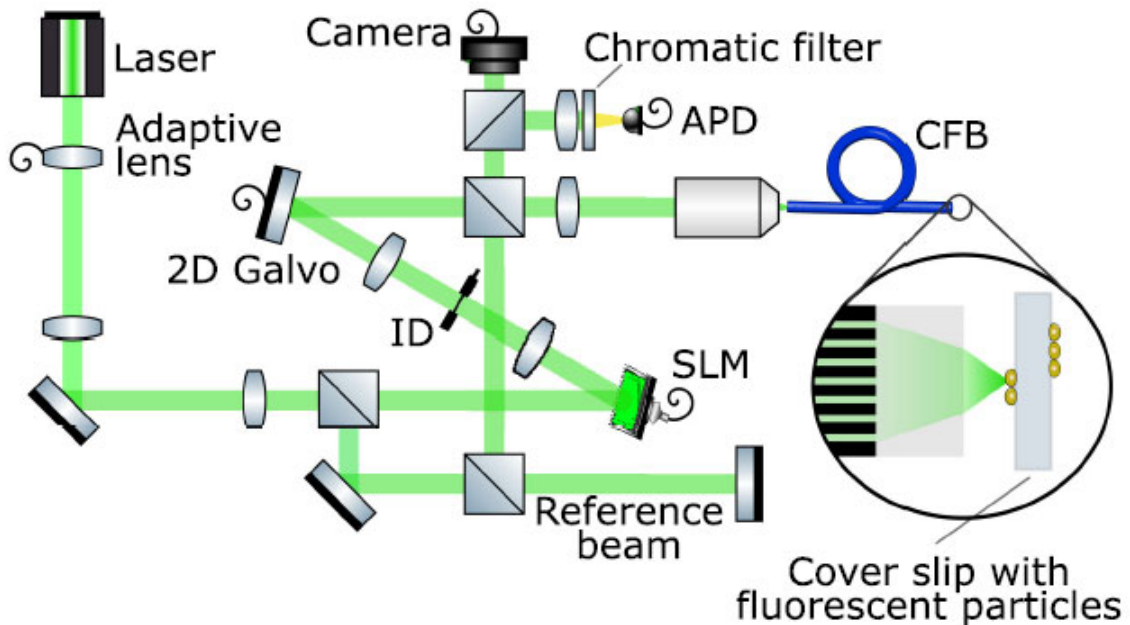


<https://jsss.copernicus.org/articles/9/227/2020/>

<https://doi.org/10.5194/jsss-9-227-2020>

06/2020

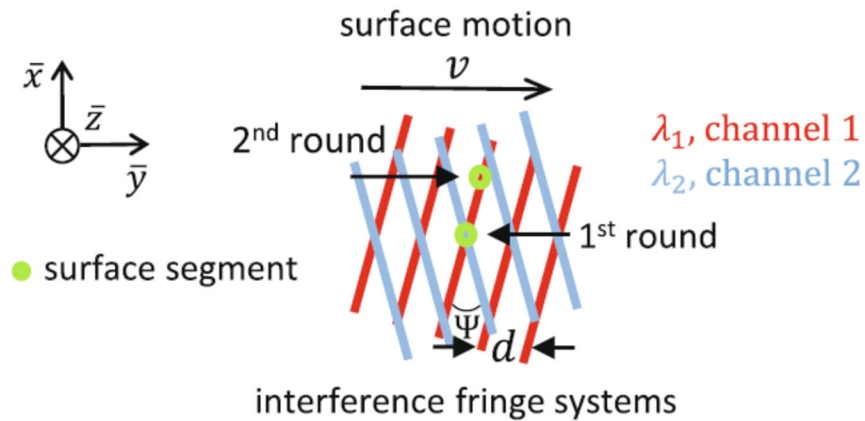
E. Scharf, J. Dremel, R. Kuschmierz, J. Czarske, "Video-rate lensless endoscope with self-calibration using wavefront shaping", *Optics Letters* 45(13), 3629-3632, 2020



<https://opg.optica.org/ol/abstract.cfm?uri=ol-45-13-3629>

05/2020

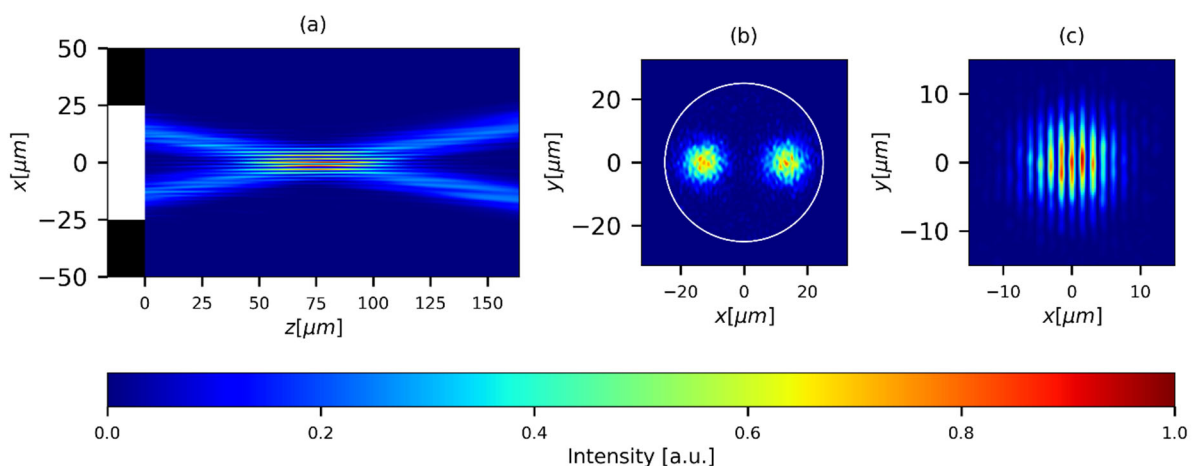
H. Zhang, D. Anders, M. Löser, S. Ihlenfeldt, J. Czarske, R. Kuschmierz, "Non-contact, bi-directional tool tip vibration measurement in CNC milling machines with a single optical sensor", Mechanical Systems and Signal Processing, 2020



<https://www.sciencedirect.com/science/article/abs/pii/S0888327020300339>

03/2020

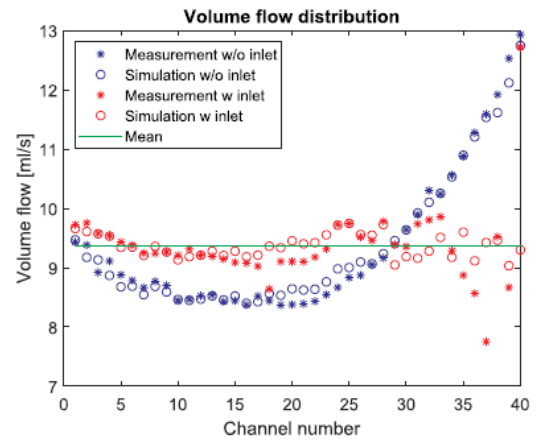
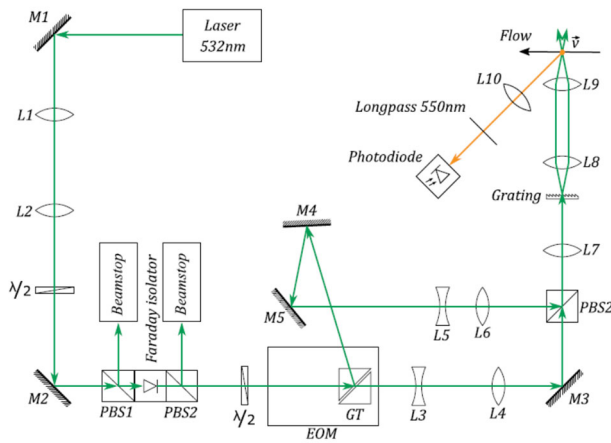
L. Büttner, M. Thümmler, J. Czarske, "Velocity measurements with structured light transmitted through a multimode optical fiber using digital optical phase conjugation", Opt. Express 28, 8064-8075, 2020



<https://opg.optica.org/oe/fulltext.cfm?uri=oe-28-6-8064&id=428742>

02/2020

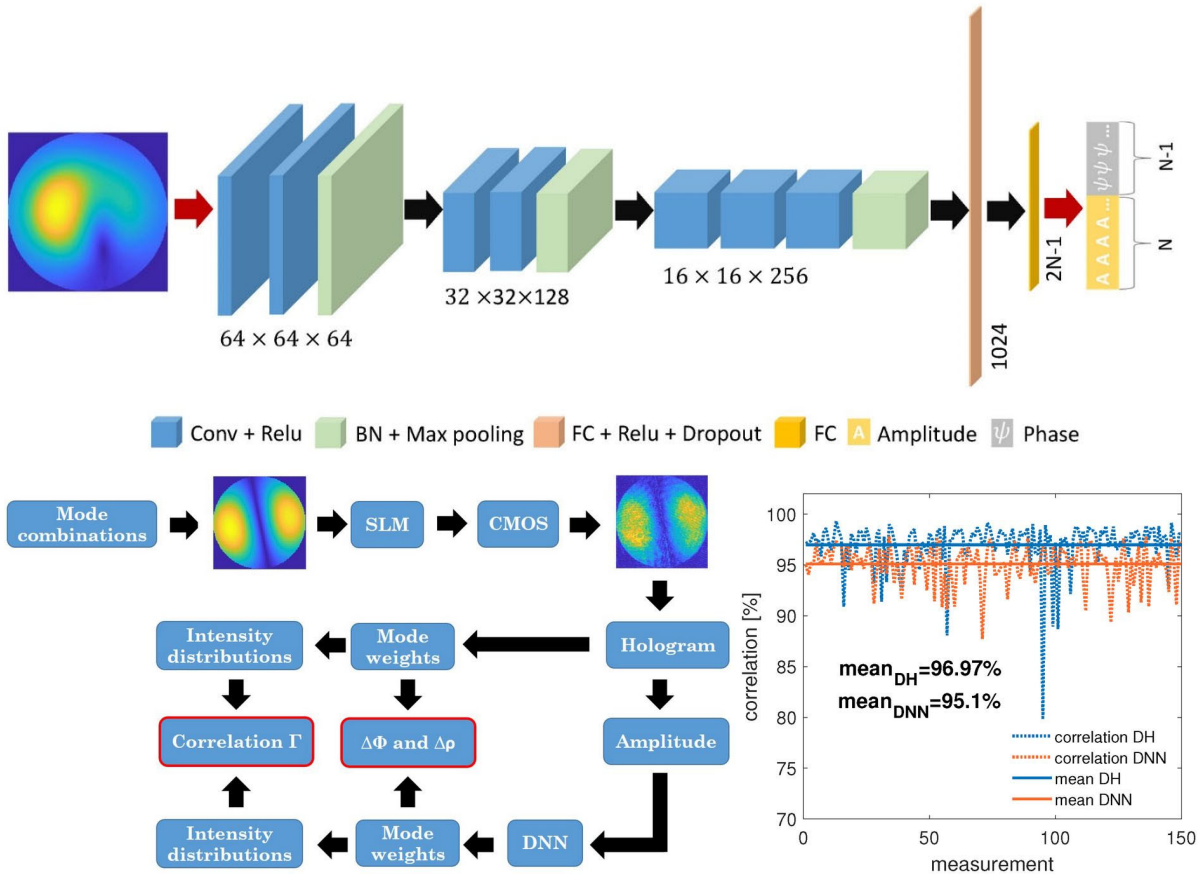
F. Bürkle, F. Moyon, L. Feierabend, J. Wartmann, A. Heinzl, J. Czarske, L. Büttner, "Investigation and Equalisation of the Flow Distribution in a Fuel Cell Stack", Journal of Power Sources, 2020



<https://doi.org/10.1016/j.jpowsour.2019.227546>

02/2020

Rothe, S., Zhang, Q., Koukourakis, N., & Czarske, J. W. (2020). Deep learning for computational mode decomposition in optical fibers. Applied Sciences, 10(4), 1367.



<https://www.mdpi.com/2076-3417/10/4/1367>

02/2020

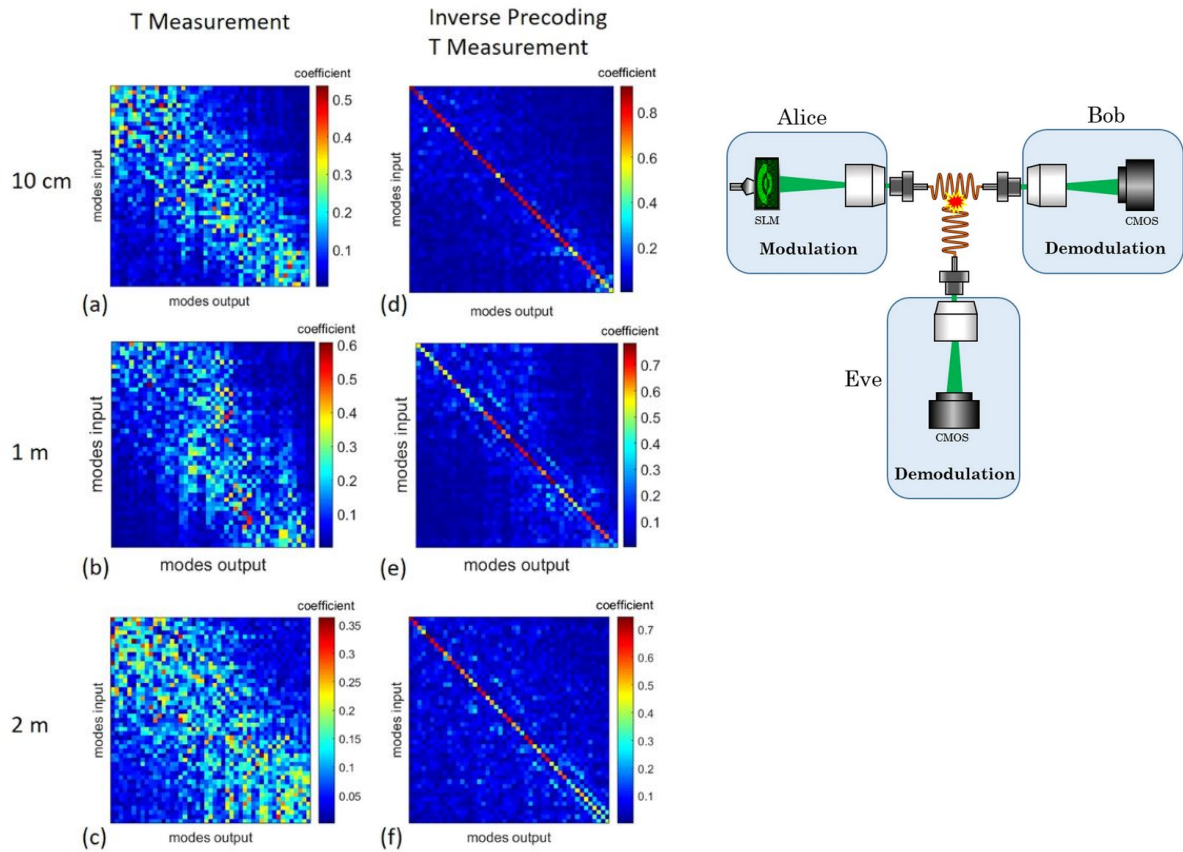
S. Rothe, Q. Zhang, N. Koukourakis, J. Czarske, "Deep Learning for Computational Mode Decomposition in Optical Fibers", Applied Sciences 10(4), 1367, 2020 <https://doi.org/10.3390/app10041367>

02/2020

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 <https://doi.org/10.1038/s41598-020-59625-9>

01/2020

Rothe, S., Koukourakis, N., Radner, H. *et al.* Physical Layer Security in Multimode Fiber Optical Networks. *Sci Rep* **10**, 2740 (2020).



<https://www.nature.com/articles/s41598-020-59625-9>

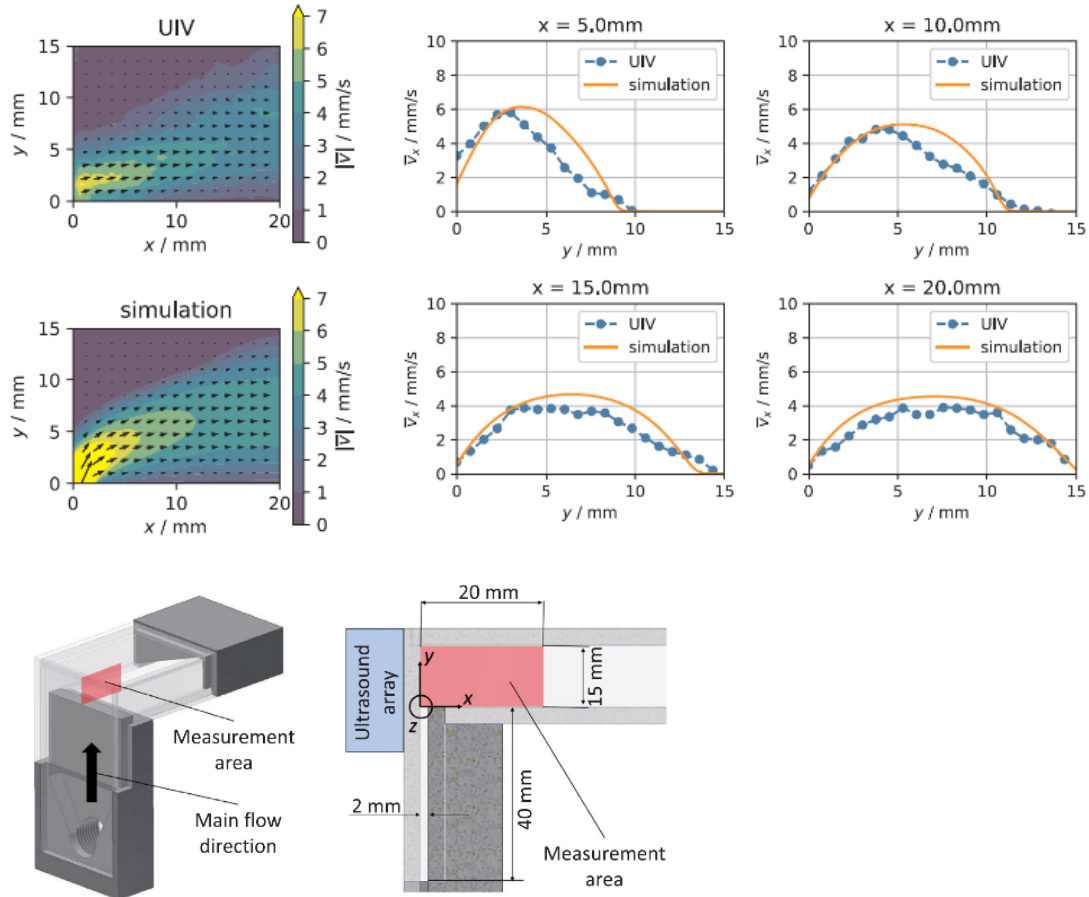
<https://doi.org/10.1038/s41598-020-59625-9>

01/2020

W. Wang, K. Philipp, J. Czarske, N. Koukourakis, "Real-time monitoring of adaptive lenses with high tuning range and multiple degrees of freedom", *Optics Letters* **45**(2), 272-275, 2020
<https://doi.org/10.1364/OL.45.000272>

12/2019

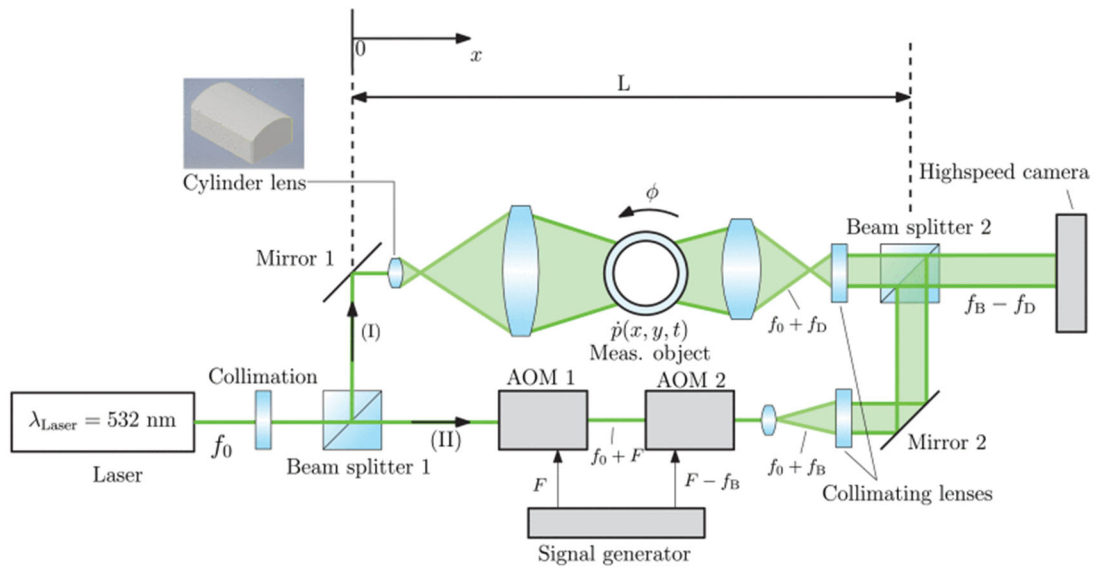
C. Kupsch, L. Feierabend, R. Nauber, L. Büttner, J. Czarske, "Flow investigation of complex suspension electrodes for battery applications using ultra-sound imaging velocimetry", Experimental Thermal and Fluid Science 109 (2019), 109886.



<https://www.researchgate.net/publication/330301162> Vector Flow Imaging of a Highly Laden S
uspension in a Zinc-Air Flow Battery Model

10/2019

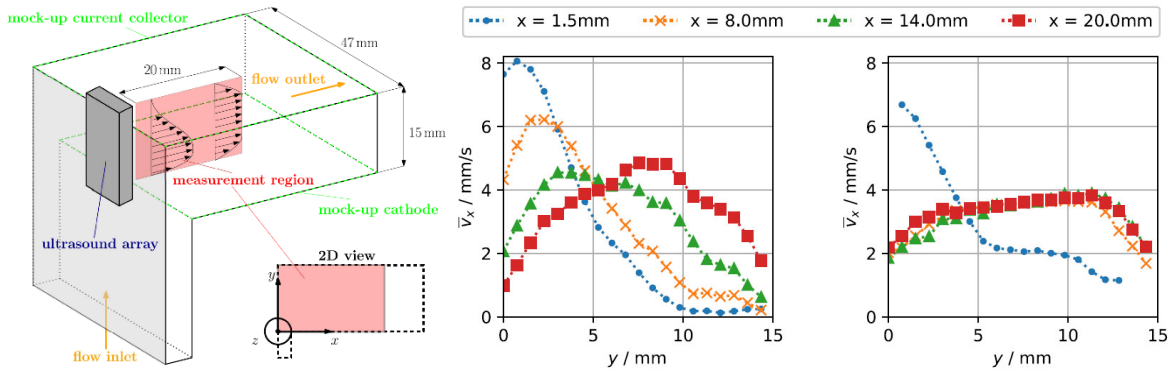
Andrés E. Ramos Ruiz, Johannes Gürtler, Robert Kuschmierz, and Jürgen W. Czarske,
“Measurement of the local sound pressure on a Bias-flow liner using high-speed holography
and tomographic reconstruction”, IEEE Access (2019),



<https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8873569>

04/2019

C. Kupsch, D. Weik, L. Feierabend, R. Nauber, L. Büttner, J. Czarske, "Vector Flow Imaging of a Highly Laden Suspension in a Zinc-Air Flow Battery Model," IEEE Transactions on Ultra-sonics, Ferroelectrics, and Frequency Control 66.4 (2019), 761-771.

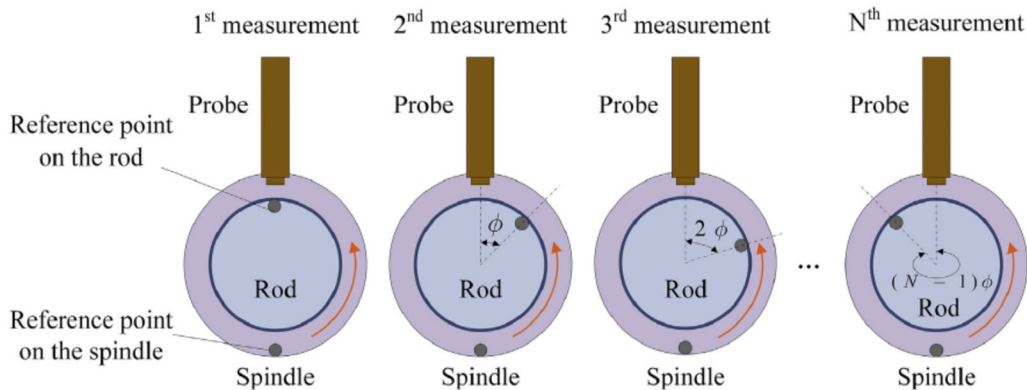


<https://www.lasermetrology.de/dateien/MST-Report-2018.pdf>

<https://athene-forschung.unibw.de/doc/124162/124162.pdf>

04/2019

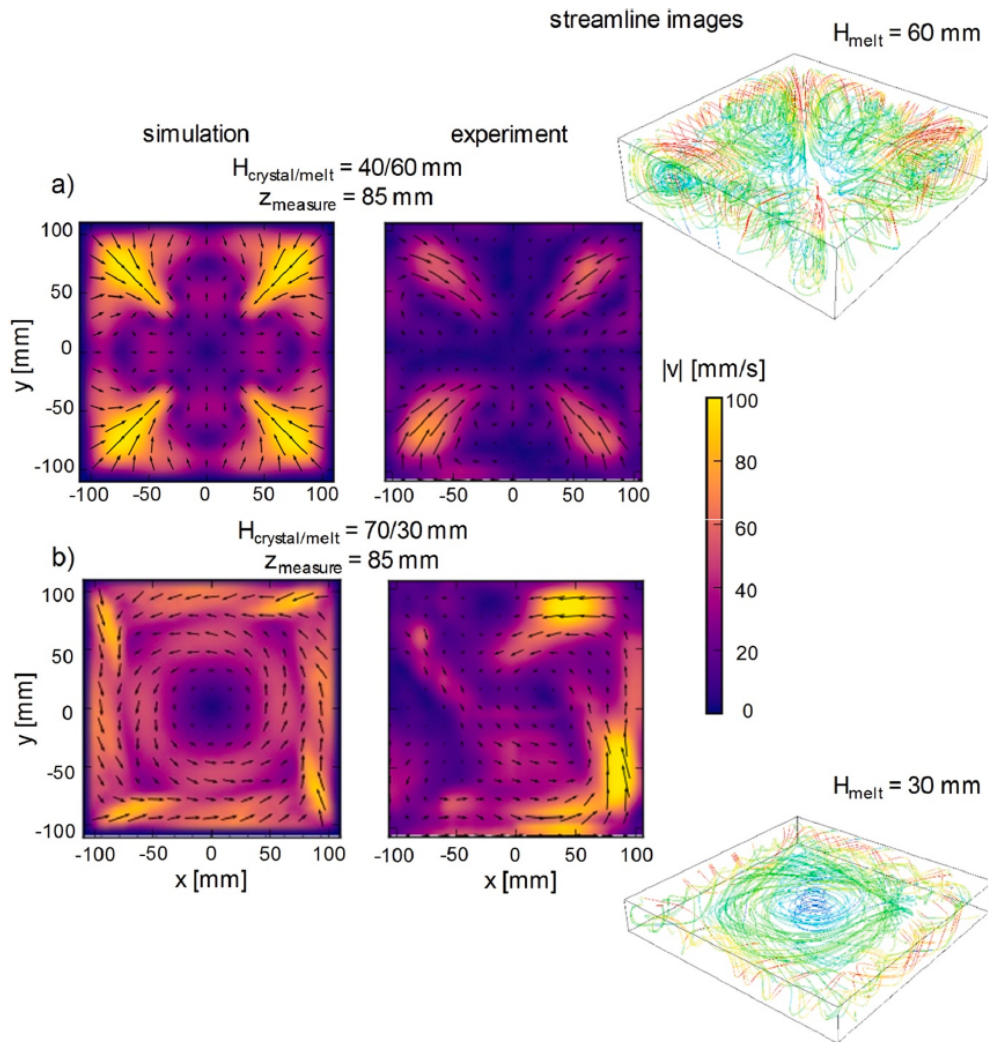
S. Shi, H. Zhang, J. Qu, G. Jin, R. Kuschmierz, Jürgen Czarske, "Measurement uncertainty propagation in spindle error separation techniques - Investigation by means of stochastic spectral method", International Journal of Machine Tools and Manufacture, Volume 141, 2019



<https://www.sciencedirect.com/science/article/abs/pii/S0890695518307193>

03/2019

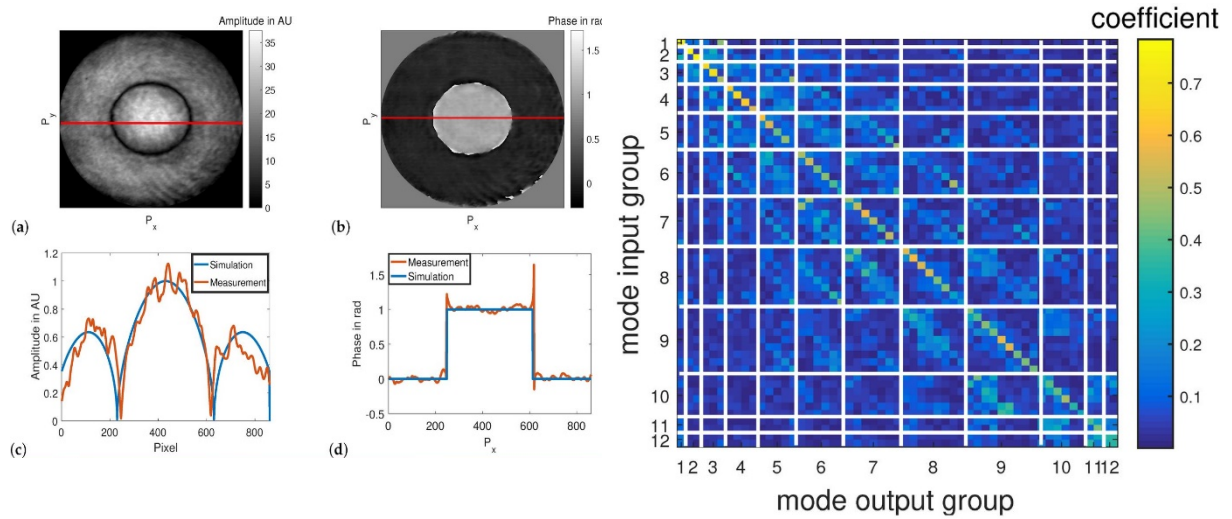
N. Thieme, M. Keil, D. Meier, P. Bönisch, K. Dadzis, O. Pätzold, M. Stelter, L. Büttner, J. Czarske, "Directional solidification of gallium under time-dependent magnetic fields with in situ measurements of the melt flow and the solid-liquid interface", *Journal of Crystal Growth* 522 (2019), 221-229.



<https://www.sciencedirect.com/science/article/pii/S0022024819303550>

01/2019

Rothe, S., Radner, H., Koukourakis, N., & Czarske, J. W. (2019). Transmission matrix measurement of multimode optical fibers by mode-selective excitation using one spatial light modulator. *Applied Sciences*, 9(1), 195.



<https://www.mdpi.com/2076-3417/9/1/195>