**Holography Workshop 2018**

Technische Universität Berlin, Germany  
June 26th – June 28th 2018  
Location: Seehotel Zeuthen in Berlin-Zeuthen

**Programme**

**Tuesday June 26th**

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<tr>
<td>9:00</td>
<td>Workshop Opening</td>
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<tr>
<td>9:20</td>
<td>I. Phase: Part 1</td>
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<tr>
<td>11:00</td>
<td>Coffee Break</td>
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<tr>
<td>11:30</td>
<td>I. Phase: Part 2</td>
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<td>13:00</td>
<td>Lunch Break</td>
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<td>14:30</td>
<td>II. Dynamics &amp; 3D</td>
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<td>16:00</td>
<td>Coffee Break</td>
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<td>16:30</td>
<td>III. Theory</td>
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<td>19:00</td>
<td>Dinner</td>
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**Wednesday June 27th**

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<th>Time</th>
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<tr>
<td>9:00</td>
<td>IV. In situ &amp; Applications: Part 1</td>
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<td>Coffee Break</td>
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<td>16:30</td>
<td>IV. In situ &amp; Applications: Part 4</td>
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<td>19:00</td>
<td>BBQ and campfire</td>
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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"
David Cooper "Electrostatic polarization fields semiconductor materials DPC vs EH vs 4DSTEM"
Rodney Herring  "Object phase measurements in diffraction"

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”
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  (Udo Hömpler & Tolga Wagner)

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

2. Strain
Laura Meißner  "The influence of dynamical scattering on the geometric phase"
Thibaud Denneulin  "Strain measurement in ferroelectric thin films using off-axis dark-field electron holography"

3. Biasing
Rémy Berthier  “Protochips solutions for reliable in-situ TEM biasing for FIB prepared samples.”
Tolga Wagner  "Special Preparation for a Constant Reference Wave"
Udo Hömpler  "Contacting of TEM-lamellas on MEMS chips for in-situ biasing experiments"
Martin Hýtch  "The Joys and Sorrows of Electrical Measurements"
Tsukasa Hirayama  "Precise Measurement of Electric Potential, Field, and Charge Density Profiles across a biased GaAs p-n Junction by in situ Electron Holography"
Martien den Hertog  "In situ biasing and off-axis electron holography of a ZnO nanowire"

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

4. Application: Electrostatic Fields
Michael Narodovitch  "The Mystery about the Polarization Fields in AlGaN/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 Niemann)

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”
   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”