



Workshop

“New Trends in Theory for Experiments at Advanced Light Sources”

29 November-1 December 2017

Venues: Room E1.173 - European XFEL/Schenefeld
Sem. Room I and II - CFEL/Hamburg

The scope of the Workshop is recent developments in theoretical methods used for interpretation and designing experiments at novel large-scale facilities: FELs and synchrotron radiation light sources.

Scientific Committee

Chair:

Alexander Lichtenstein (Hamburg University & European XFEL, Schenefeld)

Members:

Massimo Altarelli (MPSD, Hamburg)

Evgeny Gorelov (European XFEL, Schenefeld)

Ruslan Kurta (European XFEL, Schenefeld)

Serguei Molodtsov (European XFEL, Schenefeld)

Robin Santra (CFEL & Hamburg University, Hamburg)

29 November (European XFEL/Schenefeld)

Registration:

08:30 – 09:00 XHQ foyer (European XFEL, Schenefeld)

Welcome:

09:00 – 09:20 Robert Feidenhans'l (European XFEL, Schenefeld)

Opening:

09:20 – 10:00 Gianluca Geloni (European XFEL, Schenefeld)
“Overview on XFEL’s”

Session 1: Valence-band photoemission spectroscopy (10:00 – 12:00)

10:00 – 10:40 Tim Wehling (Uni Bremen)
“Spectroscopy of two-dimensional materials”

10:40 – 11:20 Jan Minar (UWB, Pilsen)
“Understanding of dynamics of excited states by means
of static one-step model of ARPES”

11:20 – 12:00 Hubert Ebert (LMU, München)
“Theoretical description of ultrafast laser-induced demagnetization monitored by photo-emission using the non-equilibrium Green function formalism”

12:00 – 13:00 **Lunch (XHQ Foyer)**

13:00 – 14:30 **Guided Tour through European XFEL Experimental Hall and Tunnels**

Session 2: Core-level spectroscopy (14:30 – 16:30)

14:30 – 15:10 Maurits W. Haverkort (Uni Heidelberg)
“Dynamics and correlation functions in complex quantum materials”

15:10 – 15:50 Alexander Soldatov (Southern Federal University, Rostov)
“3D local atomic structure parameters for materials without long range order: theoretical analysis of high energy resolution XANES”

15:50 – 16:30 Shaul Mukamel (University of California, Irvine)
“Monitoring conical intersections and molecular chirality by nonlinear X ray spectroscopy and diffraction”

16:30 – 16:50 **Coffee Break**

Session 3: Advanced theories (16:50 – 18:50)

16:50 – 17:30 Alexey Rubtsov (Russian Quantum Center)
“A numerically exact real-time solver based on stochastic wavefunction approach for open bosonic systems”

17:30 – 18:10 Sergey Ovchinnikov (Institute of Physics, RAN, Krasnoyarsk)
“Exchange coupling and spin crossover in magnetic insulators out of equilibrium”

18:10 – 18:50 Guy Cohen (Tel Aviv University)
“Numerically exact time evolution of non-equilibrium dynamics in strongly correlated materials”

19:00 – 22:00 **Workshop Dinner (XHQ Foyer)**

30 November (CFEL/Hamburg)

9:30 – 11:30 Guided Tour through PETRA III and FLASH

Session 4(1): Spectroscopy of strongly correlated systems out of equilibrium (11:40 – 13:00)

- 11:40 – 12:20 Walter Schirmacher (Uni Mainz)
“Anderson localization of light”
- 12:20 – 13:00 Michael Bonitz (Universität zu Kiel)
“Femtosecond dynamics of correlated
finite systems - a non-equilibrium Green functions approach”

13:00 – 14:00 Lunch / Coffee Break

Session 4(2): Spectroscopy of strongly correlated systems out of equilibrium (14:00 – 16:00)

- 14:00 – 14:40 Jim Freericks (Georgetown University, DC)
“Theory of pump/probe electronic Raman scattering
in strongly correlated materials”
- 14:40 – 15:20 Martin Eckstein (Universität Erlangen-Nürnberg)
“Nonequilibrium steady states and transient dynamics
in charge-density waves, superconductors, and excitonic
condensates”
- 15:20 – 16:00 Naoto Tsuji (RIKEN, Japan)
“Terahertz-pulse-induced Higgs-mode oscillation
in d-wave superconductors”

16:00 – 16:20 Coffee Break

Session 5: Dynamics of topological materials (17:40 – 18:20)

- 16:20 – 17:00 Evgeny Stepanov (Radboud University, Nijmegen)
“Dynamical and reversible control of
topological spin textures”

- 17:00 – 17:40 Hideo Aoki (Uni Tokyo)
“Quantum phases induced by circularly-polarised light:
Floquet-topological states”
- 17:40 – 18:20 Evgene Chulkov (Tomsk University and CSIC-UPV/EHU)
“Recent progress in physics and materials science aspects
of quantum spin and anomalous Hall effects
in topological Insulators”

1 December (CFEL/Hamburg)

Session 6: Atomic, molecular and optical physics (08:30 – 10:30)

- 08:30 – 09:10 Sang-Kil Son (CFEL, DESY)
“Electronic structure of atoms and molecules
at high x-ray intensity”
- 09:10 – 09:50 Alexei Grum-Grzhimailo (Moscow State University)
“New trends in 'complete' experiment on atomic photoionization”
- 09:50 – 10:30 Nikolay M. Kabachnik (European XFEL)
“Theory and applications of new
circularly polarized light sources”
- 10:30 – 10:50 Coffee Break**

Session 7: Ultrafast structural dynamics (10:50 – 12:50)

- 10:50 – 11:30 Ivan Vartanyants (DESY)
“Interaction of intense ultrafast IR and X-ray pulses with matter”
- 11:30 – 12:10 Nikita Medvedev (Czech Academy of Science)
“X-ray-induced thermal and nonthermal transitions:
hybrid modeling of free-electron-laser irradiated matter”
- 12:10 – 12:50 Zoltan Jurek (CFEL, DESY)
“Dynamics of matter induced by high intensity x-rays”
- 12:50 – 13:00 Concluding Remarks**