

## Computational Optics 2018

Wednesday - Thursday 16 - 17 May 2018

### Conference Sessions At A Glance

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Poster Session  
Wednesday Plenary Session  
**1:** Design and Optimization  
**2:** Computational Imaging  
International Day of Light Special Event  
**3:** Microstructures and Illumination  
**4:** Physical Optics I  
**5:** Physical Optics II

### Important Dates

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Abstract Due:  
15 November 2017  
  
Author Notification:  
8 January 2018  
  
Manuscript Due Date:  
18 April 2018

### Conference Committee

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#### Conference Chairs

[Daniel G. Smith](#), Nikon Research Corp. of America (United States)  
[Frank Wvrowski](#), Friedrich-Schiller-Univ. Jena (Germany)  
[Andreas Erdmann](#), Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

#### Program Committee

Miguel A. Alonso, Univ. of Rochester (United States)  
[Sven Burger](#), Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany)  
[Donis G. Flagello](#), Nikon Research Corp. of America (United States)  
Ari T. Friberg, Univ. of Eastern Finland (Finland)  
[Hans Peter Herzig](#), Ecole Polytechnique Fédérale de Lausanne (Switzerland)

#### Program Committee continued...

Roarke Horstmeyer, Duke Univ. (United States)  
[Olivier J. F. Martin](#), Ecole Polytechnique Fédérale de Lausanne (Switzerland)  
[Carsten Rockstuhl](#), Karlsruher Institut für Technologie (Germany)  
[Michael Totzeck](#), Carl Zeiss SMT GmbH (Germany)  
[H. Paul Urbach](#), Technische Univ. Delft (Netherlands)  
[Wei Wang](#), Heriot-Watt Univ. (United Kingdom)  
[Zeev Zalevsky](#), Bar-Ilan Univ. (Israel)

**TUESDAY 15 MAY**
[Show All Abstracts](#)

### Session PTue: Poster Session

Tuesday 15 May 2018

6:00 PM - 7:30 PM

Location: Foyer Connecting Hall 4 to Hall 3

Conference attendees are invited to attend the joint poster session to network, enjoy light refreshments, and view the poster papers. Attendees are required to wear their conference registration badge. Authors of poster papers will be present to answer questions concerning their papers. Poster authors must set up their poster between 10:00 and 16:00 on Tuesday 15 May. [View poster presentation guidelines.](#)

#### 3D ray tracing model for laser beams influenced by thermal lensing in solid-state gain media

Paper 10694-29

Time: 6:00 PM - 7:30 PM

Author(s): Phillip Lino Rall, Ramon Springer, Christoph Pflaum, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)


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#### Analysis of three-dimensional diffraction wavefront error for point diffraction interferometer

Paper 10694-32

Time: 6:00 PM - 7:30 PM

Author(s): Fen Gao, Xi'an Technological Univ. (China), Heriot-Watt Univ. (United Kingdom); Jinping Ni, Xi'an Technological Univ. (China); Wei Wang, Heriot-Watt Univ. (United States)


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#### Sharp-edge diffraction theory revisited: a catastrophic perspective

Paper 10694-33

Time: 6:00 PM - 7:30 PM

Author(s): Riccardo Borghi, Univ. degli Studi di Roma Tre (Italy)

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**Multi-mode computing optical imaging technology based on software definition micro-nano satellite**

Paper 10694-34

Time: 6:00 PM - 7:30 PM

Author(s): Yangyang Liu, Qunbo Lv, Zheng Tan, Linlin Pei, Weiyan Li, Jianwei Wang, Bin Xiangli, Academy of Opto-Electronics, CAS (China)

[Add To My Schedule](#) **WEDNESDAY 16 MAY**[Show All Abstracts](#)**Session Plen:  
Wednesday Plenary Session**

Wednesday 16 May 2018

8:00 AM - 8:45 AM


Location: Europa 1

**High performance flat optics (Plenary Presentation)**

Paper 10690-503

Time: 8:00 AM - 8:45 AM

Author(s): Federico Capasso, Harvard John A. Paulson School of Engineering and Applied Sciences (United States)

[Add To My Schedule](#) **Session 1:  
Design and Optimization**

Wednesday 16 May 2018

9:00 AM - 12:00 PM


Location: Consens

Session Chair: [Frank Wyrowski](#), Friedrich-Schiller-Univ. Jena (Germany)**Multi-resonant silicon nanoantennas by evolutionary multi-objective optimization (Invited Paper)**

Paper 10694-1

Time: 9:00 AM - 9:30 AM


Author(s): Peter R. Wiecha, Arnaud Arbouet, Christian Girard, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales (France); Aurélie Lecestre, Guilhem Larrieu, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Vincent Paillard, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales (France)

[Add To My Schedule](#) **Optimization and tolerancing of highly dispersive multilayer gratings for laser applications**

Paper 10694-2

Time: 9:30 AM - 9:50 AM


Author(s): Felix Koch, Dennis Lehr, Tilman Glaser, Carl Zeiss Jena GmbH (Germany)

[Add To My Schedule](#) **An application of the virtual prototyping approach to design of VR, AR, and MR devices free from the vergence-accommodation conflict**

Paper 10694-3

Time: 9:50 AM - 10:10 AM


Author(s): Igor S. Potemin, Irina Livshits, Dmitry Zhdanov, Andrey Zhdanov, Nikolay Bogdanov, ITMO Univ. (Russian Federation)

[Add To My Schedule](#) **Coffee Break 10:10 AM - 10:40 AM****Optimization of photonic wire bonds**

Paper 10694-4

Time: 10:40 AM - 11:00 AM


Author(s): Fernando Negredo, Matthias Blaicher, Aleksandar Nesic, Pascal Kraft, Julian Ott, Willy Dörfler, Christian Koos, Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany)

[Add To My Schedule](#) **Hybrid digital-optical imaging design for reducing surface asphericity cost while keeping high performance**

Paper 10694-5



Time: 11:00 AM - 11:20 AM

Author(s): Javier Portilla, Sergio Barbero, Consejo Superior de Investigaciones Científicas (Spain)

[Add To My Schedule](#) **Solving inverse problems appearing in design and metrology of diffractive optical elements by using Bayesian optimization**

Paper 10694-6

Time: 11:20 AM - 11:40 AM


Author(s): Martin Hammerschmidt, Philipp-Immanuel Schneider, Xavier Garcia Santiago, Lin Zschiedrich, JCMwave GmbH (Germany); Martin Weiser, Zuse Institute Berlin (Germany); Sven Burger, JCMwave GmbH (Germany) [Add To My Schedule](#) 

**Application of deep learning algorithms for Lithographic mask characterization**

Paper 10694-7

Time: 11:40 AM - 12:00 PM

Author(s): Dereje Shewaseged Woldeamanual, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Andreas Erdmann, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); Andreas Maier, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

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**Lunch Break 12:00 PM - 1:30 PM**

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**Session 2:  
Computational Imaging**

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Wednesday 16 May 2018

1:30 PM - 3:20 PM

Location: Consens

Session Chair: [Andreas Erdmann](#), Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)


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**Computational holographic imaging and reconstruction** (*Invited Paper*)

Paper 10694-8

Time: 1:30 PM - 2:00 PM


Author(s): Edmund Y. M. Lam, The Univ. of Hong Kong (Hong Kong, China)

[Add To My Schedule](#) **Characterization of systematic detector errors using ptychographic diffraction imaging**

Paper 10694-9

Time: 2:00 PM - 2:20 PM


Author(s): Lars Lötgering, Hochschule Koblenz Univ. of Applied Sciences (Germany); Max Rose, Deutsches Elektronen-Synchrotron (Germany); Kahraman Keskinbora, Margarita Baluktsian, Gül Dogan, Umut T. Sanli, Luliia Bykova, Markus Weigand, Gisela Schütz, Max-Planck-Institut für Intelligente Systeme (Germany); Thomas Wilhein, Hochschule Koblenz Univ. of Applied Sciences (Germany)

[Add To My Schedule](#) **Fourier ptychography for lithography high NA systems**

Paper 10694-10

Time: 2:20 PM - 2:40 PM


Author(s): Atoosa Dejkameh, Erlangen Master Programme in Advanced Optical Technologies (Germany); Andreas Erdmann, Peter Evanschitzky, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); Yasin Ekinci, Paul Scherrer Institut (Switzerland)

[Add To My Schedule](#) **Optical phase retrieval using four rotated versions of a single binary mask – simulation results**

Paper 10694-11

Time: 2:40 PM - 3:00 PM


Author(s): Varis Karitans, Edgars Nitiss, Andrejs Tokmakovs, Kaspars Pudzs, Institute of Solid State Physics, Univ. of Latvia (Latvia)

[Add To My Schedule](#) **Realistic image synthesis in presence of birefringent media by backward ray tracing technique**

Paper 10694-12

Time: 3:00 PM - 3:20 PM

Author(s): Dmitry Zhdanov, ITMO Univ. (Russian Federation); Sergey Ershov, Lev Shapiro, Vadim Sokolov, Alexey Voloboy, Vladimir Galaktionov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Igor S. Potemin, ITMO Univ. (Russian Federation)

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**Coffee Break 3:20 PM - 3:50 PM**

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**International Day of Light Special Event**

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Wednesday 16 May 2018


4:00 PM - 6:00 PM

Location: Foyer Room Europa

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**THURSDAY 17 MAY**[Show All Abstracts](#)**Session 3:  
Microstructures and Illumination**

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Thursday 17 May 2018 

8:10 AM - 10:00 AM

Location: Consens

Session Chair: [Daniel G. Smith](#), Nikon Research Corp. of America (United States)


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**Material sensitive reconstruction of nanostructures based on finite-element simulations of complementary x-rays measurements** *(Invited Paper)*

Paper 10694-13

Time: 8:10 AM - 8:40 AM


Author(s): Victor Soltwisch, Philipp Hönicke, Mika Pflüger, Yves Kayser, Analia Fernández Herrero, Burkhard Beckhoff, Physikalisch-Technische Bundesanstalt (Germany); Sven Burger, JCMwave GmbH (Germany); Frank Scholze, Physikalisch-Technische Bundesanstalt (Germany)

[Add To My Schedule](#) **Rigorous modeling of light absorption in nanostructured materials using a parallel high order finite element time-domain technique**

Paper 10694-14

Time: 8:40 AM - 9:00 AM


Author(s): Alexis Gobé, Stéphane Lanteri, INRIA Sophia Antipolis - Méditerranée (France); Urs Aeberhard, Karsten Bittkau, Forschungszentrum Jülich GmbH (Germany)

[Add To My Schedule](#) **The concept of bidirectional operators and its application to the modelling of microstructures**

Paper 10694-15

Time: 9:00 AM - 9:20 AM


Author(s): Christian Hellmann, Wyrowski Photonics UG (Germany); Olga Baladron-Zorita, Friedrich-Schiller-Univ. Jena (Germany); Huiying Zhong, Site Zhang, Friedrich-Schiller-Univ. Jena (Germany), LightTrans International UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)

[Add To My Schedule](#) **Simulation study of illumination effects in high-NA EUV lithography**

Paper 10694-16

Time: 9:20 AM - 9:40 AM


Author(s): Mohamed Ismail, Peter Evanschitzky, Andreas Erdmann, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); Gerardo Bottiglieri, Eelco van Setten, Timon F. Fliervoet, ASML Netherlands B.V. (Netherlands)

[Add To My Schedule](#) **Fast-physical optics modeling of microscopy system with structured illumination**

Paper 10694-17

Time: 9:40 AM - 10:00 AM

Author(s): Rui Shi, Friedrich-Schiller-Univ. Jena (Germany), LightTrans International UG (Germany); Norik Janunts, Rainer Heintzmann, Leibniz-Institut für Photonische Technologien e.V. (Germany); Christian Hellmann, Wyrowski Photonics UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)

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**Coffee Break 10:00 AM - 10:30 AM**

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**Session 4:  
Physical Optics I**

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Thursday 17 May 2018

10:30 AM - 11:50 AM

Location: Consens

Session Chair: Miguel A. Alonso, Univ. of Rochester (United States)


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**Surface polarization scattering generated from a birefringent material with rough surface**

Paper 10694-19

Time: 10:30 AM - 10:50 AM


Author(s): Jonas Ritter, Univ. Stuttgart (Germany), Heriot-Watt Univ. (Germany); Ning Ma, Heriot-Watt Univ. (United Kingdom); Wolfgang Osten, Univ. Stuttgart (Germany); Mitsuo Takeda, Utsunomiya Univ. (Japan); Wei Wang, Heriot-Watt Univ. (United Kingdom)

[Add To My Schedule](#) **Physical-optics modeling for optical components made out of birefringent materials**

Paper 10694-20

Time: 10:50 AM - 11:10 AM


Author(s): Site Zhang, LightTrans International UG (Germany); Christian Hellmann, Wyrowski Photonics UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)

[Add To My Schedule](#) **Fast propagation of electromagnetic fields in graded-index media**

Paper 10694-21

Time: 11:10 AM - 11:30 AM

Author(s): Huiying Zhong, LightTrans International UG (Germany), Friedrich-Schiller-Univ. Jena (Germany); Site Zhang, LightTrans International UG (Germany); Rui Shi, Friedrich-Schiller-Univ. Jena (Germany); Christian Hellmann, Wyrowski Photonics UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)


[Add To My Schedule](#) **Accurate propagation of ultrashort pulses in nonlinear waveguides using propagation models for the analytic signal**

Paper 10694-22

Time: 11:30 AM - 11:50 AM

Author(s): Oliver Melchert, Hannoversches Zentrum für Optische Technologien (Germany); Uwe Morgner, Leibniz Univ. Hannover (Germany); Bernhard Roth, Hannoversches Zentrum für Optische Technologien (Germany); Ihar Babushkin, Ayhan Demircan, Leibniz Univ. Hannover (Germany)



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**Lunch Break 11:50 AM - 1:20 PM**

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## Session 5: Physical Optics II

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Thursday 17 May 2018

1:20 PM - 3:10 PM

Location: Consens

Session Chair: Martin Hammerschmidt, JCMwave GmbH (Germany)

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**Density estimation in optical phase space for optimizing micro-optical elements on freeform surfaces** (*Invited Paper*)

Paper 10694-23

Time: 1:20 PM - 1:50 PM


Author(s): Michael Berens, Annika Völl, RWTH Aachen Univ. (Germany); Rolf Wester, Fraunhofer-Institut für Lasertechnik (Germany); Jochen Stollenwerk, Peter Loosen, RWTH Aachen Univ. (Germany), Fraunhofer-Institut für Lasertechnik (Germany)

[Add To My Schedule](#) **Semi-analytical Fourier transform and its application to physical-optics modelling**

Paper 10694-24

Time: 1:50 PM - 2:10 PM


Author(s): Zongzhao Wang, Friedrich-Schiller-Univ. Jena (Germany), Wyrowski Photonics UG (Germany); Site Zhang, Olga Baladron-Zorita, Friedrich-Schiller-Univ. Jena (Germany), LightTrans International UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)

[Add To My Schedule](#) **Using the pupil difference probability density to understand OTF**

Paper 10694-25

Time: 2:10 PM - 2:30 PM


Author(s): Kevin Liang, Miguel A. Alonso, Univ. of Rochester (United States)

[Add To My Schedule](#) **The Gouy phase shift reinterpreted via the geometric Fourier transform**

Paper 10694-26

Time: 2:30 PM - 2:50 PM

Author(s): Olga Baladron-Zorita, Friedrich-Schiller-Univ. Jena (Germany), LightTrans GmbH (Germany); Zongzhao Wang, Friedrich-Schiller-Univ. Jena (Germany), Wyrowski Photonics UG (Germany); Christian Hellmann, Wyrowski Photonics UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany)

[Add To My Schedule](#) **Efficient optical simulation of nano structures in thin-film solar cells**

Paper 10694-28

Time: 2:50 PM - 3:10 PM

Author(s): Julian Hornich, Georg Hager, Christoph Pflaum, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

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