

Illumination Optics V

Monday - Wednesday 14 - 16 May 2018

Conference Sessions At A Glance

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Monday Plenary Session
1: Optical Modelling, Effects, and Techniques I
2: Freeform Techniques I
 Tuesday Plenary Session
3: Freeform Techniques II
4: Optical Modelling, Effects, and Techniques II
 Poster Session
 Wednesday Plenary Session
5: Illumination Applications
6: Trends in Automotive Lighting

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

[Tina E. Kidger](#), Kidger Optics Associates (United Kingdom)
[Stuart David](#), Synopsys, Inc. (United States)

Program Committee

[Peter Brick](#), OSRAM Opto Semiconductors GmbH (Germany)
[Cristina Canavesi](#), LightTopTech Corp. (United States)
[William Cassarly](#), Synopsys, Inc. (United States)
[Fabian Duerr](#), Vrije Univ. Brussel (Belgium)
[Florian R. Fournier](#), Synopsys, Inc. (United States)

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[Juan Minano](#), Univ. Politécnic de Madrid (Spain)
[Rubén Mohedano](#), Light Prescriptions Innovators Europe, S. L. (Spain)
[Julius A. Muschaweck](#), ARRI Inc. (Germany)
[Steffen Reichel](#), Pforzheim Univ. (Germany)
[Jannick P. Rolland](#), Univ. of Rochester (United States)
[Andreas L. Timinger](#), Lumileds Germany GmbH (Germany)

MONDAY 14 MAY
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Session Plen: Monday Plenary Session


Monday 14 May 2018
 8:15 AM - 10:10 AM
 Location: Europa 1

8:15 to 8:25 Welcome and Introductions


 8:25 to 8:30: A.E. Conrady Award presented to **Philip J. Rogers**, VNF Ltd. (United Kingdom)

10:00 to 10:10 (after Plenary presentations): 2018 Michael Kidger Memorial Scholarship Award

Current and future NASA telescopes (Plenary Presentation)

Paper 10690-500
 Time: 8:30 AM - 9:15 AM
 Author(s): Joseph M. Howard, NASA Goddard Space Flight Ctr. (United States)
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Optics for Virtual Reality: state of the art and future challenges (Plenary Presentation)

Paper 10690-502
 Time: 9:15 AM - 10:00 AM
 Author(s): Pablo Benitez, Univ. Politécnic de Madrid (Spain)
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Coffee Break 10:10 AM - 10:30 AM

Session 1: Optical Modelling, Effects, and Techniques I

Monday 14 May 2018

10:30 AM - 12:10 PM

Location: Entente


Session Chair: [Julius A. Muschaweck](#), ARRI Inc. (Germany)

Design of an optical refocusing illumination system for use in laser-scanning devices *(Invited Paper)*

Paper 10693-1

Time: 10:30 AM - 11:00 AM

Author(s): Lien Smeesters, Wendy Meulebroeck, Hugo Thienpont, Vrije Univ. Brussel (Belgium)


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Prescribed intensity patterns from extended sources by means of a wavefront-matching procedure *(Invited Paper)*

Paper 10693-2

Time: 11:00 AM - 11:30 AM

Author(s): Simone Sorgato, Vrije Univ. Brussel (Belgium); Julio Chaves, Rubén Moledano, Light Prescriptions Innovators Europe, S. L. (Spain); Maikel Hernandez, Jose Blen, Light Prescriptions Innovators Europe (Spain); Dejan Grabovickic, Limbak SL (Spain); Hugo Thienpont, Fabian Duerr, Vrije Univ. Brussel (Belgium)

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Etendue conserving light shaping using microlens arrays with irregular lenslets

Paper 10693-3

Time: 11:30 AM - 11:50 AM

Author(s): Chen Li, Peter Schreiber, Dirk Michaelis, Christoph Wächter, Stephanie Fischer, Uwe Zeitner, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)

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CSLM illumination for 1D and 2D encoded holographic 3D displays

Paper 10693-4

Time: 11:50 AM - 12:10 PM

Author(s): Gerald Fütterer, Hochschule Deggendorf Technologicampus Teisnach (Germany)

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Lunch Break 12:10 PM - 1:40 PM

Session 2: Freeform Techniques I

Monday 14 May 2018

1:40 PM - 5:00 PM

Location: Entente


Session Chair: [Fabian Duerr](#), Vrije Univ. Brussel (Belgium)

Designing two freeform surfaces with Monge–Ampère equation method for point-like sources *(Invited Paper)*

Paper 10693-5

Time: 1:40 PM - 2:10 PM

Author(s): Rengmao Wu, Shengqian Chang, Zhanghao Ding, Zhenrong Zheng, Zhejiang Univ. (China)


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Solving the Monge–Ampère equation on triangle-meshes for use in optical freeform design

Paper 10693-6

Time: 2:10 PM - 2:30 PM

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

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Application of the multiple Cartesian oval method for glass lens design

Paper 10693-7

Time: 2:30 PM - 2:50 PM

Author(s): Ulf Geyer, Ansgar Hellwig, Thomas Hessling, Marc C. Hübner, Auer Lighting GmbH (Germany)

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Coffee Break 3:10 PM - 3:40 PM

Monge–Ampère type equations for freeform illumination optics

Paper 10693-9

Time: 3:40 PM - 4:00 PM

Author(s): Jan ten Thije Boonkamp, Lotte Romijn, Nitin Yadav, Technische Univ. Eindhoven (Netherlands); Wilbert IJzerman, Philips Lighting B.V. (Netherlands)


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Irradiance and phase control with two freeform surfaces using partial differential equations

Paper 10693-11

Time: 4:20 PM - 4:40 PM


Author(s): Christoph Bösel, Friedrich-Schiller-Univ. Jena (Germany); Johannes Hartung, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Herbert Gross, Friedrich-Schiller-Univ. Jena (Germany)

[Add To My Schedule](#) **Speaking the language of your system: communicating with AI through spherical harmonics for self generated freeform lenses**

Paper 10693-41

Time: 4:40 PM - 5:00 PM

Author(s): Caleb D. Gannon, College of Optical Sciences, The Univ. of Arizona (United States)

[Add To My Schedule](#) **TUESDAY 15 MAY**[Show All Abstracts](#)**Session Plen:
Tuesday Plenary Session**

Tuesday 15 May 2018

8:00 AM - 8:45 AM


Location: Europa 1

Demystifying etendue (*Plenary Presentation*)

Paper 10690-501

Time: 8:00 AM - 8:45 AM

Author(s): Bill J. Cassarly, Synopsys, Inc. (United States)

[Add To My Schedule](#) **Session 3:
Freeform Techniques II**

Tuesday 15 May 2018

9:00 AM - 12:00 PM


Location: Entente

Session Chair: [Fabian Duerr](#), Vrije Univ. Brussel (Belgium)**Freeform road lighting lens design** (*Invited Paper*)

Paper 10693-12

Time: 9:00 AM - 9:30 AM


Author(s): Zexin Feng, Dewen Cheng, Yongtian Wang, Beijing Institute of Technology (China)

[Add To My Schedule](#) **Design of a freeform, luminance spreading illumination lens with a continuous surface**

Paper 10693-13

Time: 9:30 AM - 9:50 AM


Author(s): Karel Desnijder, KU Leuven (Belgium); Ward Deketelaere, ETAP Lighting (Belgium); Michael Vervaeke, Hugo Thienpont, Brussels Photonics B-PHOT (Belgium); Peter Hanselaer, Youri Meuret, KU Leuven (Belgium)

[Add To My Schedule](#) **Design of two-dimensional waveguide head-up display**

Paper 10693-14

Time: 9:50 AM - 10:10 AM


Author(s): Luo Gu, Dewen Cheng, Beijing Institute of Technology (China); Weihong Hou, Beijing Ned+ AR Display Technology Co.,Ltd (China); Yongtian Wang, Beijing Institute of Technology (China)

[Add To My Schedule](#) **Coffee Break 10:10 AM - 10:40 AM****Modeling of free-form optical surfaces for forming required light distribution**

Paper 10693-15

Time: 10:40 AM - 11:00 AM


Author(s): Anna O. Voznesenskaya, Iana Mazur, ITMO Univ. (Russian Federation)

[Add To My Schedule](#) **Design of freeform micro-optical elements with hexagonally shaped irradiance distributions and their application in a thin direct-lit luminaire**

Paper 10693-16

Time: 11:00 AM - 11:20 AM

Author(s): Claude Leiner, Franz P. Wenzl, Christian Sommer, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria)


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Free-form optics for non-idealized light sources in 3D: a phase-space approach

Paper 10693-17

Time: 11:20 AM - 11:40 AM

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

[Add To My Schedule](#) **Developments in extended-source 3D irradiance tailoring using edge-ray footprint-tracing (Canceled)**

Paper 10693-18

Time: 11:40 AM - 12:00 PM

Author(s):

Lunch Break 12:00 PM - 1:50 PM**Session 4:
Optical Modelling, Effects, and Techniques II**

Tuesday 15 May 2018

1:50 PM - 4:10 PM


Location: Entente

Session Chair: [Peter Brick](#), OSRAM Opto Semiconductors GmbH (Germany)**Illumination optics of LED luminaires (Invited Paper)**

Paper 10693-19

Time: 1:50 PM - 2:20 PM


Author(s): Gilles Vissenberg, Philips Lighting B.V. (Netherlands)

[Add To My Schedule](#) **Methods to precisely generate arbitrary spectra using multi-coloured LED light engines**

Paper 10693-21

Time: 2:20 PM - 2:40 PM


Author(s): Aleix Llenas, Josep Carreras, Ledmotive Technologies SL (Spain)

[Add To My Schedule](#) **Recent discoveries in the rich landscape of aplanatic optics**

Paper 10693-22

Time: 2:40 PM - 3:00 PM


Author(s): Daniel Feuermann, Heylal Mashaal, Jeffrey M. Gordon, Ben-Gurion Univ. of the Negev (Israel)

[Add To My Schedule](#) **Coffee Break 3:00 PM - 3:30 PM****Opto-thermal simulation model for optimizing laser-excited remote phosphor systems**

Paper 10693-23

Time: 3:30 PM - 3:50 PM


Author(s): Elisavet Chatzizyrii, Nadine Tinne, Laser Zentrum Hannover e.V. (Germany); Roland Lachmayer, Leibniz Univ. Hannover (Germany); Jörg Neumann, Dietmar Kracht, Laser Zentrum Hannover e.V. (Germany)

[Add To My Schedule](#) **Problems of using the PMA adaptive mesh method in lens-array design for LED signal lighting**

Paper 10693-25

Time: 3:50 PM - 4:10 PM

Author(s): Mahmoud Essameldin, Friedrich Fleischmann, Thomas Henning, Hochschule Bremen Univ. of Applied Sciences (Germany)

[Add To My Schedule](#) **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.](#)

Modeling of LED scheme for street lighting on the basis of chip-on-board scheme

Paper 10693-33

Time: 6:00 PM - 7:30 PM

Author(s): Anna O. Voznesenskaya, ITMO Univ. (Russian Federation); Galina Romanova, ITMO University (Russian Federation); Xuanlin Qiao, ITMO Univ. (Russian Federation), Capital Univ. of Science & Technology (China)


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Design of single and two-lens laser flat-top reshaping systems

Paper 10693-34

Time: 6:00 PM - 7:30 PM

Author(s): Maria K. Orekhova, Anna O. Voznesenskaya, Galina Romanova, ITMO Univ. (Russian Federation)

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Research on multi-wavelength and multi-beam illumination for improving object illumination uniformity (Canceled)

Paper 10693-35

Time: 6:00 PM - 7:30 PM


Author(s):

Efficient methods of BSDF reconstruction from the micro-relief dataset for the lighting simulation tasks

Paper 10693-36

Time: 6:00 PM - 7:30 PM

Author(s): Dmitry Zhdanov, ITMO Univ. (Russian Federation); Sergey Ershov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Igor S. Potemin, ITMO Univ. (Russian Federation); Vladimir Galaktionov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Nikolay Bogdanov, ITMO Univ. (Russian Federation)

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Analysis and study of the optical schemes for LED street lighting (Canceled)

Paper 10693-37

Time: 6:00 PM - 7:30 PM


Author(s):

Optimization based on reconstruction of volume scattering medium parameters

Paper 10693-38

Time: 6:00 PM - 7:30 PM

Author(s): Vadim Sokolov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Dmitry Zhdanov, Igor S. Potemin, ITMO Univ. (Russian Federation); Boris Barladian, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Nikolay Bogdanov, ITMO Univ. (Russian Federation)


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Calculation and computer modeling of radiation-tolerant LED luminaire

Paper 10693-40

Time: 6:00 PM - 7:30 PM

Author(s): Elena Starostina, Oleg A. Pereziabov, Nadezhda K. Maltseva, ITMO Univ. (Russian Federation)

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WEDNESDAY 16 MAY

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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)

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Session 5: Illumination Applications

Wednesday 16 May 2018

9:00 AM - 10:00 AM

Location: Entente


Session Chair: [Bill J. Cassarly](#), Synopsys, Inc. (United States)

Optical realization and calibration of a light field generator

Paper 10693-26

Time: 9:00 AM - 9:20 AM

Author(s): Johannes Meyer, Karlsruher Institut für Technologie (Germany); Thomas Längle, Jürgen Beyerer, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany)


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User evaluation study on illumination requirements to design an augmented reality projector for open liver surgery

Paper 10693-27

Time: 9:20 AM - 9:40 AM


Author(s): Shivaraman Ilango, Marvin Knöchelmann, Lüder Alexander Kahrs, Alexander Wolf, Tobias Ortmaier, Roland Lachmayer, Leibniz Univ. Hannover (Germany)

[Add To My Schedule](#) **Development of LED lighting system for pressurized water reactor**

Paper 10693-28

Time: 9:40 AM - 10:00 AM

Author(s): Radda A. Iureva, Andrey S. Timko, ITMO Univ. (Russian Federation); Nadezhda K. Maltseva, ITMO University (Russian Federation)

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Coffee Break 10:00 AM - 10:30 AM

**Session 6:
Trends in Automotive Lighting**

Wednesday 16 May 2018

10:30 AM - 11:50 AM


Location: Entente

Session Chair: [Steffen Reichel](#), Pforzheim Univ. (Germany)**Optimization of prismatic light extraction elements in automotive signal or ambience lighting** (*Invited Paper*)

Paper 10693-29

Time: 10:30 AM - 11:00 AM


Author(s): Thomas L. R. Davenport, Synopsys, Inc. (United States)

[Add To My Schedule](#) **Automotive interior illumination: challenges and requirements** (*Invited Paper*)

Paper 10693-30

Time: 11:00 AM - 11:30 AM

Author(s): Robert Isele, BMW Group Forschungs- und Innovationszentrum (Germany); Roland Neumann, INOVA Semiconductors (Germany); Karlheinz Blankenbach, Pforzheim Univ. (Germany)

[Add To My Schedule](#) **On a partially color corrected illumination system**

Paper 10693-31

Time: 11:30 AM - 11:50 AM

Author(s): Holger Weigand, Sascha Heib, Technische Hochschule Köln (Germany)

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