

Holo-Workshop 2018

Technische Universität Berlin, Germany

June 26th – June 28th 2018

Location: Seehotel Zeuthen in Berlin-Zeuthen

Programme

Tuesday June 26th

9:00	-	9:20	Workshop Opening
9:20	-	11:00	I. Phase: Part 1
11:00	-	11:30	Coffee Break
11:30	-	13:00	I. Phase: Part 2
13:00	-	14:30	Lunch Break
14:30	-	16:00	II. Dynamics & 3D
16:00	-	16:30	Coffee Break
16:30	-	18:00	III. Theory
19:00	-	20:00	Dinner

Wednesday June 27th

9:00	-	11:00	IV. In situ & Applications: Part 1
11:00	-	11:30	Coffee Break
11:30	-	13:00	IV. In situ & Applications: Part 2
13:00	-	14:30	Lunch Break
14:30	-	16:00	IV. In situ & Applications: Part 3
16:00	-	16:30	Coffee Break
16:30	-	18:00	IV. In situ & Applications: Part 4
19:00	-	22:00	BBQ and campfire

Thursday June 28th

9:00 - 11:00	V. Instrumentation: Part 1
11:00 - 11:30	Coffee Break
11:30 - 13:00	V. Instrumentation: Part 2
13:00 - 14:30	Lunch Break
14:30 - 16:00	V. Instrumentation: Part 3
16:00 - 16:30	Coffee Break
16:30 - 18:00	V. Instrumentation: Part 4
19:00 - 20:00	Dinner

Sponsors:

We would like to thank the following companies for their financial support:



Tuesday June 26th

I. Phase: Part 1 & 2 (Axel Lubk & Tore Niermann)

1. General

Axel Lubk *"Phase Space Tomography - Unified Perspective on Focal Series, TIE and Off-axis Holography"*

Vadim Migunov *"Comparison of off-axis electron holography, DPC and pixelated-STEM for measurements of long range electrostatic fields. Assessment of noise and detection limits."*

David Cooper *"Electrostatic polarization fields semiconductor materials DPC vs EH vs 4DSTEM"*

Rodney Herring *"Object phase measurements in diffraction"*

Dominic Vogt *"DENSsolutions in-situ systems"*

2. DPC

Helmut Kohl *"Comparison of the Contrast Transfer Functions for Differential Phase Contrast with Split, a Quadrant and a Center of Mass Detector"*

3. Inline Holography

Christoph Koch *"Recent developments in and applications of inline electron holography"*

4. Ptychography

Jonas Krehl *"Inelastic DPC/Ptychography to Measure Fields in Surface Plasmons"*

Arthur Blackburn *"Recent experiences and practical implementation of high-speed defocused-probe ptychography using a Merlin/Medipix3RX detector and the ePIE algorithm"*

II. Dynamics & 3D (Tolga Wagner & Daniel Wolf)

1. Time-resolved electron holography

Tolga Wagner *"Challenges and Limitations in Time-Resolved EH"*

Vadim Migunov *"Development of fast electrostatic shutter and denoising algorithms for time-resolved EH"*

Florent Houdellier *"Electron holography using femtosecond electron pulses"*

Yoshie Murooka *"Towards direct imaging of fast magnetic dynamics with nm resolution in a transmission electron microscope"*

2. Tomography

Daniel Wolf *"STEM vs holographic Tomography"*

Sebastian Sturm *"Development of a Multiple-Axes Holder"*

III. Theory (Kurt Scheerschmidt & Tore Niermann)

Kurt Scheerschmidt *"Image matching and beyond: tools and techniques"*

Zhongbo Li *"Phase contrast imaging at low voltages"*

Marco Beleggia *"Parameter estimation of a Gaussian phase object imaged in Fresnel mode"*

Giulio Guzzinati *"The role of phase in the inelastic interaction with plasmonic structures"*

Florian Winkler *"Absolute scale Quantitative off-axis Electron Holography at atomic resolution"*

Rodney Herring *"Dynamical diffraction of specimen phase instabilities"*

Wednesday June 27th

IV. In situ & Applications: Part 1 & 2 (Vadim Migunov & Udo Hömpler)

1. Overview

Bert Freitag *"iDPC STEM phase imaging: status and future"*

Florent Houdellier *"Direct determination of coherent electron source performances based on double biprism interferometry performed in splitting CBED configuration"*

2. Biasing

Vadim Migunov *"In situ TEM studies of electric field distribution during resistive switching experiments"*

Tolga Wagner *"Special Preparation for a Constant Reference Wave"*

Udo Hömpler *"FIB/SEM preparation of TEM-lamellas for in-situ biasing experiments"*

Martien den Hertog *"In situ biasing and off-axis electron holography of a ZnO nanowire"*

Tsukasa Hirayama *"Precise Measurement of Electric Potential, Field, and Charge Density Profiles across a biased GaAs p-n Junction by in situ Electron Holography"*

3. Strain

Thibaud Denneulin *"Strain measurement in ferroelectric thin films using off-axis dark-field electron holography"*

Laura Meißner *"The influence of dynamical scattering on the geometric phase"*

IV. In situ & Applications: Part 3 (David Cooper & Michael Narodovitch)

4. Application: Electrostatic Fields

Michael Narodovitch *"The Mystery about the Polarization Fields in AlGaIn/GaN Multi Quantum Well Structures."*

Fengshan Zheng *"Model-based iterative reconstruction of electric field and charge distribution in nanoscale materials using off-axis electron holography"*

David Cooper *"Holography on III-V materials - Combining High Signal to Noise and high Spatial Resolution"*

Mahdi Halabi *"Mapping the Space Charge Region in Nanoscale Magnesium Aluminate Spinel, "Off-axis EH"*

Elisabetta Maria Fiordaliso *"Doping in NW solar cells"*

IV. In situ & Applications: Part 4 (Marco Beleggia & Michael Lehmann)

5. Application: Magnetic Fields

András Kovács *"Experimental challenges of studies the magnetic states of skyrmions"*

Franziska Seifert *"Cryo Electron Holography of Skyrmions"*

Jan Caron *"Model-based reconstruction of magnetisation distributions in nanostructures from electron optical phase images"*

Aurélien Masseboeuf *"Integration and field of view problematics for Magnetic characterization in EH"*

Thursday June 28th

V. Instrumentation: Part 1 & 2 (Jo Verbeeck & Christoph Koch)

1. Phase plates

Jo Verbeeck *"Designing a programmable phase plate for electrons"*

Peng-Han Lu *"Dynamic wavefront engineering using structured electromagnetic fields: Prospects for a spatial electron phase modulator"*

Martial Duchamp *"Manipulation of the phase of the electron wave using MEMS devices: electrostatic simulations, fabrications and implementation in the microscope column"*

Chris Boothroyd *"Understanding images from phase plates"*

Amir Tavabi *"Electrostatic Aharonov-Bohm effect: A tunable electron vortex beam generator"*

Rebecca Pretzsch *"Physical properties of hole-free phase plates for TEM"*

Martin Obermair *"Phase plates for phase contrast enhancement in TEM"*

Armand Béché *"Dynamic generation of electron vortex beams in a (S)TEM"*

V. Instrumentation: Part 3 & 4 (Martin Linck & Tore Niermann)

2. Holographic setups / optics

Martin Linck *"Utilizing aberration correctors for electron holography"*

Christophe Gatel *"Real-time optimized acquisition of off-axis holograms by computer control of the electron microscope"*

Martin Hÿtch *"Correcting camera distortions in electron holography: oneview camera"*

Chris Boothroyd *"Phase-shifting holography"*

3. High / Low – Voltage Electron Holography

Toshiaki Tanigaki *"High-Voltage Electron Holography"*

Robert Leiter *"Low Voltage EM / Instrumentation and Applications"*

Baokun Liang *"Low Voltage Electron Microscope"*

Hannah Ochner *"Low Energy Electron Holography as a tool for imaging single proteins at high resolution"*