

Monday, 21 October 2019

08:30 – 09:00	Registration
09:00 – 09:10	Opening remarks Atsushi Momose, <i>Tohoku University, Japan</i>
Session I: Development for medicine I	
09:10 – 09:40	Ten years from bench to bedside - Key achievements and pitfalls on the way to first patient results of grating-based darkfield chest X-ray radiography (INVITED) Franz Pfeiffer, <i>Technische Universität München, Germany</i>
09:40 – 10:00	Performance of the first dark-field chest X-ray system for patients Konstantin Willer, <i>Technische Universität München, Germany</i>
10:00 – 10:20	Reconstruction of X-ray dark-field chest images from a scanning moiré system used in a first patient study Wolfgang Noichl, <i>Technische Universität München, Germany</i>
10:20 – 10:40	<i>Coffee Break</i>
Session II: Development for medicine II	
10:40 – 11:10	Multi-contrast X-ray breast imaging system: From bench-top physics experimental studies to prototype engineering system construction and final clinical translations (INVITED) Guang-Hong Chen, <i>University of Wisconsin-Madison, USA</i>
11:10 – 11:30	Human-compatible phase contrast mammography system with fast image acquisition Ke Li, <i>University of Wisconsin-Madison, USA</i>
11:30 – 12:00	Recent advances in grating-based phase-contrast breast imaging (INVITED) Julia Herzen, <i>Technische Universität München, Germany</i>
12:00 – 12:20	Journey towards in-vivo grating-interferometry mammography Zhentian Wang, <i>Paul Scherrer Institut, Switzerland</i>
12:20 – 13:40	<i>Lunch</i>
Session III: Method & instrumentation I	
13:40 – 14:10	On X-ray dark-field tomography with a helix trajectory (INVITED) Christian Riess, <i>Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany</i>
14:10 – 14:30	X-ray darkfield tensor tomography at the synchrotron Jonas Graetz, <i>Universität Würzburg, Germany</i>
14:30 – 14:50	Towards real-time X-ray scattering tensor tomography Jisoo Kim, <i>Eidgenössische Technische Hochschule Zürich, Switzerland</i>
14:50 – 15:10	A 3-D dark-field projection model for arbitrary trajectories Lina Felsner, <i>Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany</i>
15:10 – 15:30	<i>Coffee Break</i>
Session IV: Method & instrumentation II	
15:30 – 15:50	Non-destructive inspection by X-ray Talbot-Lau interferometry —in-situ observation of tensile test— Masahiro Imada, <i>Konica Minolta, Inc., Japan</i>
15:50 – 16:10	Grating-based dark-field imaging of additively manufactured carbon fiber reinforced composite parts Sascha Senck, <i>University of Applied Sciences Upper Austria, Austria</i>
16:10 – 16:40	Laboratory-based nanoscopic phase tomography by combining a full-field X-ray microscope and a Lau interferometer (INVITED) Hidekazu Takano, <i>Tohoku University, Japan</i>
16:40 – 17:00	Super-Resolution X-ray phase-contrast imaging with a single 2D grating an electromagnetic source stepping Till Dreier, <i>Lund University, Sweden</i>
17:00 – 19:00	Poster Session

Tuesday, 22 October 2019

08:30 – 09:00	Registration
Session V: Method & instrumentation III	
09:00 – 09:30	Recent developments in X-ray speckle-based imaging (INVITED) Marie-Christine Zdora, <i>University of Southampton, UK</i>
09:30 – 10:00	A fast edge illumination based phase contrast CT prototype for intraoperative specimen imaging (INVITED) Lorenzo Massimi, <i>University College London, UK</i>
10:00 – 10:20	X-ray speckle-based imaging of a single-material object. Beyond the geometric-flow formalism. Konstantin M. Pavlov, <i>University of Canterbury, New Zealand</i>
10:20 – 10:40	Coffee Break
Session VI: Method & instrumentation IV	
10:40 – 11:00	Comparison of speckle based imaging phase retrieval algorithms for optimizing transfer to conventional sources Laurene Quenot, <i>Université Grenoble Alpes, France</i>
11:00 – 11:20	White beam X-ray transmission, refraction and dark-field contrast micro computed tomography Marco Endrizzi, <i>University College London, UK</i>
11:20 – 11:40	Quantitative visibility reduction in a dual phase-grating interferometer Amogha Pandeshwar, <i>Paul Scherrer Institut, Switzerland</i>
11:40 – 12:00	A phase-sampling method for an X-ray Talbot-Lau scanner with continuous grating movement Veronika Ludwig, <i>Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany</i>
12:00 – 13:20	Lunch
Session VII: Neutron phase imaging	
13:20 – 13:50	Phase-grating moiré neutron interferometry (INVITED) Dmitry A. Pushin, <i>University of Waterloo, Canada</i>
13:50 – 14:20	Development of pulsed neutron grating interferometer at J-PARC MLF (INVITED) Takenao Shinohara, <i>Japan Atomic Energy Agency, Japan</i>
14:20 – 14:40	The upgraded neutron grating interferometer at ANTARES —Design, Performance and Applications— Tobias Neuwirth, <i>Technische Universität München, Germany</i>
14:40 – 15:00	Coffee Break
15:00 – 15:20	3D-printed structured-illumination neutron optics for phase contrast imaging with a TRIGA neutron source Les G. Butler, <i>Louisiana State University, USA</i>
15:20 – 15:40	An edge illumination approach to neutron dark-field imaging Marco Endrizzi, <i>University College London, UK</i>
Session VIII: Method & instrumentation V	
15:40 – 16:10	Wavefront sensing and phase retrieval at hard X-ray free electron lasers (INVITED) Bob Nagler, <i>SLAC National Accelerator Laboratory, USA</i>
16:10 – 16:30	GPGPU online processing pipeline development for wavefront monitoring at European XFEL Ladislav Mikeš, <i>European XFEL, Germany</i>
16:30 – 16:50	Coffee Break / Conference Photo
16:50 – 17:10	Single shot differential phase stereographic X-ray imaging Patrik Vagovič, <i>Center for Free-Electron Laser Science, Germany</i>
17:10 – 17:30	Grating-based phase-contrast imaging for the field of laboratory astrophysics Max Schuster, <i>Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany</i>
17:30 – 18:00	Pink-beam four-dimensional phase tomography and its application to polymer laser processing model (INVITED) Atsushi Momose, <i>Tohoku University, Japan</i>
18:00 – 18:20	The Effects of thermal expansion of gratings in Talbot-Lau lab-based X-ray phase contrast imaging Kyle Thompson, <i>Sandia National Laboratories, USA</i>
18:30 – 20:30	Banquet

Wednesday, 23 October 2019

Session IX: Development for medicine III

09:00 – 09:20 **Dosimetry for combined dark-field & attenuation chest X-ray imaging on patients**

Manuela Frank, *Technische Universität München, Germany*

09:20 – 9:40 **Image quality comparison of grating-based 70 kVp attenuation images with conventional 125 kVp chest X-rays**

Margarete Kattau, *Technische Universität München, Germany*

9:40 – 10:00 **Variation of dark-field chest X-ray signal strength with breathing state**

Theresa Urban, *Technische Universität München, Germany*

10:00 – 10:20 **Grating-based spectral X-ray dark-field imaging for correlation with structural properties**

Kirsten Taphorn, *Technische Universität München, Germany*

10:20 – 10:40 **Coffee Break**

Session X: Method & instrumentation VI

10:40 – 11:00 **Development of a micro array anode structured target source for high-energy X-ray grating interferometry**

Guibin B. Zan, *University of Science and Technology of China, China*

11:00 – 11:20 **Feasibility of a G0-less grating based interferometer for high X-ray energies using a micro array anode structured target source**

Sheraz Gul, *Sigray, Inc., USA*

11:20 – 11:40 **X-ray phase-contrast imaging using Talbot-Lau interferometer with lanthanum targets embedded in diamond substrates**

Rinako Fukuda, *Osaka University, Japan*

11:40 – 12:00 **High resolution and high sensitivity laboratory phase contrast X-ray imaging for biomedical applications**

Joan Vila-Comamala, *Paul Scherrer Institut, Switzerland*

12:00 – 13:00 **Lunch**

13:00 – 18:00 **Excursion**

XNPIG2019 Program



Thursday, 24 October 2019

Session XI: Grating development

09:00 – 09:30 **Insight into silicon-based technologies: an effective micro- and nanofabrication platform for high aspect ratio X-ray gratings (INVITED)**

Lucia Romano, *Paul Scherrer Institut, Switzerland*

09:30 – 9:50 **Ten years of LIGA-development for X-ray gratings —A review**

Joachim Schulz, *microworks GmbH, Germany*

9:50 – 10:10 **X-ray optics for accelerating (sub)microstructural analysis**

Matias Kagias, *Paul Scherrer Institut, Switzerland*

10:10 – 10:30 **Large area quality assessment of X-ray absorption gratings**

Nikolai Gustschin, *Technische Universität München, Germany*

10:30 – 10:50 **Coffee Break**

Session XII: Theory, algorithms

10:50 – 11:10 **Reducing moiré artifact in grating-based x-ray interferometry imaging with convolutional neural network**
Yongshuai Ge, *Shenzhen Institutes of Advanced Technology, China*

11:10 – 11:30 **Exploration of Talbot-Lau grating interferometry computed tomography data by interactive transfer function combination**

Jonathan Kastner, *University of Applied Sciences Upper Austria, Austria*

11:30 – 11:50 **Describing grating-based phase contrast X-ray imaging with the Fokker-Planck equation**

Kaye S. Morgan, *Monash University, Australia*

11:50 – 12:10 **Advanced phase extraction method of fringe scanning interferometric imaging**

Koh Hashimoto, *Tohoku University, Japan*

12:10 - 13:00

**Award ceremony
Announcement of XNPIG2021
Closing remarks**

XNPIG2019 Poster Session

(17:00 - 19:00, Monday 21 October 2019)



- P1 **Visualization of combined dark-field and attenuation chest X-rays from patients**
Rafael C. Schick, *Technische Universität München, Germany*
- P2 **Tube voltage optimization in X-ray dark-field human chest radiography**
Jana Andrejewski, *Technische Universität München, Germany*
- P3 **Assessment of intraductal carcinoma in situ with laboratory grating-based phase-contrast computed tomography**
Lorenz J. Birnbacher, *Technische Universität München, Germany*
- P4 **Dose-compatible grating-based phase-contrast mammography on mastectomy specimens using a compact synchrotron source**
Lisa Heck, *Technische Universität München, Germany*
- P5 **Large-FOV grating-interferometry computed tomography for breast imaging**
Michal Rawlik, *Eidgenössische Technische Hochschule Zürich, Switzerland*
- P6 **Fabrication of X-ray and neutron gratings using ultracentrifugation machine**
Wataru Yashiro, *Tohoku University, Japan*
- P7 **Development of phase gratings with parabolic and triangular phase profiles to improve spatial resolution in X-ray phase imaging**
Katsumasa Ikematsu, *Tohoku University, Japan*
- P8 **Displacement Talbot lithography for X-ray Talbot imaging on 8-inch wafer scale**
Konstantins Jefimovs, *Paul Scherrer Institut, Switzerland*
- P9 **High aspect ratio silicon template fabrication for 100 keV X-ray phase contrast imaging**
Patrick S. Finnegan, *Sandia National Laboratories, USA*
- P10 **Novel plating approaches for grating fabrication: conformal deposition, through mask filling, and superfilled electrodeposition**
Andrew E. Hollowell, *Sandia National Laboratories, USA*
- P11 **Modified evaporation approach for fabricating large area high aspect-ratio Gd gratings for neutron phase imaging**
Tetsuo Samoto, *Tohoku University, Japan*
- P12 **Fabrication and characterization of Gd particle-based neutron absorption gratings**
Alex Gustschin, *Technische Universität München, Germany*
- P13 **Analysis of the anisotropic scattering behavior of (embossed) non-oriented electrical steel sheets in an external magnetic field**
Maximilian Jung, *Heinz Maier-Leibnitz Zentrum, Germany*
- P14 **New designs of Talbot-Lau interferometer at pulsed neutron imaging system RADEN in J-PARC**
Yoshichika Seki, *Japan Atomic Energy Agency, Japan*
- P15 **Reducing signal bias in X-ray Talbot-Lau imaging via deep estimation technique**
Yongshuai Ge, *Shenzhen Institutes of Advanced Technology, China*
- P16 **The trigonometric orthogonality of phase stepping curves in X-ray grating-based imaging: integral property and its applications**
Chengpeng Wu, *Tsinghua University, China*
- P17 **Sparse X-ray phase contrast computed tomography (XPCT) using iterative reconstruction**
Johnathan Mulcahy-Stanislawczyk, *Sandia National Laboratories, USA*
- P18 **The machine learning method using wavelet pre-processing dataset for accumulated noise reduction in phase contrast image**
Myungkeun Kim, *Pusan National University, Republic of Korea*
- P19 **Denosing for low-dose X-ray phase tomography with unsupervised learning**
Ryosuke Ueda, *University of Tsukuba, Japan*
- P20 **Image filtering algorithm for grating-based X-ray differential phase-contrast imaging**
Jianheng Huang, *Shenzhen University, China*
- P21 **Phase retrieval using consensus equilibrium in X-ray phase contrast imaging**
Johnathan Mulcahy-Stanislawczyk, *Sandia National Laboratories, USA*
- P22 **Noise analysis of a three-image algorithm in X-ray analyzer-based imaging**
Zhili Wang, *Hefei University of Technology, China*

XNPIG2019 Poster Session

(17:00 - 19:00, Monday 21 October 2019)



- P23 **High accuracy phase recovery from single interferometry —demonstration from real CT data**
Songzhe Lian, *University of Tsukuba, Japan*
- P24 **Direct information retrieval methods based on moment analysis of grating-based X-ray interferometry: Analysis and feasible pre-processing approaches**
Xiaohua Zhu, *Tsinghua University, China*
- P25 **Development and implementation of a Monte Carlo algorithm for the simulation of X-ray grating interferometry**
Stefan Tessarini, *Eidgenössische Technische Hochschule Zürich, Switzerland*
- P26 **Grating-based phase-contrast microtomography using synchrotron radiation at PETRA III / DESY**
Felix Beckmann, *Helmholtz-Zentrum Geesthacht, Germany*
- P27 **Development of fast phase-contrast X-ray imaging system using Talbot interferometry and pink synchrotron radiation at SAGA Light Source**
Akio Yoneyama, *SAGA Light Source, Japan*
- P28 **Stroboscopic phase tomography using grating interferometer**
Yanlin Wu, *Tohoku University, Japan*
- P29 **Time-resolved X-ray vector radiography**
Yanlin Wu, *Tohoku University, Japan*
- P30 **Advancing biomedical applications of phase-contrast X-ray imaging with liquid-metal-jet anode and extreme-resolution sources**
Emil Espes, *Excillum AB, Sweden*
- P31 **Advancing phase-contrast imaging with high brightness and extreme resolution X-ray sources**
Fei Yang, *Excillum AB, Sweden*
- P32 **A compact synchrotron for X-ray phase contrast imaging: the Lyncean Compact Light Source**
Benjamin Hornberger, *Lyncean Technologies, Inc., USA*
- P33 **Parametric X-ray radiation as a source for phase contrast imaging**
Yumiko Takahashi, *Nihon University, Japan*
- P34 **X-ray differential phase contrast imaging on asymmetric dual-phase grating interferometer with source grating**
Yongshuai Ge, *Shenzhen Institutes of Advanced Technology, China*
- P35 **Clarification on generalized Lau condition for dual phase grating X-ray interferometry**
Xizeng Wu, *University of Alabama at Birmingham, USA*
- P36 **A design of a multi-beam X-ray optical system for high-speed X-ray tomography**
Wataru Yashiro, *Tohoku University, Japan*
- P37 **X-ray dual phase interferometer design for a multi-scale characterization of mineral building materials**
Caori A. Organista, *Paul Scherrer Institut, Switzerland*
- P38 **Study on the effect of the incoherent scattering in the Single grid-based X-ray phase imaging for in-line system**
Seho H. Lee, *Pusan National University, Republic of Korea*
- P39 **Super-resolution scanning transmission X-ray imaging**
Talgat Mamyrbayev, *Karlsruhe Institute of Technology, Germany*
- P40 **High energy, large field of view and fast phase contrast computed tomography using medical CT tube and detector**
Zhao Wu, *University of Science and Technology of China, China*
- P41 **Multi-energy X-ray phase contrast imaging using subpixel analysis and multilayer X-ray target in optical system of microfocus X-ray source and SOI pixel detector, SOPHIAS**
Takayoshi Shimura, *Osaka University, Japan*
- P42 **Image quality analysis at multi-positions of shifting curve**
Faiz Wali, *Shenzhen University, China*
- P43 **X-ray phase contrast imaging with new devices**
Hiroki Kawakami, *Hamamatsu Photonics K.K., Japan*
- P44 **Contrast formation and image reconstruction in grating-based X-ray microscopy**
Andreas H. Wolf, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*

XNPIG2019 Poster Session
(17:00 - 19:00, Monday 21 October 2019)



- P45 **A material decomposition and quantification method using grating phase CT imaging**
Shiwo Deng, *Capital Normal University, China*
- P46 **High-definition X-ray phase tomography towards high spatial resolution and wide field of view measurements**
Masato Hoshino, *Japan Synchrotron Radiation Research Institute, Japan*
- P47 **Development of sample elasticity measurement method using X-ray phase contrast imaging**
Chika Kamezawa, *The Graduate University for Advanced Studies, Japan*
- P48 **High-sensitivity and high-resolution laboratory X-ray grating-based phase-contrast computed tomography**
Josef A. Scholz, *Technische Universität München, Germany*
- P49 **Grating-based X-ray phase tomographic microscopy reveals auditory ossicles smaller than the primordial cartilages**
Shuting Ji, *Keio University, Japan*
- P50 **A prototype of edge illumination x-ray phase contrast CT scanner**
Kun Gao, *University of Science and Technology of China, China*
- P51 **Development of single phase-grating X-ray Talbot interferometer for fast imaging**
Shashi Marathe, *Diamond Light Source Limited, UK*
- P52 **Development of a 30 keV X-ray Talbot-Lau interferometer for non-destructive testing applications**
Jing Li, *China Academy of Engineering Physics, China*
- P53 **Visualization of fiber orientation of CFRP using Talbot-Lau interferometry with grating and sample rotating structure**
Naoki Morimoto, *Shimadzu Corporation, Japan*
- P54 **Inspection of patch repaired carbon-fiber reinforced polymers using Talbot-Lau grating interferometry**
Jonathan Glinz, *University of Applied Sciences Upper Austria, Austria*
- P55 **Non-destructive testing of CFRP and intermediate materials by grating based X-ray phase contrast imaging and X-ray microscopy**
Masashi Kageyama, *Rigaku Corporation, Japan*
- P56 **Phase contrast X-ray imaging for explosives detection**
Erin A. Miller, *Pacific Northwest National Laboratory, USA*