

7th International
Conference
on Speckle
Metrology

speckle2018



PROGRAMME BOOK

POLAND | Janów Podlaski
10-12 September 2018
www.speckle2018poland.pl





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Warsaw University of Technology



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Sunday, 9 September 2018

start	end	
16:00	20:00	Conference secretariat – registration for the conference
19:30	21:30	Welcome reception at historical interiors of Bishop's Castle (conference venue)

Monday, 10 September 2018

start	end	duration			
07:30	08:30	1:00	Conference secretariat – registration for the conference		
			Conference room: SZYSZKOWSKI HALL 3		
8:30	9:00	0:30	Welcome		
			Award Ceremony (2017 Kingslake Medal and Prize)		
			Session 1: OPTICAL METROLOGY AND SPECKLES: PAST, PRESENT AND FUTURE		
			Conference room: SZYSZKOWSKI HALL 3		
			Chair: Małgorzata Kujawińska		
start	end	duration			
9:00	9:50	0:50	Wolfgang Osten	Stuttgart Technical University, Germany	Optical Metrology – the long and unstoppable way to become an outstanding measuring tool (Keynote)
9:50	10:20	0:30	Mitsuo Takeda	Utsunomija University, Japan	Noise inspired research – a journey through speckle driven years (Invited)
10:20	10:40	0:20	Coffee break - at the lobby in front of Szyszkowski hall 3		

Monday, 10 September 2018



Session 2: PHASE RETRIEVAL METHODS

Conference room: SZYSZKOWSKI HALL 3

Chair: Joanna Schmit

start	end	duration			
10:40	11:10	0:30	Krzysztof Patorski	Warsaw University of Technology, Poland	Adaptive information retrieval in automated fringe based full-field optical metrology (Invited)
11:10	11:30	0:20	Fucaai Zhang	Southern University of Science and Technology, China	Wavefront reconstruction from modulated speckle patterns
11:30	11:50	0:20	Angel F. Doval	Universidad de Vigo, Spain	Propagation of the measurement uncertainty for the numerical reconstruction of holograms in Fresnel approximation
11:50	12:10	0:20	Toyohiko Yatagai	Utsunomiya University CORE, Japan	Digital holography based on geometric phase shifting
12:10	12:30	0:20	Ichirou Yamaguchi	Gunma University and RIKEN, Japan	Digital simulation of speckle patterns
12:30	13:30	1:00	Lunch BISHOP'S CASTLE RESTAURANT BISHOP'S CASTLE RESTAURANT		

Monday, 10 September 2018



Session 3: NOISE AND SPECKLES

Conference room: SZYSZKOWSKI HALL 3

Chair: Mitsuo Takeda

start	end	duration			
13:30	14:00	0:30	Pascal Picart	Université du Maine, France	Metrics and appraisal for noise reduction in holographic data processing (Invited)
14:00	14:20	0:20	Gerd Häusler	Friedrich-Alexander University Erlangen-Nürnberg, Germany	Instantaneous speckle reduction? Yes - but there is no free lunch!
14:20	14:40	0:20	Silvio Montresor	Le Mans Université, France	Investigation of de-noising processing on the Contrast Transfer Function in digital holographic imaging
14:40	15:00	0:20	Pavel A. Cheremkhin	National Research Nuclear University MEPhI, Russian Federation	Shot noise vs fixed pattern noise: what has higher effect on digital hologram quality?
15:00	15:50	0:50	Coffee break + Poster session 1 Conference rooms: HOLSZAŃSKI HALL 1,2		

Monday, 10 September 2018



Session 4: NEW APPROACHES

Conference room: SZYSZKOWSKI HALL 3

Chair: Peter J. de Groot

start	end	duration			
15:50	16:20	0:30	ByoungHo Lee	National Seoul University, Korea	Complex amplitude and phase control of light using metasurface holograms – the challenges, opportunities and perspectives (Invited)
16:20	16:40	0:20	Steen G. Hanson	Technical University of Denmark, Denmark	Light with finite rotation: an attempt for a theoretical description
16:40	17:00	0:20	Carlos Torres-Torres	Instituto Politécnico Nacional, Mexico	Nonlinear mechano-optical effects and speckle fringe patterns exhibited by Gold-Platinum nanoparticles in cells
17:00	17:20	0:20	Yoshio Hayasaki	Utsunomiya University, Japan	Single-pixel camera with complex-amplitude representation
17:45			Departure for barbecue dinner at an open-air museum in Zaborek (MEETING POINT: Bishop's Castle lobby)		
18:00	22:00		Barbecue dinner at an open-air museum in Zaborek		

Tuesday, 11 September 2018



Session 5: APPLICATIONS IN NATURAL AND LIFE SCIENCES

Conference room: SZYSZKOWSKI HALL 3

Chair: Fernando Mendoza Santoyo

start	end	duration			
8:30	9:00	0:30	Maciej Wojtkowski	Institute of Physical Chemistry PAS, Poland	Spatio-Temporal Optical Coherence techniques for in vivo tissue imaging (Invited)
9:00	9:20	0:20	Björn Kemper	Westfälische Wilhelms-University Münster, Germany	Hyperspectral digital holographic microscopy approach for reduction of coherence induced disturbances in quantitative phase imaging of biological specimens
9:20	9:40	0:20	Jorge M. Flores Moreno	Centro de Investigaciones en Óptica AC, Mexico	Qualitative characterization of collagen hydrogel membranes using digital holographic microscopy and SHG microscopy
9:40	10:00	0:20	Nektarios Koukourakis	TU Dresden, Germany	Adaptive hybrid illumination microscopy for zebrafish screening
10:00	10:50	0:50	Coffee break + Poster session 2 Conference rooms: HOLSZAŃSKI HALL 1,2		

Tuesday, 11 September 2018

**Session 6: POLARIZATION AND TOMOGRAPHIC METHODS****Conference room: SZYSZKOWSKI HALL 3****Chair: Björn Kemper**

start	end	duration			
10:50	11:20	0:30	Wei Wang	Heriot-Watt University, United Kingdom	Generation and spatial-temporal evolution of polarization speckle (Invited)
11:20	11:40	0:20	Leszek R. Jaroszewicz	Military University of Technology, Poland	Modulation of depolarization analyzed by interferometry setup
11:40	12:00	0:20	Christophe Gorecki	FEMTO-ST, France	MOEMS-based imaging probe with integrated Mirau micro-interferometer and MEMS microscanner for swept-source OCT endomicroscopy
11:20	12:20	0:20	Przemyslaw W. Wachulak	Military University of Technology, Poland	Holography and tomography with compact EUV and SXR sources
12:20	12:40	0:20	Chau-Jern Cheng	National Taiwan Normal University, Taiwan	Integrated dual-mode tomography in digital holographic microscopy
12:40	13:10	0:40	Scientific Committee & Invited Speakers Meeting		
13:10	14:10	1:00	Lunch BISHOP'S CASTLE RESTAURANT		

Tuesday, 11 September 2018

**Session 7: COMPUTATIONAL IMAGING AND APPLICATIONS****Conference room: SZYSZKOWSKI HALL 3****Chair: Peter Schelkens**

start	end	duration			
14:10	14:40	0:30	Jun Tanida	Osaka University, Japan	Learning-based signal retrieval from scattering media (Invited)
14:40	15:00	0:20	Guohai Situ	Shanghai Institute of Optics and Fine Mechanics, China	Computational Imaging: when optics meets AI
15:00	15:20	0:20	Mikael Sjödaahl	Luleå University of Technology, Sweden	Measurement of selective species concentration using spectroscopic holography
15:20	15:40	0:20	Pietro Ferraro	Istituto di Scienze Applicate e Sistemi Intelligenti, Italy	Detection and sorting of microplastics in marine environment by new imaging tools
16:45	18:00	The Arabian horse show at the historic stud farm in Janów Podlaski (MEETING POINT: THE BISHOP'S CASTLE LOBBY)			
20:00	0:00	Gala Dinner (Bishop's Castle conference centre level)			

Wednesday, 12 September 2018



Session 8: APPLICATIONS IN ENGINEERING

Conference room: SZYSZKOWSKI HALL 3

Chair: Armando Albertazzi Gonçalves Jr.

start	end	duration			
8:30	9:00	0:30	Manuel De la Torre Ibarra	Centro des Investigaciones en Optica, Mexico	Study of transparent media using a simple digital holographic interferometer configuration (Invited)
9:00	9:20	0:20	Peter J. de Groot	Zygo Corporation, United States	Applications of optical coherence in interferometric metrology
9:20	9:40	0:20	Pierre R. Slangen	IMT Mines Ales, Universite de Montpellier, France	Recent developments in high speed imaging and applications in speckle light
9:40	10:00	0:20	Pablo D. Ruiz	Loughborough University, United Kingdom	Height uncertainty due to surface roughness in single-shot hyperspectral interferometry
10:00	10:40	0:40	Coffee break - at the lobby in front of Szyszkowski hall 3		

Wednesday, 12 September 2018



Session 9: APPLICATIONS IN ENGINEERING

Conference room: SZYSZKOWSKI HALL 3

Chair: Wolfgang Osten

start	end	duration			
10:40	11:10	0:30	Daniel Carl	Fraunhofer Institute for Physical Measurement Techniques (IPM), Germany	Industrial application of multi wavelength digital holography (Invited)
11:10	11:30	0:20	Armando Albertazzi Gonçalves Jr.	University Federal de Santa Catarina, Brazil	A single shot shearography device for simultaneous measurement in three shearing directions
11:30	11:50	0:20	Fabian Languy	Liege Université, Belgium	Mechanical deformations of space mirrors under thermal stress and their effect on wavefront errors. Measurements by ESPI and interferometry and comparison with multiphysics modeling
11:50	12:10	0:20	Ulana Cikalova	Fraunhofer Institute IKTS, Germany	Defect detection during laser welding by Laser Speckle Photometry
12:10	12:30	0:20	Andrei G. Anisimov	TU Delft, Netherlands	EXTREME shearography: development of high-speed shearography instrument for measurements of the surface strain components during an impact event
12:30	13:30	1:00	Lunch and hotel room check-out BISHOP'S CASTLE RESTAURANT		

Wednesday, 12 September 2018



Session 10: DIGITAL HOLOGRAPHY AND APPLICATIONS

Conference room: SZYSZKOWSKI HALL 3

Chair: Pietro Ferraro

start	end	duration			
13:30	14:00	0:30	Peter Schelkens	Vrije University Brussel, Belgium	Source coding of holographic data: challenges, algorithms and standardisation efforts (Invited)
14:00	14:30	0:30	Tomasz Kozacki	Warsaw University of Technology, Poland	Incoherent light digital holography and displays (Invited)
14:30	14:50	0:20	Vittorio Bianco	Istituto di Scienze Applicate e Sistemi Intelligenti, Italy	Speckle suppression method for Infrared Digital Holograms based on sparse object representation and noise diversity
14:50	15:10	0:20	James D. Trolinger	MetroLaser Inc., United States	An airborne, scanning, digital holography system
15:10	15:30	0:20	Jean Michel Desse	ONERA, France	Dual reference digital holographic interferometer for studying strong density gradients
15:30	16:00	0:30	Student Poster Awards & Closing ceremony Conference room: SZYSZKOWSKI HALL 3		
16:30			Departure to Warsaw with stops at:		
			(Meeting point for departure to Warsaw: the Bishop's Castle lobby)		
			- Warsaw Chopin Airport (arrival 19:30)		
			- Ibis Budget Centrum (arrival 20:00)		
			- Ibis The Old Town (arrival 20:30)		



Session 1 - Fundamentals and Applications in Engineering**10 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (PAPER POSTERS)**

Number	Tracking Number	Title	Author	Author Affiliation
S1_1	10834-84	Speckle suppression and error reduction by synthesis and display of multiple kinoforms with sparsed image implementing dummy-area technique	Pavel Cheremkhin	National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)
S1_2	10834-12	Holographic optical based digital speckle pattern shearing interferometer	Kumar Manoj	Kobe University
S1_3	10834-15	Laser Speckle Photometry - a suitable method for defect detection in ceramics	Chen Lili	Fraunhofer IKTS
S1_4	10834-22	Quantitative analysis of the agreement between scalar finite element simulation and pulsed TV-holography detection of the scattering of Rayleigh-Lamb waves in plates	José Carlos	Universidade de Vigo
S1_5	10834-29	Controlled compression test applied to composite materials reinforced with particles to predict fracture formation	De la Torre Ibarra Manuel	Centro de Investigaciones en Optica AC
S1_6	10834-35	Study of the degradation process of glass-ionomer cements by analysis of speckle field dynamics	El Cheikh Aicha	Universite de Bretagne Occidentale
S1_7	10834-38	Using spatial light modulator for correction of wavefront reflected from optically rough surface	Sarbort Martin	The Czech Academy of Sciences, Institute of Scientific Instruments
S1_8	10834-45	Simultaneous form and texture measurement using laser speckle projection	Sims-Waterhous Danny	University of Nottingham
S1_9	10834-51	Enhancing spatial resolution of two-wavelength digital holographic microscopy using speckle patterns generated from ring-slit apertures	Funamizu Hideki	Muroran Institute of Technology
S1_10	10834-54	Wavefront Division Off-Axis Digital Holography Microscopy on Chip	Mandracchia Biagio	Institute of Applied Sciences & Intelligent Systems
S1_11	10834-59	Tyres shoulder section characterization by means of ESPI	Pagliarulo Vito	Institute of Applied Sciences & Intelligent Systems,

Session 1 - Fundamentals and Applications in Engineering**10 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (PAPER POSTERS)**

Number	Tracking Number	Title	Author	Author Affiliation
S1_12	10834-65	Preprocessing of raw data for quality enhancement of the pointwise dynamic speckle analysis	Stoykova Elena	Institute of Optical Materials and Technologies
S1_13	10834-75	Optical vortex application for secure optical system	Jaroszewicz Leszek R.	Military University of Technology
S1_14	10834-80	Processing of binary fringe patterns obtained by real-time time-averaged shearography on vibrating objects	Georges Marc	Liege University
S1_15	10834-94	Depth-of-field characteristic analysis of the imaging system with scattering medium	Liao Meihua	Shenzhen University
S1_16	10834-100	Grating (moire) interferometry with decreased sensitivity	Salbut Leszek	Warsaw University of Technology, Institute of Micromechanics and Photonics
S1_17	10834-107	Extensive microstructural quality control inside a machine tool using multiwavelength digital holography	Seyler Tobias	Fraunhofer IPM
S1_18	10834-110	Phase shift strategies in phase shifting time averaging interferometry for harmonic motion measurements	Styk Adam	Warsaw University of Technology, Institute of Micromechanics and Photonics
S1_19	10834-113	Black light matters!	Hanson Steen	Technical University of Denmark
S1_20	10834-115	The dynamic speckle-based wavemeter	Hanson Steen	Technical University of Denmark
S1_21	10834-119	Height measurements on tilted and rotating objects with multiwavelength digital holography	Schiller Annelie	Fraunhofer IPM
S1_22	10834-122	Optical vortex scanning microscopy - the state of research	Masajada Jan	Wroclaw University of Technology
S1_23	10834-127	Spectroscopic optical coherence tomography data acquisition with two-dimensional detector	Wróbel Krystian	Nicolaus Copernicus University
S1_24	10834-11	Wavefront reconstruction from two lateral shearing interferograms with Hilbert–Huang transform in monitoring of high power laser beam quality	Józwik Michał	Warsaw University of Technology

Session 1 - Fundamentals and Applications in Engineering**10 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (PAPER POSTERS)**

Number	Tracking Number	Title	Author	Author Affiliation
2017 Rudolf Kingslake Medal and Prize		Measuring aspheres quickly: tilted wave interferometry	¹ Pruss Christof, ² Baer Goran Bastian, ¹ Johannes Schindler, ¹ Wolfgang Osten	¹ University Stuttgart, Institute of Applied Optics (ITO), Stuttgart, Germany ² Baer-OE, Berlin, Germany

Session 1 - Fundamentals and Applications in Engineering**10 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (E-POSTERS)**

Number	Tracking Number	Title	Author	Author Affiliation
E1_1	10834-28	Integration of relay optics in LED-based reflective digital holographic microscopy	Kim Dongyeon	Seoul National University
E1_2	10834-57	Automatic comparison between process simulation and deformation measured by defocused speckle photography	Sjodahl Mikael	Lulea University of Technology
E1_3	10834-76	Redundant Haar wavelet regularization in sparse-view optical diffraction tomography of microbiological structures	Makowski Piotr	Warsaw University of Technology
E1_4	10834-83	Multimodal DIC-thermovision investigations of polymer structural sandwich composites exposed to high energy laser beam	Siedlecki Krzysztof	Warsaw University of Technology
E1_5	10834-93	Modified variational image decomposition algorithm aided by the Hilbert transform as an alternative to 2D Hilbert-Huang transform for fringe pattern phase retrieval	Cywińska Maria	Warsaw University of Technology
E1_6	10834-128	Inspection of mechanical surfaces with polarized structured light	Schmit Joanna	4D Technology Corp.

Session 2- Applications in Natural/Life Sciences and Display Technology**11 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (PAPER POSTERS)**

Number	Tracking Number	Titte	Author	Author Affiliation
S2_1	10834-24	Study of the cortical bone strength affectation due dehydration	Tavera Ruiz César G.	Centro de Investigaciones en Optica AC
S2_2	10834-30	Speckle imaging for monitoring the growth kinetics of <i>Bacillus thuringiensis</i>	Loutfi Hadi	University of Western Brittany (UBO-Brest)
S2_3	10834-37	Enhanced Image processing of OCT data for Global Ischemia	Rapolu, Mounika	Institute of Physical Chemistry of the PAS
S2_4	10834-41	A multidirectional system for shape measurement of a human body in motion	Liberadzki Paweł	Warsaw University of Technology
S2_5	10834-46	Autofocusing method for holographic tomography of 3D samples with large axial thickness	Winnik Julianna	Warsaw University of Technology
S2_6	10834-50	Analysis of computerized aided designed and manufactured dental occlusal ceramics with multi-wavelength digital holography	Picart Pascal	Le Mans Université
S2_7	10834-52	Holographic imaging of evolving thin liquid films	Mandracchia Biagio	Institute of Applied Sciences & Intelligent Systems
S2_8	10834-61	Combined Optical Coherence Tomography and spectral technique for detection of changes in eggshells caused by <i>Mycoplasma synoviae</i>	Pakuła Anna	Warsaw University of Technology
S2_9	10834-64	Portable speckle shearing interferometer for measuring micro vibration of human skin	Hanayama Ryohei	The Graduate School for the Creation of New Photonics Industries
S2_10	10834-74	Investigation of temporal response in finger blood flow and concentration change in occlusion test on human arm using bio-speckle patterns	Yoshihisa Aizu	Muroran Institute of Technology
S2_11	10834-79	Tomographic flow cytometry of circulating human breast adenocarcinoma cells	Miccio Lisa	Institute of Applied Sciences & Intelligent Systems
S2_12	10834-86	Imaging Through Turbid Media with Speckle Illumination Optical Coherence Microscopy	Hamkalo Michał	Institute of Physical Chemistry PAS

Session 2- Applications in Natural/Life Sciences and Display Technology**11 September 2018****Conference rooms: HOLCZAŃSKI 1-2 (PAPER POSTERS)**

Number	Tracking Number	Title	Author	Author Affiliation
S2_13	10834-90	Scanning errors in holographic tomography	Kuś Arkadiusz	Warsaw University of Technology
S2_14	10834-95	Angle selection strategy in multi incidence digital holography for shape measurements	Mikuła Marta	Warsaw University of Technology
S2_15	10834-101	Dynamic Speckle-Interferometry of Technical and Thin Biological Objects	Mikhailova Iuliia	Ural Federal University
S2_16	10834-102	Imaging dynamic objects hidden behind scattering medium by retrieving the point spread function	Lu Dajiang	Shenzhen University
S2_17	10834-104	Histogram based hologram binarization for DMD application	Chlipała Maksymilian	Warsaw University of Technology
S2_18	10834-106	Numerical model of diffraction effect of pixelated phase-only spatial light modulators	Zaperty Weronika	Warsaw University of Technology
S2_19	10834-116	Biomechanical properties and epigenetic modifications of acute myeloid leukemia cells as a new diagnostic and therapeutic tool for chemoresistance	Kaczorowska Aleksandra	Wrocław University of Science and Technology
S2_20	10834-117	Anti-CD133 antibody biofunctionalized cardiovascular surfaces for enhanced re-endothelialization and diminished restenosis risk	Duda Maciej	Wrocław University of Science and Technology
S2_21	10834-125	Imaging living cells with reduced speckle noise using optical coherence microscopy	Szkulmowski Maciej	Nicolaus Copernicus University
S2_22	10834-134	An adaptive optics 3D STED microscope for super- resolution imaging of thick samples with background noise suppression using digital image processing	Zdańkowski Piotr	Warsaw University of Technology

Session 2- Applications in Natural/Life Sciences and Display Technology**11 September 2018****Conference rooms: HOLSZAŃSKI 1-2 (E-POSTERS)**

Number	Tracking Number	Tilte	Author	Author Affiliation
E2_1	10834-25	Inspection of micrometric size semitransparent biological samples using a transmission digital holographic interferometer	Frausto Rea Gloria	Centro de Investigaciones en Optica AC
E2_2	10834-27	Comparison between LED and LD as a light source for near-eye holographic display	Lee Dukho	Seoul National University
E2_3	10834-63	Quantitative analysis of elasticity changes in UV radiated skin	Silva Acosta Jose Luis	Centro de Investigaciones en Óptica AC
E2_4	10834-69	Feasibility study of digital histology carried out with digital holographic microscopy	Baczewska Maria	Warsaw University of Technology
E2_5	10834-70	Sinogram-clearing method for limited angle optical diffraction tomography	Krauze Wojciech	Warsaw University of Technology
E2_6	10834-71	Characterization of 3D phantom for holographic tomography produced by two-photon polymerization	Ziemczonok Michał	Warsaw University of Technology
E2_7	10834-77	Investigations of apoptosis process in cultured cells with digital holographic microscopy	Stępień Piotr	Warsaw University of Technology
E2_8	10834-97	The method of acquiring and processing 3D data from drones	Rutkiewicz Jan	Warsaw University of Technology



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