



Quantum Dynamics and Photon-Matter Interaction

Joint IMPRS workshop, MPI-PKS Dresden
May 13.-17. 2013

Preliminary Program

Sunday, 12/5

18:00 – 20:00 Arrival, Registration
19:00 – 21:00 Welcome Buffet

Monday, 13/5

8:50 – 9:00 **WELCOME**

Chair: Michael Genkin

9:00 – 9:45 **Jan-Michael Rost** (MPI-PKS Dresden)
Classical Non-Linear Response of Matter to Light Pulses
from the Microwave to the X-Ray Regime

10:00 – 10:35 **Thorsten Uphues** (U Hamburg)
Time Resolved Physics at Extreme Time Scales

10:45 – 11:15 **COFFEE BREAK**

11:15 – 11:40 **Kirsten Schnorr** (MPIK Heidelberg)
Tracing Interatomic Coulombic Decay of Neon Dimers by
XUV-pump—XUV-probe Experiments at FLASH

11:45 – 12:10 **Yi-Jen Chen** (DESY Hamburg)
Fluctuations in Laser-Induced Molecular Alignment

12:15 – 12:40 **Abraham Camacho** (MPI-PKS Dresden)
Multiple Ionization of Fullerenes in Intense XFEL Pulses

12:45 – 14:15 **LUNCH**

Chair: Antonino Di Piazza

14:15 – 14:50 **Martin Eckstein** (MPSD Hamburg)
Crossing an Electronic Phase Transition in Real Time

15:00 – 15:25 **Sabine Keiber** (MPQ Garching)
Controlling Electron Dynamics in Solids with Electric Fields

15:30 – 15:55 **Georg Wachter** (TU Vienna)
Electron Rescattering at Metal Nanotips Induced by Ultrashort
Laser Pulses

16:00 – 16:30 **COFFEE BREAK**

Chair: Jan-Michael Rost

16:30 – 17:30 **MPI-PKS Colloquium: Thomas Elsässer** (MBI & HU Berlin)
Ultrafast Structural Dynamics in Ionic Crystals Mapped by
Femtosecond X-Ray Powder Diffraction

18:00 **SUPPER**

Tuesday, 14/5

Chair: Andrey Surzhykov

9:00 – 9:45 **Matthias Kling** (MPQ Garching)
Electron Emission from Nanostructures in Intense Ultrashort
Fields

10:00 – 10:25 **Julia Hengster** (U Hamburg)
Ultra-short Laser Pulse Characterization by Propagation
in Fluorescent Liquid Dye Cells

10:30 – 11:00 **COFFEE BREAK**

11:00 – 11:35 **Petra Imhof** (U Heidelberg & FU Berlin)
Modelling Proton Transfer in Enzymatic Reactions:
A Transition Networks Approach

11:45 – 12:10 **Mattia Lupetti** (LMU Munich)
Ultrafast Plasmonic Field Excitations:
From Practical Application to Fundamental Aspects

12:15 – 12:40 **Nikolay Belov** (MPIK Heidelberg)
Pair Production Processes in Exotic Atomic Systems

12:45 – 14:15 **LUNCH**

Chair: Nicholas Karpowicz

14:15 – 14:50 **Pavel Jungwirth** (IOCB Prague)
Photoionization in Water: Electrons, Cationic Holes,
and DNA Damage

15:00 – 15:25 **Zheng Li** (DESY Hamburg)
Correlated Non-adiabatic Proton-Hole Motion
After Photoionization

15:30 – 16:00 **COFFEE BREAK**

16:00 – 16:25 **Frank Uhlig** (IOCB Prague)
Optical Absorption Spectroscopy of the Hydrated Electron

16:30 – 16:55 **Olga Ivchenko** (DKFZ Heidelberg)
Study of Proton-Proton Transfer Pathways in Creatine-Water
System for Quantification of Chemical Exchange Saturation

17:00 – 17:25 **Daniel Badali** (MPSD Hamburg)
Chemical Archaeology:
The Ultrafast Photoreduction of Graphene Oxide

18:00 **SUPPER**

19:00 **POSTER SESSION**

Wednesday, 15/5

Chair: Pavel Jungwirth

9:00 – 9:45 **Henry Chapman** (DESY Hamburg)
Imaging Macromolecules with X-Ray FEL Pulses

10:00 – 10:35 **Armin Scrinzi** (LMU Munich)
A New Approach to Photo-Electron Spectra: t-SURFF

10:45 – 11:15 **COFFEE BREAK**

11:15 – 11:40 **Katharina Doblhoff-Dier** (TU Vienna)
Classical Analysis of Coulomb Effects in Strong-Field
Ionization of H₂⁺ by Intense Circularly Polarized Laser Fields

11:45 – 12:10 **Andreas Fischer** (MPIK Heidelberg)
XUV Induced Dissociative Photo-Ionization of H₂
Observed by Electron-Ion Correlation

12:15 – 12:40 **Matthias Kübel** (MPQ Garching)
Nonsequential Double Ionization in Near-Single-Cycle
Laser Fields

12:45 – 14:15 **LUNCH**

Afternoon: **Social Program & Workshop Dinner**

Thursday, 16/5

Chair: Mathias Nest

9:00 – 9:45 **Selim Jochim** (U Heidelberg)
One, Two, Three, Many – Exploring Quantum Systems
One Atom at a Time

10:00 – 10:25 **Christoph Sträter** (MPI-PKS Dresden)
Coherent Coupling of Bloch Bands in an Optical Lattice

10:30 – 11:00 **COFFEE BREAK**

11:00 – 11:25 **Ion Stroescu** (U Heidelberg)
Counting Mesoscopic Atom Numbers

11:30 – 11:55 **Laura Gil** (MPI-PKS Dresden)
Spin Squeezing in Ultracold Strontium Lattices

12:00 – 12:25 **Anne-Laure Calendron** (DESY Hamburg)
An Orchestra of Light

12:30 – 14:00 **LUNCH**

Chair: Vladislav Yakovlev

- 14:00 – 14:35 **Alexander Eisfeld** (MPI-PKS Dresden)
Optical and Excitation Transfer Properties of Quantum
Aggregates
- 14:45 – 15:10 **Karsten Leonhardt** (MPI-PKS Dresden)
The Role of Conical Intersections in Flexible Rydberg
Aggregates
- 15:15 – 15:45 **COFFEE BREAK**
- 15:45 – 16:10 **Michael Fischer** (TU Dresden)
Non-adiabatic Quantum Molecular Dynamics with Trajectory
Surface Hopping
- 16:15 – 16:40 **Nele Müller** (DESY Hamburg)
Controlled Gas-Phase Molecules for Studies of Rotational
and Chemical Dynamics
- 16:45 – 17:10 **Michael Förster** (MPQ Garching)
Ultrafast Electron Dynamics at Metal Nanotips
- 18:00 **SUPPER**
- 19:00 **POSTER SESSION**

Friday, 17/5

Chair: Martin Eckstein

- 9:00 – 9:35 **Mathias Nest** (TU Munich)
Laser Driven Electron Dynamics in Atoms, Molecules, and
Nanoparticles and How it Can Be Done from First Principles
- 9:45 – 10:20 **Andrey Surzhykov** (U Heidelberg)
Photon-Matter Interaction in the Extreme Relativistic Regime
- 10:30 – 11:00 **COFFEE BREAK**
- 11:00 – 11:25 **Oleg Skoromnik** (MPIK Heidelberg)
Collapse Revival Dynamics in Laser Driven Electrons
- 11:30 – 11:55 **Jan-Malte Slowik** (DESY Hamburg)
X-Ray Phase Contrast Imaging: The Quantum Perspective
- 12:00 – 12:25 **Enderalp Yakoboylu** (MPIK Heidelberg)
Time Scales and Relativistic Features of Laser-Induced
Tunneling Ionization
- 12:30 – 12:40 **CLOSING REMARKS**
- 12:40 **Lunch, Departure**