

Program PIPT8, June 23-27 2024

Sunday June 23

8.00 Registration and coffee

8.50 Opening

Session 1: Phase transitions and Dynamics in strongly correlated systems

09.00 Dragan Mihailovic
Metastability in quantum materials

09.45 Tatsuya Miyamoto
Melting of the Excitonic Insulator Phase in Ta₂NiSe₅ by Optical or Terahertz Electric-Field Excitation Using Femtosecond Reflection Spectroscopy

10.15 Martin Eckstein
Long-lived non-thermal phases of strongly correlated electrons

10.45 **Coffee Break**

11.15 Alexander Boris
Photoinduced dynamics of a Mott insulator-to-metal transition in correlated ruthenates

11.45 Simon Wall
Enhancing the efficiency of photo-induced phase transitions with correlated disorder

12.15 Jimin Zhao
High Pressure Ultrafast Spectroscopy and Ultrafast Dynamics

12.45 Hiroshi Okamoto
Nonlinear and ultrafast optical responses induced by a MIR pulse in 1D Mott insulators and related materials: Observations of Floquet states and Floquet engineering

13.00 **Lunch**

Session 2 Photo-induced superconductivity

14.00 *Andrea Cavalleri*
Advances in Photo-induced Non-Equilibrium Superconductivity

- 14.45 Stefan Kaiser
Phase resolved THz-THG for Higgs spectroscopy on Superconductors
- 15.15 Eugene Demler
Lighting up superconductivity
- 15.45 MorihikoNishida
Light-induced superconductivity from CDW states in LaNdSrCuO_4
- 16.00 **Coffee Break**
- 16.15 Lara Benfatto
A theory perspective on THz spectroscopy of superconducting collective modes
- 16.45 Marta Zonno
Probing condensate's coherence in cuprates by time-resolved ARPES
- 17.15 Fumiya Sekiguchi
Non-monotonic switching between superconducting and normal state triggered by DC plus terahertz current
- 17.30 Jacopo Fiore
Fingerprints of amplitude (Higgs) and phase (Josephson plasmons) superconducting collective modes in THz two-dimensional coherent spectroscopy
- 17.45 Kotaro Tanaka
Nonlocal third-order nonlinear response in a s-wave superconductor NbN driven by terahertz vortex beam

18.00 Welcome reception and Postersession I

Monday June 24

- 8.00 Registration and coffee

Session 3. Photo-induced Structural phase transitions

- 9.00 Eric Collet
Monitoring the out-of-equilibrium dynamics of isosymmetric and symmetry-breaking degrees of freedom during photoinduced phase transition
- 9.45 Herma Cuppen (Radboud University)
Phase transitions in molecular crystals

- 10.15 Claus Ropers
Probing light-induced phase transitions by ultrafast electron diffraction
- 10.45 **Coffee Break**
- 11.15 Meredith Henstridge
Nonlocal nonlinear phononics and unravelling THz-driven phenomena with the LCLS
- 11.45 Sheng Meng
Light control of phase transitions: insights from ab-initio quantum dynamics simulations
- 12.15 Etienne Janod
Propagating insulator-to-metal phase transition at acoustic velocities in a prototype Mott material
- 12.30 Michal Magott
Reversible photoinduced formation of persistent ferrimagnetic order in paramagnetic solids
- 12.45 Oleksander Kovalenko
Signatures of Jahn-Teller-like magnetic instability in TbFeO₃ and dynamical strong coupling of Fe spins and Tb orbitals"

13.00 **Lunch**

Session 4: Photo-induced control of topological states of matter

- 14.00 Johan Mentink
Understanding ultrafast nanomagnetism - insights from topological fluctuation states
- 14.45 Thomas Lagrange
Probing the Itinerant Magnetic Behavior of FeRh using In-situ Electron Magnetic Circular Dichroism (EMCD)
- 15.15 Stefan Eisebitt
Magnetic Skyrmions: Birth and death, fluctuations and chaos
- 15.45 **Coffee Break**
- 16.15 Chong Yu Ruan
The many facets of ultrafast Electron Diffraction and Microscopy: Development and Applications
- 16.45 Atsushi Ono
High harmonic generation from electrons moving on topological spin textures

17.00 Poster session II

Tuesday June 25

08.30 Registration and coffee

Session 5: Ultrafast optical manipulations of Ferroelectrics and Multiferroics

9.00 Roberto Merlin
Magnetophononics: Breaking Time Reversal Symmetry with Non-Maxwellian Magnetic Fields

9.45 Aaron Lindenberg
Hidden domain boundary dynamics towards crystalline perfection

10.15 Stefano Bonetti
Terahertz-Driven Phonons in Perovskites: Dynamical Multiferroicity and Unexpected Coupling Pathways

10.45 Coffee Break

11.15 Vladimir A. Stoica
Long-range dynamical correlations of photoinduced polar supertextures

11.45 Sylvia Matzen
Controlling photo-induced strain in ferroelectric thin-film devices

12.15 Stanislav Kamba
Terahertz field-induced magnetic moment and polar distortion in the quantum paraelectric diamagnet

12.30 Ryo Fukaya
Element-specific transient dynamics of magnetic orders in multiferroic manganites studied by time-resolved resonant soft X-ray scattering

12.45 Inhyeok Choi
Real-time dynamics of angular momentum transfer from spin to acoustic chiral phonon in oxide heterostructures

13.00 Lunch

Session 6: Magnetic PIPT/Magneto-phononics

- 14.00 Bert Koopmans
Towards Spintronic-Photonic Integration
- 14.45 Sangeeta Sharma
Femtomagnetism meets spintronics
- 15.15 Urs Staub
Resonant driving of phonon/magnon and orbital modes
- 15.45 Luyi Yang
Discovery of terahertz-frequency orbitally-coupled magnons in a kagome ferromagnet
- 16.15 **Coffee Break**
- 16.30 Dominik Juraschek
Chiral phonons: Controlling electronic phases with a twist
- 17.00 Matteo Savoini
Time-resolved X-ray diffraction: a powerful tool to investigate photo-induced phase transitions
- 17.30 Chiara Ciccarelli
THz spectroscopy studies on magnetic interfaces
- 18.00 Elton J. G. Santos
Exploring the Limits of Ultrafast Magnetism in vdW magnets
- 18.30 Jun Xiao Lin
Laser pulse induced magnetization reversal in in-plane magnetized spin valves
- 18.45 Thomas Metzger (Radboud University)
THz magnetism of antiferromagnets in the non-collinear phase

Wednesday June 26

Session 7: PIPT in 2D materials/strong fields effects

- 9.00 Isabella Gierz
Ultrafast dynamics in 2D materials viewed through trARPES eyes
- 9.45 Olga Smirnova
Sub-cycle multidimensional spectroscopy of strongly correlated materials
- 10.15 Keith Nelson
Multimodal Coherent Control

- 10.45 **Coffee Break**
- 11.15 Alexander Osterkorn
Dynamical phase confinement of excitonic condensates in bilayer systems
- 11.30 Xiaoyue Zhou
Ultrafast terahertz dynamics of the photo-induced topological phase transition in type-II Weyl semimetal WTe_2
- 11.45 Andrea Caviglia
Cavity-driven correlated insulators
- 12.15 Daniele Fausti
Cavity control of phase transition in complex quantum materials
- 13.00 Outing (lunch on bus) + Dinner**

Thursday June 27

Session 8: Photo-induced Dynamical (Floquet) states

- 9.00 Uli Höfer
Buildup and dephasing of Floquet-Bloch bands on subcycle time scales
- 9.45 Ryo Shimano
Floquet engineering of 3-dimensional Dirac electron systems
- 10.15 Matteo Mitrano
Transient parity symmetry breaking in a Floquet-Hubbard chain
- 10.45 **Coffee Break**
- 11.15 Michael Sentef
Cavity Light-Matter Entanglement through Quantum Fluctuations
- 11.45 Thomas Blank (Radboud University)
Diversity of Ultrafast Spin Dynamics Near the Tricritical Point in a Ferrimagnetic Gd/FeCo Multilayer
- 12.00 Yuta Murakami
Possible hidden phases in photo-doped Mott Insulators

12.15 Lukas Körber (Radboud University)
Self-induced Floquet states generated by nonlinear magnon interactions in a magnetic soliton

12.30 **Closure Concluding remarks**
Lunch