



Program

Daily schedule

09:00 – 11:00	Workshop
11:00 – 11:15	Coffee break
11:15 – 12:30	Workshop
12:30 – 13:30	Lunch
13:30 – 15:30	Workshop
15:30 – 16:00	Coffee break
16:00 – 19:00	Workshop
19:00 – 20:00	Dinner

Tuesday, June 10

9:00–9:20 Workshop opening (*Hannes Lichte*)

I Basics: Elastic electron scattering

9:20–11:00 1. Introduction to elastic and dynamic scattering theory (*Helmut Kohl*)
2. Solution of the scattering problem (*Harald Rose*)

11:00–11:15 Coffee break

11:15–12:30 3. Inverse problem (*Wouter Van den Broek*)
Wouter Van den Broek: Inversion of dynamical electron scattering
Kurt Scheerschmidt: The mean inner potential — some inverse remarks
Falk Röder: One effect of finite energy resolution on the reversibility

12:30–13:30 Lunch

II Basics: Inelastic electron scattering

13:30–15:30 1. Introduction to inelastic scattering (*Helmut Kohl*)
2. MDFF, simulation of inelastic scattering (*Ralf Hambach*)

15:30–16:00 Coffee break

16:00–19:00 3. Intensity and coherence by low-loss (*F. Javier García de Abajo*)
4. Near field inelastic scattering and decoherence (*Archie Howie*)
F. Javier García de Abajo: Decoherence in TEM
Martin Linck: Effect of Johnson noise
Christian Dwyer: tba
Rodney Herring: Self interference in thermal diffuse scattering
Falk Röder: Analysis of small angle scattering phenomena by electron holography

19:00–20:00 Dinner

Wednesday, June 11

III Methods, reconstruction schemes, and instrumentation for electron holography

- 09:00 – 11:00 **1. Overview: Twenty + x forms of electron holography (*Giulio Pozzi*)**
Shery Chang: Averaged electrostatic potential: from 3D to 2D
2. Off-Axis: state of the art, figures of merit (*Michael Lehmann*)
Toshiaki Tanigaki: Multiple biprisms: Path of rays
Yuval Tsur: Implementation of a diffractive biprism
Chris Boothroyd: Understanding noise in holography
Falk Röder: Noise transfer in off-axis electron holography
- 11:00 – 11:15 Coffee break
- 11:15 – 12:30 **3. Inline-holography: TIE, Gerchberg-Saxton, etc. (*Axel Lubk*)**
Yun Yamasaki: Phase imaging by electron diffraction patterns
Robert McLeod: Diffractive Imaging, What is it good for?
Philipp Pelz: Ptychography (effect of partial coherence)
- 12:30 – 13:30 Lunch
- 13:30 – 15:30 **4. Differential phase contrast (*Josef Zweck*)**
5. Phase plates (*Rasmus Schröder*)
Roy Shiloh: Phase masks
Marco Beleggia: Imaging with a hole free phase plate
6. Holographic tomography (*Daniel Wolf*)
Axel Lubk: Tomographic reconstruction
Patrick Diehle: Approaches to vector field tomography
Jan Caron: Towards model-based reconstruction of 3D magnetic distributions
- 15:30 – 16:00 Coffee break

Wednesday, June 11

IV Role of detectors

- 16:00 – 19:00 1. Characteristics and performance of CCD cameras (*Axel Lubk*)
 Wouter van den Broek: MTF measurements
 Hans Tietz: Multi-Purpose CMOS Cameras for TEM
 Andreas Kastenmüller: Gatan's direct detection camera
 Martin Linck: TEAM vs. Gatan camera

V Applications

1. Modern materials questions (*David Smith*)
 2. Atomic resolution holography (*Tore Niermann*)
 Robert McLeod: Coherent illumination for hologram series of MoS₂
- 19:00 – 20:00 Dinner

Thursday, June 12

- 9:20 – 11:00 **3. Low/high voltage electron holography (*Ute Kaiser*)**
Martin Linck: Electron holography on boron nitride
Dorin Geiger: Off-axis electron holography on graphene: state of the art in Ulm
- 4. Electric electron holography (*Marco Beleggia*)**
Molly McCartney: Electrostatic potential mapping in nanowires by electron holography
Tsukasa Hirayama: Potential distributions in Li-ion batteries
- 11:00 – 11:15 Coffee break
- 11:15 – 12:30 *David Cooper*: Dopant profiling in the TEM ... from devices to single dopant atoms
Duchamp Martial: Electric holography
Robert McLeod: Time-series electron holography for measurement of charging dynamics
Tore Niermann: Impact of electron irradiation on electron holographic potentiometry
- 12:30 – 13:30 Lunch
- 13:30 – 15:30 **5. Dark field electron holography (*Martin Hÿtch*)**
Felix Kießling: Strain mapping at InAs/oxide stressors
Maxim Korytov: High-resolution dark-field electron holography for strain and chemical composition mapping in InGaN/GaN heterostructures
Victor Boureau: Thin layers-on-insulator strain mapping by off-axis dark field electron holography
Jan Sickmann: Dark-field electron holography for mapping strain fields induced by overlayer stress films
Rodney Herring: 3D strain measurement by self-interference of split HOLZ-lines
David Cooper: Dark-field holography compared to other techniques
- 15:30 – 16:00 Coffee break

Thursday, June 12

16:00 – 19:00 **6. Magnetic electron holography (*Marco Beleggia*)**

Zi-An Li: Interface ferromagnetic ordering in Co oxide nanocrystals by electron holography

András Kovács: Challenges of field studies in nanostructures

Karin Vogel: Magnetic shape memory alloys

7. In-situ electron holography (*Rafal Dunin-Borkowski*)

Felix Börrnert: New concept for an insitu electron microscope

Vadim Migunov: Electrical Biasing

Duchamp Martial: Electrical biasing / heating solar cells

Amir H. Tavabi: Magnetic field of a current carrying wire

19:00 – 20:00 Dinner

VI Future prospects

20:00 – 20:30 *Archie Howie, Hannes Lichte, Giulio Pozzi, Harald Rose, David Smith*