XII Ultrafast Dynamics & Ultrafast Bandgap Photonics Conference

SCHEDULE OF TALKS – Wednesday – Catalina Room

Plenary Session

9:00-9:30 **Michael Rafailov, Rolf Binder**
Opening Remarks

9:30-10:15 **Keith Nelson,** MIT
Molecules…materials…It's all about the light-matter interactions

10:15-10:45 **Kazuhiro Yabana, University of Tsukuba**
Ab initio description for propagation and dephasing in ultrafast and nonlinear photonics

10:45-11:15 **Peter Littlewood**, University of Chicago
Non-reciprocal phase transitions

Ultrafast Magnetism I

12:45-13:15 **Wanzheng Hu,** Boston University
Resonant excitation of van der Waals antiferromagnets

13:15-13:45 **Andrey Baydin,** Rice University
Magnetic manipulation of electronic topology with chiral phonons

13:45-14:15 **Michael Zuerch,** University of California, Berkeley
Ultrafast Imaging of Domain Wall Motion in Ferroelectric Superlattices

14:15-14:45 **Honglie Ning**, MIT
Terahertz control of magno-phononics in 2D antiferromagnets

14:45-15:15 **Geoffrey Diederich**, University of Maryland Baltimore County
Extreme nonlinear opto-magnonic effects in a layered magnetic semiconductor

Nonequlibrium Superconductivity I

15:45-16:15 **Patrick Kirchmann**, SLAC National Accelerator Laboratory
Undressing electron-phonon interactions in FeSe

16:15-16:45 **Fabio Boschini**, Institut National de la Recherche Scientifique, Canada
Time-resolved ARPES at the Advanced Laser Light Source (ALLS) user facility – new insights into the ultrafast quenching of superconductivity in Bi-based cuprates

16:45-17:15 **Martin Claassen**, University of Pennsylvania
Ultrafast and cavity electrodynamical control of optical nonlinearities in quantum materials

17:15-17:45 **Steve Dodge**, Simon Fraser University, Canada
How nonlinearity distorts the evidence for photoinduced superconductivity

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SCHEDULE OF TALKS – Wednesday – Ocotillo Room

Ultrafast Dynamics: Theory

12:45-13:15 **Jim Freericks**, Georgetown University
Near perfect conductor dynamics near the transition from single to double well potentials in electron-phonon driven charge-density-wave materials driven by femtosecond pumps

13:15-13:45 **Vasili Perebeinos,** SUNY Buffalo
Many-body interactions on linear and non-linear optical properties of low dimensional materials

13:45-14:15 **Herbert Fotso***, SUNY Buffalo*
Nonequilibrium dynamics of an interacting binary disordered alloy after an interaction quench

14:15-14:45 **Chenhang Xu,** Stanford University
Quantifying transient structure and phonon evolution in photoinduced transitions by MeV ultrafast electron diffraction

14:45-15:15 **Stefan Schumacher**, University of Paderborn
Nonlinear polariton physics: controlling light with light in semiconductor microcavities

Heterostructure Dynamics I

15:45-16:15 **Rolf Binder**, University of Arizona
Polaritons in plasmonic and laser heterostructures

16:15-16:45 **Claudia Gollner**, Stanford University
Probing charge carrier dynamics in 2D transition metal dichalcogenides with terahertz emission spectroscopy

16:45-17:15 **Milan Delor,** Columbia University
Ultrafast imaging of polariton propagation and nonlinear optics in semiconductor microcavities

17:15-17:45 **Yusong Bai**, Brown University
Designing and probing exciton quantum phase transitions in 2D semiconductor heterostructures

17:45-18:15 **Christopher Smallwood,** San Jose State University
Coherent Interactions within and between negatively charged silicon-vacancy centers in diamond as measured using optical multidimensional coherent spectroscopy

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SCHEDULE OF TALKS – Thursday – Catalina Room

Plenary Session

08:00-08:30 **Henry Kapteyn**, JILA University of Colorado, Boulder
Understanding fundamental phenomena in 2D and quantum materials using time-resolved extreme-UV spectroscopies

08:30-09:00 **Hermann Dürr**, Uppsala University, Sweden
Nanoscale confinement of dynamical spin textures

09:00-9:30 **Michele Buzzi**, Max-Planck-Institut für Struktur und Dynamik der Materie, Germany
Advances in the optical control of superconductivity in high-Tc cuprates

09:30-10:00 **Steven Cundiff**, University of Michigan
Double-quantum spectroscopy of electrostatically doped TMD monolayers

Ultrafast Magnetism II

10:30-11:00 **Eric Fullerton**, University of California, San Diego
Structural dynamics driven by ultrafast laser-induced demagnetization

11:00-11:30 **Benjamin Stadtmüller**, University of Augsburg, Germany
Revealing spin polarization in compensated spin systems on ultrafast timescales

11:30-12:00 **John Harter**, University of California Santa Barbara
Quantum decoherence by magnetic fluctuations in a candidate axion insulator from electric quadrupole second harmonic generation

12:00-12:30 **Kyle Seyler**, University of Arizona
Fast Light-Driven Antiferromagnetic Domain Walls

12:30-13:00 **Liuyan Zhao**, University of Michigan
Magnetism and magnetic phase transitions in CrSBr

Nonequilibrium Superconductivity II

14:30-15:00 **Richard Averitt,** University of California San Diego
Terahertz nonlinear and parametric spectroscopy of quasiparticles and condensates in quantum materials

15:00-15:30 **Kota Katsumi,** New York University
Revealing unique light-matter interaction of the amplitude mode in superconductors by terahertz two-dimensional coherent spectroscopy

15:30-16:00 **Albert Liu**, Brookhaven National Laboratory
Probing inhomogeneous cuprate superconductivity with terahertz photon echoes

Nonequilibrium Superconductivity III

16:30-17:00 **Michael Rübhausen,** University of Hamburg, Germany
Quest to reveal the Higgs Excitation in Superconductors by NEARS

17:00-17:30 **Martin Mootz**, Iowa State University
Revealing unconventional quantum echoes and pseudo-spin soliton states in superconductors via terahertz 2D coherent spectroscopy

17:30-18:00 **Yiping Wang**, Columbia University
All-optical Discovery of Ferro-rotational Density Wave in RTe3

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SCHEDULE OF TALKS – Thursday – Ocotillo Room

Attoscience

10:30-11:00 **Mohammed Hassan**, University of Arizona
Attosecond quantum tunneling current switching in graphene

11:00-11:30 **Markus Borsch**, University of Michigan
A lightwave-electronics toolbox for quantum

11:30-12:00 **Michael Chini**, Ohio State University
Efficient high-order harmonic generation from novel van der Waals crystals and heterostructures

12:00-12:30 **Miroslav Kolesik**, University of Arizona
Full Brillouin zone, multi-band reconstruction of the electronic band-structure from high-harmonic spectra

12:30-13:00 **Jun Xiao**, University of Wisconsin at Madison
THz optoelectronics and ultrafast dynamics of layered topological semimetals

Heterostructure Dynamics II

14:30-15:00 **Markus Raschke,** University of Colorado Boulder
Vibrational nano-imaging and dynamics of cation-polaron coupling in organic-inorganic hybrid perovskites

15:00-15:30 **Brian Kim**, University of Arizona
Charge-transfer polaritons in van der Waals heterojunctions

15:30-16:00 **James McIver**, Columbia University & Max-Planck Institut, Germany
Cavity electrodynamics of van der Waals heterostructures

Optics of Nonequilibrium

16:30-17:00 **Hui Zhao,** University of Kansas
Transient absorption microscopy of photocarrier transport in solids

17:00-17:30 **Diyar Talbayev**, Tulane University
Superoscillatory terahertz waveform shaping for high contrast sensing and imaging

17:30-18:00 **David Bain**, Cornell University
Ultrafast structural relaxation and coherent excitation of triplet pairs

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Plenary Session

08:00 - 08:30 **Xiaoyang Zhu,** Columbia University
Time domain view of van der Waals quantum matter

08:30-09:00 **Victor Klimov**, Los Alamos National Laboratory
Ultrafast spin-exchange interactions in magnetically doped quantum dots for advanced photoconversion

Heterostructure Dynamics III

09:05-09:35 **Anton Husakou,** Max-Born Institut Berlin, Germany
Generation of ultrashort optical pulses by a photoionization-induced resonance

09:35-10:05 **Katsumasa Yoshioka**, NTT Corporation, Japan
Tracking ultrafast non-local charge dynamics in graphene using on-chip terahertz spectroscopy

10:05-10:35 **Vitaly Gruzdev**, University of New Mexico
Ultrafast laser interactions with metal-semiconductor structures for field sampling and phase measurements

10:35-11:05 **Christian Heide**, Stanford University
Ultrafast light-field driven electron dynamics in solids – from ultrafast spectroscopy to quantum computing

Chirality Control & Ultrafast Magnetism III

11:30-12:00 **Michael Först,** Max-Planck-Institut für Struktur und Dynamik der Materie, Germany
Transient chirality induced by nonlinear phononics

12:00-12:30 **Matt Beard**, NREL, DoE
Inverse chirality induced spin selectivity with terahertz emission spectroscopy

12:30-13:00 **Alexander Gray**, Temple University
Low-dimensional magnetism at oxide interfaces and the possibility of controlling it with ultrafast THz excitation

Metastability

14:30-15:00 **Alan Bristow,** West Virginia University
Metastable dynamics and transport in type-II InAs/AlAsSb quantum wells

15:00-15:30 **Linjie Dai**, MIT
Control of electron-phonon coupling in perovskite nanocrystals

15:30-16:00 **Aaron Sternbach**, University of Maryland College Park
Inhomogeneous photosusceptibility of VO2 films at the nanoscale

16:00-16:30 **Oleg Gorobtsov**, Cornell University
Memory and transient states in relaxation pathways of a Mott insulator far from equilibrium

16:30-17:00 **Felipe Jornada**, Stanford University
Strong light-matter interactions and nonlinearities from first principles: from exciton dynamics to giant exciton-driven Floquet effects

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Ultrafast Dynamics: Experiments

09:05-09:35 **David Reis**, Stanford University-SLAC
Imaging valence-electron motion in solids

09:35-10:05 **Carina Belvin,** Caltech
Hybrid timescale pump-probe spectroscopy for Floquet engineering

10:05-10:35 **Jiaojian (Tristan) Shi,** Stanford University
Nonresonant Raman control of material phases

10:35-11:05 **Samuel Teitelbaum**, Arizona State University
Commissioning results from the ASU compact X-ray source

Ultrafast Bandgap Photonics

11:30-12:00 **Matt Graham**, Oregon State University
Driving optomagneto dynamics between correlated triplet pair states in single-crystal singlet fission materials

12:00-12:30 **Vanessa Huxter**, University of Arizona
Photophysics of Photocatalytic and Radical Systems

Ultrafast Dynamics: Semiconductors

14:30-15:00 **John Schaibley**, University of Arizona
Controlling excitons in 2D semiconductor heterostructures

15:00-15:30 **Yusuke Morita**, University of Tokyo
Direct observation of Bose-Einstein condensates of excitons in a bulk semiconductor at sub-Kelvin temperatures

15:30-16:00 **Leonid Butov**, University of California at San Diego
Indirect excitons in heterostructures

16:00-16:30 **Oliver Monti**, University of Arizona
Ultrafast time-reversal symmetry breaking without magnetic fields in 2D heterostructures

16:30-17:00 **Christian Schneider**, University of Kaiserslautern, Germany
Carrier dynamics in models of charge density wave materials and excitonic insulators: A density-matrix approach