A01: *Advances in Scanned Probe Microscopy I.* Room: 150A

A01.6 Zeldov, Eli: Nanoscale thermal imaging of dissipation from individual atomic defects in graphene. 09:00AM

A02: *Developments of DFT from Quantum to Statistical Mechanics (I).* Room: 150B

A02.1 Yang, Weitao: Localized Orbital Scaling Correction for Systematic Elimination of Delocalization Error in Density Functional Approximations. 08:00AM

A02.7 Gillespie, Dirk: Classical DFT of Ions in the Electrical Double Layer and Nanofluidics. 09:36AM

A03: *Supported Nano-Clusters I: Tuning Reactivity Through Cluster-Support Support Interactions.* Room: 150C

A03.1 Pacchioni, Gianfranco: Tuning metal clusters properties: the important role of the support. 08:00AM

A03.2 Watanabe, Yoshihide: Morphology and catalysis of size-selected Pt clusters tuned by interfacial interaction with metal oxide support. 08:36AM

A03.5 Christopher, Phillip: Structure, stability and reactivity of oxide supported sub-nm Pt-group metal species. 09:36AM

A04: Quantum Hall States at Even-Denominator Filling. Room: 151

A04.1 Ippoliti, Matteo: Effect of band anisotropy on the Fermi contour of composite fermions at half filling. 08:00AM

A04.2 Banerjee, Mitali: Quantization of Heat Flow in Fractional Quantum Hall States. 08:36AM

A04.3 Rezayi, Edward: Landau Level Mixing and the Ground State of the ν=5/2 Quantum Hall Effect. 09:12AM

A04.4 Young, Andrea: Even denominator fractional quantum Hall effects in high quality bilayer graphene. 09:48AM

A04.5 Manfra, Michael: Possible Nematic to Smectic Phase Transition in a Two-Dimensional Electron System at Half-Filling. 10:24AM

A05: Solids in Strong Laser Fields. Room: 152

A05.1 Gaarde, Mette: Theory of HHG in solids: band structure, orientation dependence, and time profiles. 08:00AM

A05.2 Sherwin, Mark: High-order sideband generation in semiconductors: colliding quasiparticles and probing Berry curvature. 08:36AM

A05.3 Kira, Mackillo: Many-body theory of quasiparticles in strong laser fields. 09:12AM

A05.4 Ghimire, Shambhu: First Experiments on Solid-state HHG. 09:48AM

A05.5 Corkum, Paul: Atoms and solids in strong laser fields. 10:24AM

A09: *Ferroic oxides—Domain and Domain Walls.* Room: 301A

A09.7 Kagawa, Fumitaka: Athermal domain-wall creep near a ferroelectric quantum critical point. 09:12AM

A10: *Dirac/Weyl Semimetals—Disorder and Novel Phenomena.* Room: 301B

A10.1 Ilan, Roni: Inhomogeneous Weyl Semimetals. 08:00AM

A11: *Organometal Halide Perovskites I.* Room: 303A

A11.1 McGehee, Michael: Developing metal-halide perovskites with optimal band gaps, slow recombination and high stability for tandem solar cells. 08:00AM

A12: *Nanostructures and Metamaterials 1.* Room: 303B

A12.1 Raschke, Markus: Ultrafast and Nonlinear Nanoscopy. 08:00AM

A13: *Novel Phases in Complex Oxide Heterostructures.* Room: 304A

A13.7 Disa, Ankit: Phase control and hidden order in oxide superlattices: dimensional and interfacial effects. 09:12AM

A14: *Fe-based Superconductors—Spectroscopy.* Room: 304B

A14.1 Khasanov, Rustem: Pressure induced magnetic order in FeSe: the muon-spin rotation study. 08:00AM

A15: *Charge Transport at the Nanoscale.* Room: 304C

A15.1 Dubi, Yonatan: Diodes and switches from single molecules. 08:00AM

A16: History of Soviet Physics. Room: 305

A16.1 Kojevnikov, Alexei: More is Different, or the Transition from Quantity to Quality. 08:00AM

A16.2 Bilenky, Samoli: Dubna: From a secret Research Laboratory to the International Joint Institute for Nuclear Research. 08:36AM

A16.3 Siddiqi, Asif: Secrets in Public: Soviet Physics and Cold War Knowledge Cultures. 09:12AM
A16.4 Sher, Gerson S.: The Great Experiment: Scientific Cooperation Between the United States and the Former Soviet Union. 09:48AM

A20: *Energy Materials.* Room: 308B
A20.1 Chiang, Yet-Ming: Meeting the Growing Need for Long-Duration Energy Storage. 08:00AM

A21: *Thermoelectrics I.* Room: 309
A21.1 Ren, Zhifeng: High Performance Thermoelectric Half-Heusler and Zintl Materials. 08:00AM

A22: *Spin Polarization and Spin Order in Heterostructures and Oscillators.* Room: 402A
A22.4 DEAC, Alina: Beller Lectureship: Ultrahigh anisotropy Heusler alloys for THz spin-torque oscillators. 08:36AM
A22.8 Von Bergmann, Kirsten: Tailoring metallic ferromagnet heterostructures for non-collinear spin states and skyrmions. 09:48AM

A23: *Bulk Manganites and Cobaltites.* Room: 402B
A23.1 MacDougall, Greg: Identification and control of domain wall order in spinel ferrimagnets. 08:00AM

A24: *2D Frustrated Spin Systems: Shastry Sutherland and Bipartite Lattices.* Room: 403A
A24.1 Haravifard, Sara: Mapping the Phase Diagram of Frustrated Quantum Magnets Using Magnetic Field, Pressure and Chemical Doping. 08:00AM

A25: Topological/Skyrmion Hall Transport and Related Phenomena in Chiral Magnets. Room: 403B
A25.1 Beach, Geoffrey: Skyrmion dynamics, nucleation, and stability in ferromagnetic thin film multilayers. 08:00AM
A25.2 Yang, Fengyuan: Robust Zero-Field Skyrmion Formation in FeGe Epitaxial Thin Films. 08:36AM
A25.3 Kim, Bom: Skyrmions and Hall Transport. 09:12AM
A25.4 Panagopoulos, Christos: Evolution of chiral magnetic textures and their topological Hall signature in Ir/Fe/Co/Pt multilayer films. 09:48AM
A25.5 Wiesendanger, Roland: Electric-Field-Driven Switching of Individual Magnetic Skyrmions. 10:24AM

A26: *Quantum Defect-based Sensing.* Room: 404A
A26.1 Degen, Christian: Diamond-based quantum sensing. 08:00AM

A27: *Optomechanics I.* Room: 404B
A27.1 Safavi-Naeini, Amir: High-Q photonic resonators and electro-optic coupling using silicon-on-lithium-niobate. 08:00AM

A28: *DQI Prize Session.* Room: 405
A28.1 Simon, Barry: Dannie Heineman Prize for Mathematical Physics Talk: Twelve Tales in Mathematical Physics. 08:00AM
A28.5 Harrow, Aram: Rolf Landauer and Charles H. Bennett Award talk on the mathematics of quantum information, and the development of new algorithmic primitives for quantum computers. 09:12AM

A29: *First-principles Modeling of Excited-State Phenomena in Materials I: Method Development.* Room: 406A
A29.1 Blum, Volker: Advancing accurate and scalable electronic structure formalisms for light-harvesting materials. 08:00AM

A32: Machine Learning in Classical and Quantum Many-body Physics. Room: 408A
A32.1 Melko, Roger: Modeling Many-Body Physics with Restricted Boltzmann Machines. 08:00AM
A32.2 Carleo, Giuseppe: Neural-network Quantum States. 08:36AM
A32.3 Khatami, Ehsan: Machine learning and the magnetic phases of correlated fermions. 09:12AM
A32.4 Trebst, Simon: Machine learning of quantum many-fermion systems. 09:48AM
A32.5 Qi, Yang: Self-Learning Monte Carlo Methods. 10:24AM

A33: *Scaling Superconducting Circuits.* Room: 408B
A33.1 Kelly, Julian: Engineering superconducting qubit arrays for Quantum Supremacy. 08:00AM
A33.2 Russell, Damon: Microwave Engineering Challenges in Scaling Superconducting Qubits. 08:36AM

A34: ***Petascale Science and Beyond: Applications and Opportunities for Materials, Chemical, and Bio Physics I.*** Room: 409A

A34.1 Zhang, Shiwei: Accurate, scalable computations in many-electron systems. 08:00AM

A35: ***2D Materials—Spins and Valleys.*** Room: 409B

A35.1 Fabian, Jaroslav: Proximity physics in graphene: spin-orbit coupling, exchange, field effects, and pseudohelical states. 08:00AM

A35.5 Kawakami, Roland: Optospintronics and Magnetism with 2D Materials and Heterostructures. 09:12AM

A36: ***2D Materials—Strain and Mechanical Properties.*** Room: 410

A36.10 Gerardot, Brian: Deterministic strain-induced arrays of quantum emitters in a two-dimensional semiconductor. 09:48AM

A37: ***2D Materials—TMDCs I.*** Room: 411

A37.4 Gedik, Nuh: Large, valley-exclusive Bloch-Siegert shift in monolayer WS_2. 08:36AM

A38: ***Advances in Computational Statistical Mechanics and their Applications: Part 1.*** Room: 501A

A38.7 Costa, Bismarck: Studying phase transitions by zeros in energy probability distribution. 09:12AM

A39: ***Superconducting Circuits: Measurement I.*** Room: 501B

A39.1 Jacobs, Kurt: Fast, high-fidelity, QND measurements of superconducting qubits using a transverse interaction? 08:00AM

A41: Anomalous Low-Energy Bulk Excitations in Kondo Insulator SmB_6. Room: 502A

A41.1 Sonier, Jeff: Evidence of weakened 4f-5d Kondo hybridization and diminished valence fluctuations concurrent with the formation of the metallic surface state in SmB_6. 08:00AM

A41.2 Tjeng, Liu: 4f crystal field ground state of the strongly correlated topological insulator SmB_6. 08:36AM

A41.3 Laliberte, Francis: Heat transport in the Kondo insulator SmB_6. 09:12AM

A41.4 Butch, Nicholas: The persistence of the intermediate valence in SmB_6 under pressure. 09:48AM

A41.5 Hamidian, Mohammad: Imaging Topologically Emergent Dirac States of a Kondo Insulator. 10:24AM

A42: Physics of Biofilms. Room: 502B

A42.1 Yan, Jing: Mechanical Principles of Biofilm Formation. 08:00AM

A42.2 Gordon, Vernita: Bacteria Sense Mechanical Stress to Know When to Start Forming a Biofilm. 08:36AM

A42.3 Wong, Gerard: Surface sensing, motility appendages, and hydrodynamics in bacterial interactions with surfaces. 09:12AM

A42.4 Newman, Dianne: The importance of changing color: roles for redox-active pigments in sustaining biofilm metabolism. 09:48AM

A42.5 Suel, Gurol: Electrical cell-to-cell signaling in bacterial communities. 10:24AM

A43: ***Polymer Crystallization from Classical to Functional Systems I.*** Room: 503

A43.1 Cheng, Stephen: Polymer Crystals and Crystallization: A Rediscovered and Challenging Research Field. 08:00AM

A47: ***Inference and Stochastic Processes in Biophysics.*** Room: 507

A47.1 Sgouralis, Ioannis: Quantifying the invisible: Bayesian approaches in fluorescence microscopy. 08:00AM

A48: ***GSNP Student & Postdoc Prize Session.*** Room: 510

A48.1 Koser Patteson, Alison: Dissertation Award in Statistical and Nonlinear Physics Talk: Life in Suspense: Particle dynamics in suspensions of swimming bacteria. 08:00AM

A49: ***Biomaterials 1: Structure, Function, Design.*** Room: 511A

A49.1 Frigi Rodrigues, Debora: Structure-property relations in biomaterials. 08:00AM

A50: ***Physics of Proteins I: Experimental and Computational Studies on the Structure and Conformational Dynamics of Proteins.*** Room: 511B

A50.1 Gaines, Jennifer: Computational assessment of mutations of protein cores. 08:00AM

A51: ***Physical Force Regulation of Cells and Tissue—I.*** Room: 511C

A51.1 Levine, Herbert: Reciprocal coupling between cells and their mechanical environment. 08:00AM

A51.11 Haas, Pierre: Mechanics and Variability of a Volvox Embryo Turning Itself Inside Out. 10:24AM

A52: ***Mechano-Responsive Polymers and Soft Materials.*** Room: 512

A52.4 Boulatov, Roman: Challenges and Opportunities of Polymer Mechanochemistry. 08:36AM

A52.8 Craig, Stephen: Quantitative Studies of Polymer Mechanochemistry. 09:48AM

A55: ***Confined Polymer Glasses I: Influence of Irreversibly Adsorbed Layers and Free Surfaces.*** Room: 515A

A55.7 Cangialosi, Daniele: Glass transition and molecular mobility in polymers under nanoscale confinement. 09:12AM

A56: ***Symposium Honoring William W. Graessley I.*** Room: 515B

A56.1 McLeish, Thomas: Molecular theory for Polymer Rheology: When the Mist Clears and When it Swirls Back Again. 08:00AM

A56.8 Milner, Scott: Chi parameters from simulations. 09:48AM

A57: ***Mechanics of Networks I: Allostery and Designed Response.*** Room: 518

A57.4 Nagel, Sidney: Designing allostery-inspired response in mechanical networks. 08:36AM

A58: Frustration in Soft Matter Assemblies. Room: PH C

A58.1 Shi, Anchang: Frustration in block copolymer assemblies. 08:00AM

A58.2 Mahanthappa, Mahesh: Molecular Frustration and Formation of Lyotropic Liquid Crystalline Frank-Kasper Phases. 08:36AM

A58.3 Grason, Gregory: Competing morphologies and escaping to infinite size in geometrically frustrated assemblies. 09:12AM

A58.4 Lenz, Martin: Slimming down through frustration. 09:48AM

A58.5 Efrati, Efi: Cumulative geometric frustration: From bent-core liquid crystals to spherulites of twisted molecular crystals. 10:24AM

A59: Bridging New Polymer Chemistry and Polymer Physics. Room: PH D

A59.1 Winey, Karen: Precise Associating Polymers Exhibit New Morphologies and Promising Properties. 08:00AM

A59.2 Dobrynin, Andrey: Computationally Driven Design of Soft Materials. 08:36AM

A59.3 Meyer, Tara: Structure, Properties, and Function in Periodically Sequenced Poly(lactic-co-glycolic acid)s. 09:12AM

A59.4 Sita, Lawrence R.: Dynamic Order-Order Transitions and Kinetic Surface Trapping of Unique Morphologies for Sub-10 nm Nanostructured Ultrathin Films of Sugar-Polyolefin Conjugates. 09:48AM

A59.5 Liu, Guoliang: The design of block copolymers and the control over their structures for energy storage. 10:24AM

B02: ***Self-assembly of Nanomaterials: Mechanisms of Structure Formation.*** Room: 150B

B02.1 Mundy, Christopher: Building models for the initial stages of nucleation: $CaCO_3$ revisited. 11:15AM

B02.5 van Driessche, Alexander: Nanoparticle driven nucleation of inorganic and macromolecular crystals. 12:27PM

B03: ***Supported Nano-Clusters II: Tuning Reactivity Through Cluster Size and Alloy Formation.*** Room: 150C

B03.1 Landman, Uzi: Old Questions, New Paradigms: Tuning Nanocatalytic Reactivity and Selectivity. 11:15AM

B03.2 Heiz, Ueli: Clusters in Action. 11:51AM

B03.6 Anderson, Scott: Size, Structure, Support, and Alloying Effects on Cluster Chemistry. 01:03PM

B04: Driven Topological Quantum Materials. Room: 151

B04.1 Prasankumar, Rohit: Using Ultrashort Light Pulses to Probe and Control Quasiparticle Dynamics in Topological Materials. 11:15AM

B04.2 Devereaux, Thomas: Light controlled topological phase transitions in multi-orbital and frustrated magnetic systems. 11:51AM

B04.3 Neupane, Madhab: Photoemission Studies of Topological Superconducting Materials. 12:27PM

B04.4 Chia, Ee Min: Spin-charge conversion in topological materials via THz emission spectroscopy. 01:03PM

B04.5 Refael, Gil: Topological frequency conversion in strongly driven quantum systems. 01:39PM

B05: Progress in Quantum Computing Implementations. Room: 152

B05.1 Das Sarma, Sankar: Progress and challenges for topological qubits. 11:15AM

B05.2 Biercuk, Michael: The advantages of trapped-ion quantum computation. 11:51AM

B05.3 Dzurak, Andrew: Progress and Challenges for Semiconductor Spin Qubits. 12:27PM

B05.4 Oliver, William: Progress and Challenges for Engineering Superconducting Qubits. 01:03PM

B05.5 O'Brien, Jeremy: Silicon Photonic Quantum Computing. 01:39PM

B09: ***Ordering in Ferroic Oxides I.*** Room: 301A

B09.1 Ihlefeld, Jon: Backscattered Scanning Electron Microscopy Domain Imaging of Ferroelectric Films: in operando Ferroelectric Domain Structure Characterization. 11:15AM

B10: ***Magnetotransport and Quantum Oscillations in Topological Semimetals.*** Room: 301B

B10.1 Hassinger, Elena: Fermi Surface Topology and Transport in Weyl Semimetals. 11:15AM

B11: ***Organometal Halide Perovskites II.*** Room: 303A

B11.1 Huang, Jinsong: Unveiling the Operation Mechanism of Two-dimensional Perovskite Solar Cells. 11:15AM

B12: ***Nanostructures and Metamaterials 2.*** Room: 303B

B12.1 Armani, Andrea: Nonlinear behavior in hybrid optical resonators. 11:15AM

B14: ***Fe-based Superconductors—Multiorbital Superconductivity.*** Room: 304B

B14.1 DAVIS, J.C.: Visualizing Orbital Selective Mottness/Hundness and Cooper Pairing in FeSe. 11:15AM

B16: Pais Prize Session: Peter Galison. Room: 305

B16.1 Galison, Peter: Abraham Pais Prize for History of Physics Talk: Filming and Writing Physics: Concrete Abstractions. 11:15AM

B16.2 Gross, David: Einsteins Quest for a Unified Theory. 11:51AM

B16.3 Carson, Cathryn: Physics and History, Data and Time. 12:27PM

B16.4 Porter, Ted: Physics and the Ideals of Human Reason. 01:03PM

B16.5 Else, Jon: TBD. 01:39PM

B17: ***Organic Film Structure, Properties, and Dynamics.*** Room: 306A

B17.8 Zhang, Pengpeng: Tailoring the growth and electronic structures of organic molecular thin films. 12:39PM

B19: ***Magnetic Nanoparticles and Biomedical Applications.*** Room: 308A

B19.3 Srikanth, Hariharan: Anisotropic hybrid nanostructures for advanced hyperthermia. 11:39AM

B19.7 Gutierrez, Lucia: Magnetic nanoparticles for biomedical applications: synthesis, aggregation and biotransformations. 12:51PM

B20: ***Energy Storage: Electrolytes and Interfaces.*** Room: 308B

B20.1 Toney, Michael: Interfaces in Electrochemical Energy Storage. 11:15AM

B21: ***Electrons, Phonons, Electron Phonon Scattering and Phononics I.*** Room: 309

B21.1 Toberer, Eric: Force multipliers for the discovery of advanced thermoelectric materials. 11:15AM

B23: ***Controlling Magnetism in Oxide Heterostructures I.*** Room: 402B

B23.10 Triscone, Jean-Marc: Electronic properties of nickelate based films and heterostructures. 01:03PM

B24: ***Spin Frustration: Kitaev Systems.*** Room: 403A

B24.1 Lee, Minhyea: Anomalous Thermal Conductivity and Magnetic Torque Response in the Honeycomb Magnet α-$RuCl_3$. 11:15AM

B25: Ultrafast Laser Techniques for Molecular Photochemistry and Photophysics. Room: 403B

B25.1 Sension, Roseanne: Light, Molecules, Action: Using Ultrafast Optical and X-ray Spectroscopy to Probe Excited State Dynamics in Photoactive Molecules. 11:15AM

B25.2 Schwartz, Benjamin J.: What do Ultrafast Photoelectron Spectroscopy and Temperature-Dependent Transient Absorption Experiments Tell Us About the Structure of the Hydrated Electron? 11:51AM

B25.3 Jonas, David: Nonadiabatic Dynamics and Nested Funnels in Energy Transfer and Photosynthesis. 12:27PM

B25.4 Bradforth, Stephen: Photoelectron processes in liquid water: new methods for probing elementary reactivity. 01:03PM

B25.5 Turner, Daniel: Signatures of Herzberg-Teller coupling in three-dimensional electronic spectroscopy. 01:39PM

B28: ***Quantum Thermodynamics—from Quantum Information Theory to Statistical Mechanics.*** Room: 405

B28.1 Averin, Dmitri: Reversing the Landauer's erasure: information and entropy in mesoscopic thermodynamics. 11:15AM

B28.2 Dahlsten, Oscar: Information thermodynamics meets technology. 11:51AM

B29: ***First-principles Modeling of Excited-State Phenomena in Materials II: Real-time TDDFT.*** Room: 406A

B29.1 Kaxiras, Efthimios: Recent advances in time-dependent density functional theory for applications to electronic excitations and non-adiabatic dynamics. 11:15AM

B32: Computational Modeling of Electronic Materials for Energy Applications. Room: 408A

B32.1 Ertekin, Elif: Towards a Design Framework for Magnetocaloric Shape Memory Alloys. 11:15AM

B32.2 Viswanathan, Venkat: Towards computational discovery of next-generation batteries for electrification of transportation and aviation. 11:51AM

B32.3 Wang, Wennie: Tuning the Optical Properties of Complex Oxides for Energy Applications. 12:27PM

B32.4 Frost, Jarvist: Semiconductor physics of halide perovskite solar cells. 01:03PM

B32.5 Schwegler, Eric: Accelerated materials development for solar-to-fuel conversion technologies. 01:39PM

B33: ***Nonreciprocal Superconducting Devices.*** Room: 408B

B33.1 Metelmann, Anja: Nonreciprocal and reciprocal information processing at the quantum level. 11:15AM

B33.2 Painter, Oskar: TBD. 11:51AM

B34: ***Petascale Science and Beyond: Applications and Opportunities for Materials, Chemical, and Bio Physics II.*** Room: 409A

B34.1 Cole, Jacqueline: Data-driven Molecular Engineering of Solar-Powered Windows using Materials Database Auto-Generation Tools with Large-Scale Data-Mining. 11:15AM

B36: ***2D Materials—Heterostructures I.*** Room: 410

B36.1 Yao, Wang: Valley-spin phenomena in the moire pattern of van der Waals heterostructures. 11:15AM

B36.8 Zhu, Jun: Quantum valley Hall effect and valleytronics in bilayer graphene. 01:03PM

B37: ***2D Materials—TMDCs II.*** Room: 411

B37.4 Wu, Sanfeng: Observation of Topological Insulating and Superconducting Ground States of Monolayer WTe_2. 11:51AM

B38: ***Advances in Computational Statistical Mechanics and their Applications: Part 2.*** Room: 501A

B38.1 Bartok-Partay, Livia: Nested sampling for computational thermodynamics. 11:15AM

B41: Metallic Hydrogen and Hydrides. Room: 502A

B41.1 Eremets, Mikhail: Molecular semimetallic hydrogen. 11:15AM

B41.2 Goncharov, Alexander: Synthesis of superhydrides and metallization of hydrogen at high pressures. 11:51AM

B41.3 Timusk, Thomas: Spectroscopic Evidence of a new Energy Scale in H_3S. 12:27PM

B41.4 Pickett, Warren: van Hove Singularities and Strong Electron-Phonon Coupling: Superconductivity and H_3S. 01:03PM

B41.5 Errea, Ion: Quantum Motion and Anharmonicity in Superconducting Hydrides. 01:39PM

B42: Biomaterials 2: Structure, function, design. Room: 502B

B42.1 Addadi, Lia: Biogenic Scatterers, Mirrors, Multilayer Reflectors and Photonic Crystals. Futuristic Ancient Technologies. 11:15AM

B42.2 Myers, Corinne: Exceptional Preservation of Organic Matrix and Shell Ultrastructure in a Cretaceous Pinna Fossil. 11:51AM

B42.3 McKittrick, Joanna: Investigation of the mineral and collagen arrangement in bone. 12:27PM

B42.4 Estroff, Lara: Correlative imaging techniques reveal organic-inorganic compositions of pathological mineral deposits. 01:03PM

B42.5 Dove, Patricia: The solubility and structure(s) of amorphous calcium carbonate(s) (ACC) under controlled conditions. 01:39PM

B43: *Polyelectrolyte Complexation I: Self-Assembly.* Room: 503

B43.7 Lodge, Timothy: Micelleplexes: Complexation of Polyanions with Cationic AB Diblock and ABC Triblock Micelles. 12:27PM

B47: *Physics of Multicellular Information Processing.* Room: 507

B47.1 Weaver, Valerie: A physical sciences approach to understanding tumor dormancy. 11:15AM

B47.7 Gov, Nir: Modeling Collective Cell Migration: Clusters and Monolayers. 12:51PM

B49: *Biophysics of Cellular Organization and Dynamics Across Multiple Spatial Scales—I.* Room: 511A

B49.1 Marshall, Wallace: How cells measure length: clocks, rulers, and diffusion. 11:15AM

B50: *Robophysics: Robotics Meets Physics.* Room: 511B

B50.1 Hosoi, Anette: From Razor Clams to Robots: Drawing Engineering Inspiration from Natural Systems. 11:15AM

B51: *Physical Force Regulation of Cells and Tissue—II.* Room: 511C

B51.1 Segall, Jeffrey: Tumor cell invasion and metastasis in vivo. 11:15AM

B52: *Polymer Crystallization from Classical to Functional Systems II.* Room: 512

B52.1 Brinkmann, Martin: Anisotropy of charge transport and thermoelectric properties in oriented conducting polymer films prepared by high temperature rubbing. 11:15AM

B54: *Soft Interface Mechanics II.* Room: 514

B54.13 Manning, M Lisa: 2018 Maria Goeppert Mayer Award Talk: Surface tension is weird in confluent biological tissues. 01:39PM

B55: *Confined Polymer Glasses II: Mobility Gradients.* Room: 515A

B55.4 Lipson, Jane E: Think globally, act locally: How interfaces can alter mobility and glassiness. 11:51AM

B56: *Symposium Honoring William W. Graessley II.* Room: 515B

B56.1 Robertson, Megan: Effect of Partial Saturation on Thermodynamic Interactions in Polydiene/Polyolefin Blends. 11:15AM

B57: *Physics of Granular Media.* Room: 518

B57.1 Goddard, Joe: A Van der Waals-Cahn-Hilliard regularization of granular instability via dissipation potentials. 11:15AM

B58: Stick, Slip, and Interfacial Dynamics in Soft Systems. Room: PH C

B58.1 Robbins, Mark: Scale Dependence of Friction: How Elasticity Destroys Superlubricity. 11:15AM

B58.2 Carpick, Robert: Rate-and-State Effects in Nanoscale Contacts: How Chemical Bonding Induces Frictional Instabilities. 11:51AM

B58.3 Marone, Chris: Quasi-dynamic Stick-Slip Frictional Sliding and The Mechanics of Slow Earthquakes. 12:27PM

B58.4 Bocquet, Lyderic: Interfacial slip and flows in nanotubes. 01:03PM

B58.5 Svetlizky, Ilya: Classical shear cracks drive the onset of frictional motion. 01:39PM

B59: Polymer Physics from Academia to Industry and Back. Room: PH D

B59.1 Kornfield, Julie: Microstructral Basis for the Unexpected Radial Strength of Poly L-lactide (PLLA) Bioresorbable Vascular Scaffolds During Hydrolysis. 11:15AM

B59.2 Ruiz, Ricardo: Polymer Physics in Self-Assembled Nanopatterns: From Block Copolymers to Polymer Grafted Nanocrystals. 11:51AM

B59.3 Degroot, Jon: Practical challenges for the implementation of polymers into highly engineered systems—an industrial perspective. 12:27PM

B59.4 Jamadagni, Sumanth: Insight vs. Accuracy for Models and Experiments in industry: How to strive for simplicity, and the importance of top-down, multi-physics modeling. 01:03PM

B59.5 Verghese, Nikhil: Thermoplastic Composite Solutions for Mass Markets: Opportunities and Challenges. 01:39PM

C02: *Developments of DFT from Quantum to Statistical Mechanics (II).* Room: 150B

C02.1 Payne, Michael: Finite Temperature Phase Diagrams by Nested Sampling. 02:30PM

C02.6 Archer, Andrew: Liquid drops on surfaces: using density functional theory to calculate the binding potential and drop profiles and comparing with results from mesoscopic modelling. 03:54PM

C03: *Self-assembly of Nanomaterials: Hierarchical assembly of nanoparticles.* Room: 150C

C03.1 Talapin, Dmitri: Self-Assembly of Nanocrystal Superlattices: puzzles and opportunities. 02:30PM

C03.6 Fichthorn, Kristen: Growth of Nanoscale Materials: Insights from Multiscale Theory and Simulations. 03:54PM

C04: Coherent Magnonics: Progress to the Quantum Regime. Room: 151

C04.1 Tabuchi, Yutaka: Sensing magnetization oscillation in quantum regime. 02:30PM

C04.2 Andrich, Paolo: Long-range spin wave control of spin qubits in nanodiamonds1. 03:06PM

C04.3 Tang, Hong: Cavity Elecctrodynamics of Magnons. 03:42PM

C04.4 Flatt, Michael: Designing magnonic crystals for quantum control. 04:18PM

C04.5 Johnston-Halperin, Ezekiel: High-Q spin wave excitations in the organic-based ferrimagnet vanadium tetracyanoethylene. 04:54PM

C05: Patents, Innovations, and Wars! Room: 152

C05.1 Taylor, Nick: Laser: The Inventor, the Nobel Laureate, and the 30-year Patent War. 02:30PM

C05.2 Foreman, Louis: The Independent Inventors Handbook. 03:06PM

C05.3 Krueger, Dan: Patent Sense: knowing when to pursue patent protection. 03:42PM

C05.4 DiBerardino, Diana: Pieces of the Patent Puzzle: A Primer. 04:18PM

C07: *Electron Solids.* Room: 153B

C07.4 Ashoori, Raymond: Sharp Tunneling Resonance from Vibrations of a 2D Wigner Crystal. 03:06PM

C09: *Dielectric and Ferroic Oxides—Elastic Phenomena.* Room: 301A

C09.1 Stengel, Massimiliano: New functionalities from gradient couplings: Flexoelectricity and more. 02:30PM

C10: *Topological Nodal Line and Point Semimetals.* Room: 301B

C10.1 Weng, Hongming: Triply Degenerate Nodal Point Semimetals. 02:30PM

C11: *Organometal Halide Perovskites III.* Room: 303A

C11.1 Yu, Dong: Photocurrent Mapping in Single-Crystal Methylammonium Lead Iodide Perovskite Nanostructures. 02:30PM

C12: *Nanostructures and Metamaterials 3.* Room: 303B

C12.1 DePrince, Eugene: Time-dependent electronic structure methods for plasmon-molecule interactions. 02:30PM

C13: *Assembly and Behavior of Hierarchical Materials.* Room: 304A

C13.1 Gang, Oleg: Prescribed Self-Assembly of Nanoscale Architectures. 02:30PM

C13.5 De Yoreo, James: The Impact of Molecular Sequence on Hierarchical Assembly of Biomimetic Polymers. 03:42PM

C14: *Fe-based Superconductors—Quantum Criticality and Quantum Phase Transitions.* Room: 304B

C14.1 Shekhter, Arkady: Scale-Invariant transport near quantum critical point in high-temperature superconductors. 02:30PM

C15: *Exciton and Photo-induced Charge Dynamics.* Room: 304C

C15.1 Silva, Carlos: Coherent exciton dynamics in lead halide perovskites probed via two-dimensional electronic spectroscopy. 02:30PM

C15.2 Sfeir, Matthew: Dissociation of triplet pair states in intramolecular singlet fission materials. 03:06PM

C16: Pattern Formation in Soft Materials. Room: 305

C16.1 Lee, Sungyon: Pattern formation in suspensions. 02:30PM

C16.2 Aarts, Dirk: Pattern formation in confined colloidal liquid crystals. 03:06PM

C16.3 Driscoll, Michelle: Critters: stable clusters born from an unstable front. 03:42PM

C16.4 Chopin, Julien: Geometry and Mechanics of Thin Elastic Ribbons. 04:18PM

C16.5 Marchetti, M Cristina: Topological patterns in active liquid crystals. 04:54PM

C19: *Magnetic Clusters and Molecular Magnets I.* Room: 308A

C19.10 Santini, Paolo: Fingerprinting molecular nanomagnets by four-dimensional inelastic neutron scattering. 04:18PM

C20: *Energy Storage: Towards High Capacity Electrodes.* Room: 308B

C20.1 Siegal, Michael: Nanoporous-Carbon Based Anode Materials for Increased Li-Ion Energy Specific Capacity. 02:30PM

C21: *Thermoelectrics II.* Room: 309

C21.1 Minnich, Austin: Thermal phonon coherence in superlattices and the role of phonon scattering phase space. 02:30PM

C22: *Antiferromagnetic and Topological Spintronics.* Room: 402A

C22.4 Sinova, Jairo: Topological Antiferromagnetic Spintronics. 03:06PM

C23: *Controlling Magnetism in Oxide Heterostructures II.* Room: 402B

C23.4 Stemmer, Susanne: Carrier Density Control of Magnetism and Hall Effects in $EuTiO_3$ Films. 03:06PM

C23.8 Christensen, Dennis: GMAG Student Dissertation Award: When conductivity and magnetism emerge at a spinel/perovskite heterointerface. 04:18PM

C24: *3D Frustrated Spin Systems: Pyrochlores and Spinels.* Room: 403A

C24.7 Gaudet, Jonathan: Ground State Selection in the XY Pyrochlore Magnet $Er_2Ti_2O_7$ and its Stability to Chemical Pressure and Quenched Impurities. 03:42PM

C26: *Quantum Annealing: Architectures.* Room: 404A

C26.1 Kerman, Andrew: Design and simulation of complex superconducting circuits for advanced quantum annealing hardware. 02:30PM

C28: *Silicon Spin Qubits.* Room: 405

C28.1 Tarucha, Seigo: Charge Noise Limited Gate Fidelity $> 99.9\%$ of Spin Qubits with Si/SiGe Quantum Dots. 02:30PM

C29: *First-principles Modeling of Excited-State Phenomena in Materials III: Phonons, Spins, Dynamics.* Room: 406A

C29.1 Kresse, Georg: BSE and time dependent DFT beyond the Tamm-Dancoff approximation: diagonalization versus time evolution. 02:30PM

C32: DMP Prize Session. Room: 408A

C32.1 Ruoff, Rodney S.: James C. McGroddy Prize for New Materials Talk: Fundamental discoveries about graphene and their implications to date. 02:30PM

C32.2 Palmstrom, Christopher: Adler Prize Winner. 03:06PM

C32.3 Yacaman, Miguel: Edward A. Bouchet Award Talk: Nanoparticles with Five-fold Symmetry. 03:42PM

C32.4 Ceriotti, Michele: Symmetry Matters: Machine-learning of Scalar and Tensorial Atomic-Scale Properties. 04:18PM

C33: *Quantum Acoustics.* Room: 408B

C33.10 Chu, Yiwen: Hybrid systems with bulk acoustic wave resonators. 04:18PM

C33.9 LaHaye, Matthew: Investigations and Potential Applications of Qubit-Nanoresonator-Cavity Interactions in a Superconducting Quantum Electromechanical System. 04:30PM

C34: *Petascale Science and Beyond: Applications and Opportunities for Materials, Chemical, and Bio Physics III.* Room: 409A

C34.1 Govoni, Marco: Large-scale first principles calculations with leadership class HPC using many-body perturbation theory. 02:30PM

C36: *2D Materials—Heterostructures II.* Room: 410

C36.1 Cronin, Steve: 2D Materials and Heterostructures for Electronic, Optoelectronic, and Thermoelectric Device Applications. 02:30PM

C36.8 Zheng, Changxi: Direct Observation of 2D Electrostatics and Ohmic Contacts in 2D Heterojunctions. 04:18PM

C37: *2D Materials—Optics and Excitons I.* Room: 411

C37.10 Menon, Vinod: Valley Exciton Polaritons. 04:18PM

C38: *Advances in Computational Statistical Mechanics and their Applications: Part 3.* Room: 501A

C38.1 Krauth, Werner: Fast irreversible Markov chains in statistical mechanics. 02:30PM

C39: *Scaling up Quantum Computers.* Room: 501B

C39.1 Venturelli, Davide: Optimization and Planning Approaches for Low-level Hardware Compilation of Quantum Circuits. 02:30PM

C39.4 Chong, Frederic: Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design. 03:30PM

C41: Magnetism, Unconventional Superconductivity and Pressure Effects in $CaKFe_4As_4$. Room: 502A

C41.1 Furukawa, Yuji: NMR studies of magnetism and superconducting properties of $CaK(Fe_{1-x}Ni_x)_4As_4$. 02:30PM

C41.2 Fernandes, Rafael: Magnetic degeneracy and intertwined orders in iron-based superconductors. 03:06PM

C41.3 Ishikado, Motoyuki: Inelastic neutron scattering study on spin resonance in $CaKFe_4As_4$. 03:42PM

C41.4 Guillamon, Isabel: Quasiparticle interference imaging in pure and Ni-doped $CaKFe_4As_4$ and in related systems. 04:18PM

C41.5 Hickel, Tilmann: Electronic properties, low-energy Hamiltonian, and superconducting instabilities in $CaKFe_4As_4$. 04:54PM

C42: Emergent Dynamics in Neural Systems. Room: 502B

C42.1 Dzakpasu, Rhonda: How manipulating the excitatory-inhibitory balance within in vitro neuronal networks with dopamine impacts network dynamics. 02:30PM

C42.2 De Arcangelis, Lucilla: Correlations in the brain. 03:06PM

C42.3 Goldenfeld, Nigel: The statistical mechanics of hallucinations and the evolution of the visual cortex. 03:42PM

C42.4 Mehta, Mayank R.: How neural emergent dynamics creates the perception of abstract space-time. 04:18PM

C42.5 Beggs, John: Does the cortex truly operate at criticality? 04:54PM

C43: Jonathan F. Reichert and Barbara Wolff-Reichert Award for Excellence in Advanced Laboratory Instruction. Room: 503

C43.1 Wick, Kurt: Jonathan F. Reichert and Barbara Wolff-Reichert Award for Excellence in Advanced Laboratory Instruction Talk: A Project-based Lab Course Experience at the University of Minnesota. 02:30PM

C43.2 George, Elizabeth: Revitalizing Upper-Level Laboratory Instruction: Opportunities and Initiatives. 03:06PM

C43.3 Galvez, Enrique: Designing Advanced Labs: From Summer or Capstone Research Project(s) to Curricular Offering. 03:42PM

C43.4 Carlsmith, Duncan: Garage Physics: Cultivating an entrepreneurial mindset in a physics lab. 04:18PM

C43.5 Holmes, N: Hands-on or minds-on? Teaching and measuring critical thinking in labs. 04:54PM

C46: *Advanced Morphological Characterization of Polymeric Materials I: Soft and Hard X-ray, and Neutron Scattering.* Room: 506

C46.4 Wang, Cheng: Multimodal resonant x-ray scattering for polymer materials. 03:06PM

C48: *Extreme Mechanical Instabilities, Defects, and Large Deformations II.* Room: 510

C48.1 Schneider, Tobias: From turbulence transition to the buckling of a soda can. 02:30PM

C49: *Biomaterials 3: Structure, Function, Design.* Room: 511A

C49.11 Bergmann, Kristin: Biomaterials and their isotopes through geologic time. 04:30PM

C49.4 Birkedal, Henrik: Bone hierarchical structure and mechanics through 3D X-ray imaging techniques. 03:30PM

C51: *Coherence and Quantum Aspects of Living Systems I.* Room: 511C

C51.1 Policht, Veronica R.: Coherence in the Bacterial Reaction Center. 02:30PM

C51.10 Malvankar, Nikhil: Metallic Conductivity in Proteins: A New Paradigm for Biological Electron Transfer. 04:42PM

C52: *Physics of 3D Printing and Additive Manufacturing.* Room: 512

C52.7 Williams, Christopher: Molecules to Manufacturing: Advancing the Polymeric Materials Toolbox for Additive Manufacturing. 03:42PM

C55: *Polyelectrolyte Complexation II: Structure and Rheology.* Room: 515A

C55.4 Wang, Zhen-Gang: Coacervation of Oppositely Charged Polyelectrolytes: Effects of Composition Asymmetry. 03:06PM

C56: *Organic Electronics and Photonics I: Charge Transport.* Room: 515B

C56.1 Ratner, Mark: Time-dependent Behavior of Molecular Transport. 02:30PM

C57: *Soft Interface Mechanics III.* Room: 518

C57.1 Holmes, Douglas: Soft Adhesion & Friction: Compliance, Hysteresis, and Swelling. 02:30PM

C58: Large Deviations and the Butterfly Effect. Room: PH C

C58.1 Cvitanovic, Predrag: Is space time? A spatiotemporal theory of transitional turbulence. 02:30PM

C58.2 Marston, John: Large Deviation Theory of Planetary Jets. 03:06PM

C58.3 Ott, Edward: Model-free Machine Learning Analysis of Chaotic Dynamics Including that of Large Spatiotemporally Chaotic Systems. 03:42PM

C58.4 Pradas, Marc: Convergent Chaos. 04:18PM

C58.5 Smith, Leonard: Diffusion, Deviation and Divergence: Limits to Predictability in Nonlinear Systems. 04:54PM

C59: Gels and Networks. Room: PH D

C59.1 Heilshorn, Sarah: Adaptable hydrogels with secondary reinforcement for regenerative medicine. 02:30PM

C59.2 Urayama, Kenji: Nonlinear Elasticity and Diffusio-Mechanical Coupling of Elastomeric Polymer Networks Reveald by Multiaxial Stretching. 03:06PM

C59.3 Cipelletti, Luca: Dynamic precursors of failure in the creep of a colloidal gel. 03:42PM

C59.4 Ramirez, Jorge: Stress relaxation and anomalous diffusion in unentangled supramolecular networks. 04:18PM

Special Session D04: Special Outreach Session: Enabling Quantum Leap: Federal and Private Funding Opportunities in Condensed Matter Physics and Materials Science. Room: PH C

Start times after first talk are approximate

D04.1 Durakiewicz, Tomasz: Enabling Quantum Leap: Opportunities at NSF. 07:30PM

D04.2 Horowitz, Jim: Condensed Matter Physics Research in the DOE-BES Division of Materials Sciences and Engineering. 08:06PM

D04.3 Robinson, Ellen: Air Force Office of Scientific Research Young Investigator Research Program (YIP) and the AFOSR Physical Sciences Team. 08:42PM

D04.4 Pejakovic, Dusan A.: Emergent Phenomena in Quantum Systems Initiative at Gordon and Betty Moore Foundation. 09:18PM

D04.5 Gamble, Sara: ARO Opportunities in Quantum Information and Quantum Materials. 09:54PM

E01: ***Advances in Scanned Probe Microscopy II.*** Room: 150A

E01.6 Shigekawa, Hidemi: Ultrafast optical pump-probe scanning tunneling microscopy. 09:00AM

E02: ***Developments of DFT from Quantum to Statistical Mechanics (III).*** Room: 150B

E02.1 Loewen, Hartmut: Dynamical density functional theory for the collective behavior of active particles. 08:00AM

E02.6 Arias, Tomas: Joint Density-Functional Theory. 09:24AM

E03: ***Supported Nano-Clusters III: Clusters Under Reaction Conditions.*** Room: 150C

E03.1 Sautet, Philippe: Crucial role of metastable structures and restructuring of Pt clusters in catalysis. 08:00AM

E03.4 Roldan Cuenya, Beatriz: Operando Nanocatalysis: Size, Shape, Composition and Chemical State Effects. 09:00AM

E03.5 Taketsugu, Tetsuya: Theoretical study of reactivity of gold clusters: Structural effects and support effects. 09:36AM

E04: Open Questions in Unconventional Superconductivity. Room: 151

E04.1 Norman, Michael: Whats Up with the Cuprates? 08:00AM

E04.2 Vekhter, Ilya: Heavy fermion superconductors: immediate family and other relatives. 08:36AM

E04.3 Agterberg, Daniel: The odd case of superconductivity in strontium ruthenate. 09:12AM

E04.4 Brown, Stuart: Superconductivity in Molecular Solids. 09:48AM

E04.5 Mazin, I.I.: Current challenges in Fe-based superconductors. 10:24AM

E05: Anomalous Transverse Transport in Mn3X Non-collinear Antiferromagnets. Room: 152

E05.1 Nakatsuji, Satoru: Large Transverse Responses at Room Temperature in the Weyl Antiferromagnets Mn_3X. 08:00AM

E05.2 Parkin, Stuart S: Magnetic anti-skyrmions and triangular antiferromagnetism in Mn_3X and Mn_2XY compounds. 08:36AM

E05.3 Li, Xiaokang: Anomalous Nernst and Righi-Leduc Effects in Mn_3Sn:Berry Curvature and Entropy Flow. 09:12AM

E05.4 Arita, Ryotaro: Cluster multipole theory for anomalous Hall effect in antiferromagnets. 09:48AM

E05.5 Balents, Leon: Interplay of transport and domain walls in nodal semimetals. 10:24AM

E07: ***Fractional Quantum Hall 1.*** Room: 153B

E07.1 Jain, Jainendra: Quantitative comparisons between theory and experiment in fractional quantum Hall effect. 08:00AM

E10: ***Dirac/Weyl Semimetals—Thin Films, Surfaces and Interfaces.*** Room: 301B

E10.1 Fuhrer, Michael: Towards topological electronics: Epitaxial thin films of topological Dirac semimetal Na_3Bi. 08:00AM

E11: ***Dopants and Defects in Semiconductors—Experimental techniques.*** Room: 303A

E11.1 Cress, Cory: Ion Beam Modification of 2-Dimensional Nanomaterials. 08:00AM

E12: ***Nanostructures and Metamaterials 4.*** Room: 303B

E12.1 Bermel, Peter: Modeling non-equilibrium thermal radiation phenomena using a direct simulation method. 08:00AM

E13: ***Non-centro Symmetric Materials Based Topological Superconductivity.*** Room: 304A

E13.1 Hsu, Yi-Ting: Topological superconductivity in monolayer transition metal dichalcogenides. 08:00AM

E14: ***Fe-based Superconductors—Electron Correlation and Orbital Selectivity.*** Room: 304B

E14.1 Yu, Rong: Theory of electron correlation and orbital selectivity in Fe-based superconductors. 08:00AM

E15: ***Coupled Electron and Phonon Dynamics at the Nanoscale.*** Room: 304C

E15.1 Urban, Jeff: Dimensionally-controlled studies of heat and charge transport in 1D, 2D, and 3D nanoscale materials. 08:00AM

E19: ***Ultrafast Magnetism and Switching.*** Room: 308A

E19.1 Mangin, Stephane: Ultrafast Magnetization Manipulation Using Single Femtosecond Light and Hot-Electron Pulse. 08:00AM

E19.5 Wilson, Richard: Picosecond electrical excitation of ultrafast magnetization dynamics in ferro- and ferrimagnetic metals. 09:12AM

E20: ***Energy Storage: Mn-based Cathodes.*** Room: 308B

E20.1 Segre, Carlo: In Situ Characterization of Battery Materials using X-ray Absorption Spectroscopy. 08:00AM

E21: ***Current-induced Spins, Spin-orbit Torques and Magnetoresistance in Topological Insulators.*** Room: 309

E21.6 Liu, Luqiao: Magnetic Switching with Topological Insulator and Compensated Ferrimagnet. 09:00AM

E24: ***3D Frustrated Spin Systems: Ising Pyrochlores and Spin Ice.*** Room: 403A

E24.4 Grigera, Santiago: Beller Lectureship: Magnetic field tuning of order by disorder in frustrated Ising pyrochlores. 08:36AM

E25: The Author in Dialogue: A. Douglas Stone's Einstein and the Quantum. Room: 403B

E25.1 Stone, A. Douglas: Einstein and Quantum Mechanics: Its Not What You Think. 08:00AM

E25.2 Badino, Massimiliano: An Unintentional Consequence: The Quantum in the Framework of the 19th Century Physics. 08:36AM

E25.3 Janssen, Michel: Wave mechanics versus matrix mechanics. 09:12AM

E25.4 Monaldi, Daniela: When did particles become indistinguishable? Einstein, Schrdinger, Heisenberg, Dirac, and the interpretive flexibility of mathematical-theoretical apparatus in the emergence of quantum statistics. 09:48AM

E27: ***Topological Physics in AMO Systems I.*** Room: 404B

E27.1 Carusotto, Iacopo: Topological physics with atoms and with photons. 08:00AM

E28: ***Experiment and Theory of Quantum Input-output Networks.*** Room: 405

E28.1 Kerckhoff, Joseph: Experimental approaches to quantum input-output networks. 08:00AM

E28.2 Combes, Joshua: How to model almost any quantum experiement: a tutorial on the SLH formalism. 08:36AM

E29: ***First-principles Modeling of Excited-State Phenomena in Materials IV: Nanoscale Systems.*** Room: 406A

E29.1 Ogut, Serdar: Electronic and Optical Excitations in Confined Nanostructures. 08:00AM

E32: Innovative Ideas for Engaging the Public. Room: 408A

E32.1 Niemala, Joseph J.: TBD. 08:00AM

E32.2 Erukhimova, Tatiana: Physics as a street art. 08:36AM

E32.3 Sampere, Samuel: TBD. 09:12AM

E32.4 Cham, Jorge: TBD. 09:48AM

E32.5 Moskowitz, Clara: Connecting With the Public. 10:24AM

E33: ***Applications with Near-Term Superconducting Quantum Devices.*** Room: 408B

E33.1 Wilhelm, Frank: Applications of restricted near-term superconducting qubit architectures: Using quantum control to reach quantum advantage. 08:00AM

E33.2 Corcoles, Antonio: Training a classifier with a superconducting quantum processor. 08:36AM

E34: ***Machine Learning in Condensed Matter Physics I.*** Room: 409A

E34.1 Wang, Lei: From Boltzmann machines to Born machines. 08:00AM

E36: ***2D Materials—Heterostructures III.*** Room: 410

E36.1 Wang, Feng: Probing Valley Dynamics in van der Waals heterostructures. 08:00AM

E37: ***2D Materials—Optics and Excitons II.*** Room: 411

E37.4 Kaasbjerg, Kristen: A unified description of quasiparticle interference in two-dimensional materials. 08:36AM

E39: ***Microwave Photonics with Superconducting Circuits I.*** Room: 501B

E39.1 Strauch, Frederick: From Superconducting Qubits to Microwave Photonics. 08:00AM

E39.2 Fink, Johannes: Observation of the Photon-Blockade Breakdown Phase Transition. 08:36AM

E41: Atomic Origami, Kirigami and Crumpling. Room: 502A

E41.1 Gracias, David: Programmable folding triggered by temperature and DNA. 08:00AM

E41.2 Lawler, Michael: How to fold a magnet: distorted kagome antiferromagnets as topologically frustrated origami sheets. 08:36AM

E41.3 Miskin, Marc: From Atomic Origami, Towards Cell-Sized Machines. 09:12AM

E41.4 Nelson, David R.: Perforations, disclination quadrapoles and crumpling of free-standing graphene. 09:48AM

E41.5 Yin, Peng: Nanoscale Construction with DNA. 10:24AM

E42: Chemotaxis Meets Physiology. Room: 502B

E42.1 Cremer, Jonas: Theory of chemotactic ring propagation and the fitness advantage of cue-driven range expansion. 08:00AM

E42.2 Kuehn, Seppe: Evolution at the front. 08:36AM

E42.3 Liu, Chenli: Evolutionary stability of bacterial motility to spatially dependent selection. 09:12AM

E42.4 Pilizota, Teuta: Revealing bacterial free energy dynamics during loss of viability. 09:48AM

E42.5 Tu, Yuhai: Physics of bacterial chemotaxis: From molecular mechansims to cellular behaviors. 10:24AM

E43: How to Get a Job: Expanding Career Perspectives for Physicists. Room: 503

E43.1 Bailey, Crystal: Beyond the Rose-Colored Binoculars: How to Launch a Successful Physics Career in the 21st Century. 08:00AM

E43.2 Cooper, Ken: A Physicists Engineering Career in a Federal Research Laboratory. 08:36AM

E43.3 Peterson, Michael: Balance in research, teaching, service and life at a primarily undergraduate institution. 09:12AM

E43.4 Anzelc, Meghan: What to do when you realize you may want to change careers: a practical guide to career planning for physicists. 09:48AM

E43.5 Kim, Matt: The Journey of an Entrepreneurial Physicist. 10:24AM

E43.6 Mack, Gregory: Alternate Careers for Physicists: Science Policy and Government Relations. 11:00AM

E48: ***Mechanical Metamaterials I.*** Room: 510

E48.1 Daraio, Chiara: Programmable metamaterials. 08:00AM

E49: ***Evolutionary and Ecological Dynamics—I.*** Room: 511A

E49.1 Korolev, Kirill: Neither pulled nor pushed: Genetic drift and front wandering uncover a new class of reaction-diffusion waves. 08:00AM

E50: ***Morphogenesis I.*** Room: 511B

E50.1 Kauffman, Stuart: Ensembles, Dynamics and Cell Types. 08:00AM

E51: ***Physics of Intracellular Transport.*** Room: 511C

E51.1 Yildiz, Ahmet: Dynamics of the intraflagellar transport machinery at the ciliary tip. 08:00AM

E51.6 Gopinathan, Ajay: Design principles for intracellular road networks. 09:24AM

E54: ***Thermocapillary and Solvocapillary Methods for the Manipulation of Soft Matter.*** Room: 514

E54.6 Troian, Sandra: MicroAngelo Technique: 3D Sculpting of Nanofilms by Spatiotemporal Modulation of Thermocapillary Forces. 09:00AM

E55: ***Smart Responsive Polymers I.*** Room: 515A

E55.4 von Klitzing, Regine: Correlation between swelling/shrinking behaviour and nanorheology of microgel particles. 08:36AM

E56: ***Symposium Honoring Ryong-Joon Roe.*** Room: 515B

E56.2 Yu, Hyuk: Odyssey of Ryong-joon Roe: Through Polymer Physics over 1/2 Century. 08:12AM

E56.6 Clarson, Stephen: On Cyclization in Advanced Polymeric Materials. 09:24AM

E57: ***Aspherical Particles in Soft Matter Self-Assembly and Granular Matter I.*** Room: 518

E57.1 Dijkstra, Marjolein: The effect of particle shape in self-assembly and self-organisation of soft materials. 08:00AM

E58: Quantum Foundations. Room: PH C

E58.1 Spekkens, Robert: Cause and Effect in a Quantum World. 08:00AM

E58.2 Aharonov, Yakir: Finally making sense of the double-slit experiment. 08:36AM

E58.3 Ulbricht, Hendrik: Testing quantum mechanics and gravity with levitated optomechanics. 09:12AM

E58.4 Sinha, Urbasi: Measuring a deviation from the Superposition Principle in slit based interference experiments: towards a non-zero Sorkin parameter. 09:48AM

E58.5 Steinberg, Aephraim: Measuring the past of quantum systems: from counting quantum pigeons to watching atoms as they tunnel. 10:24AM

E59: Polymer Physics Prize. Room: PH D

E59.1 de Pablo, Juan: Polymer Physics Prize Talk: The interplay between elasticity, defect structure, and motion in active nematic polymers. 08:00AM

E59.2 Nealey, Paul: Directed self-assembly in two and three dimensions. 08:36AM

E59.3 Ediger, Mark: Using Physical Vapor Deposition to Produce Structured Glasses—from Isotropic to Liquid-Crystalline Order. 09:12AM

E59.4 Mueller, Marcus: Defect motion and annihilation in block copolymers. 09:48AM

E59.5 Bates, Frank: Polymeric Bicontinuous Microemulsions. 10:24AM

F03: *Microinertia Effects in Particulate Flows.* Room: 150C

F03.1 Brady, John: Inertial effects on the stress generation in active matter. 11:15AM

F04: DCMP Prize Session 1. Room: 151

F04.1 Chaikin, Paul: Oliver E. Buckley Condensed Matter Prize Talk: Aspects of Geometry, Topology and Order in Soft Matter Physics. 11:15AM

F04.2 Halas, N: Julius Edgar Lilienfeld Prize Talk: Plasmonics: Photonic Nanoscience with Societal Impact. 11:51AM

F04.3 Nelson, Keith: Frank Isakson Prize for Optical Effects in Solids Talk: Light Interactions With Matter, The Gift That Keeps On Giving. 12:27PM

F04.4 Cavalleri, Andrea: Frank Isakson Prize for Optical Effects in Solids talk: Nonlinear light matter interaction at TeraHerz Frequencies: from observation to control. 01:03PM

F04.5 Herrmann, Hans: Aneesur Rahman Prize for Computational Physics Talk: Fluids and Deforming Surfaces. 01:39PM

F05: Field Induced Phenomena in Alpha-$RuCl_3$. Room: 152

F05.1 Kelley, Paula: Excitations in the field-induced quantum spin liquid state of α-$RuCl_3$. 11:15AM

F05.2 Wolter, Anja: Magnetic field and pressure induced magnetism of the Kitaev system α-$RuCl_3$. 11:51AM

F05.3 Sears, Jennifer: Phase Diagram of α-$RuCl_3$ in an in-plane Magnetic Field. 12:27PM

F05.4 Verresen, Ruben: Dynamics of Kitaev spin liquids and other two-dimensional quantum spin models. 01:03PM

F05.5 Janssen, Lukas: Heisenberg-Kitaev physics in magnetic fields. 01:39PM

F09: *Dielectric and Ferroic Oxides—New Materials.* Room: 301A

F09.1 Taniguchi, Hiroki: Improper Ferroelectricity in Stuffed Aluminate Sodalites for Pyroelectric Energy Harvesting. 11:15AM

F10: *Three Dimensional Dirac and Weyl Materials.* Room: 301B

F10.1 Wang, Kefeng: Dirac dispersion and non-trivial Berry's phase in new 3D semimetals. 11:15AM

F11: *Dopants and Defects in Semiconductors—Theory.* Room: 303A

F11.1 Aschauer, Ulrich: Theoretical studies of defects in oxide thin films. 11:15AM

F12: *Nanostructures and Metamaterials 5.* Room: 303B

F12.1 Hartland, Greg: Strong coupling between Surface Plasmon Polaritons and Excitons for Silver Nanowires. 11:15AM

F13: *High T_c superconductor based topological superconductivity.* Room: 304A

F13.1 Robinson, Jason: Unconventional superconductivity in graphene on an electron-doped oxide superconductor. 11:15AM

F14: *Fe-based Superconductors—Nematic order and fluctuations.* Room: 304B

F14.1 Shibauchi, Takasada: Unusual electronic structure and superconducting fluctuations in $FeSe_1$-xSx. 11:15AM

F15: *Phonon dynamics and thermal conductivity at the nanoscale.* Room: 304C

F15.1 Cahill, David: Lower and upper limits to the vibrational thermal conductivity of amorphous polymers and polymer salts. 11:15AM

F16: Energy Flows in The Climate System. Room: 305

F16.1 Mlynczak, Martin: The Spectroscopic Foundation of Radiative Forcing by Carbon Dioxide. 11:15AM

F16.2 Purkey, Sarah: Abyssal Ocean Warming: How the climate system is transferring excess anthropogenic energy into the isolated deep ocean. 11:51AM

F16.3 Ricke, Katharine: Climate Model-Based Assessments of Regional Responses to Solar Geoengineering. 12:27PM

F16.4 Dykema, John: Radiative Transfer and Aerosol Scattering. 01:03PM

F16.5 Miller, Ron: Climate Response to Radiative Forcing By (Dust) Aerosols: Energy and Moisture Constraints. 01:39PM

F17: *Organic Interfaces and Adsorption Phenomena.* Room: 306A

F17.1 Dougherty, Daniel: Spin Dependent Chemisorption Interactions at Metal-Organic Semiconductor Interfaces. 11:15AM

F19: *Magnetic Clusters and Molecular Magnets II.* Room: 308A

F19.4 Schnack, Juergen: High Spin Cycles: Topping the Spin Record for a Single Molecule verging on Quantum Criticality. 11:51AM

F19.8 Bellec, Amandine: Molecular scale dynamics of light-induced spin crossover in a two-dimensional layer. 01:03PM

F21: *First Principles Design of Magnetic Oxides.* Room: 309

F21.1 Trimarchi, Giancarlo: Towards a comprehensive DFT theory of the anti-ferromagnetic and paramagnetic phases of the classic Mott insulators MnO, FeO, CoO, and NiO. 11:15AM

F22: *Spin Transport, Spin Logic and Spin Memories.* Room: 402A

F22.10 Rowlands, Graham: How nanosecond magnetization dynamics during spin-Hall switching of in-plane MTJs enables a cryogenic memory cell with superconducting line drivers. 01:03PM

F23: *Magnetism and Magnetic Coupling at Oxide Interfaces.* Room: 402B

F23.6 May, Steven: Magnetism and electronic phase transitions in isovalent manganite and ferrate superlattices. 12:15PM

F24: *Kitaev and Other Spin Orbit Coupled Systems.* Room: 403A

F24.4 Winter, Stephen: Breakdown of Magnons in α-$RuCl_3$. 11:51AM

F25: Spin Current in Antiferromagnets. Room: 403B

F25.1 Chien, Chia-Ling: Thermal magnonic spin current in antiferromagnetic insulator/YIG1. 11:15AM

F25.2 Zhang, Shufeng: Temperature dependence of magnon transport. 11:51AM

F25.3 Rezende, Sergio: Spin current transport in an insulating antiferromagnet makes possible the observation of the spin Seebeck effect in permalloy separated from the anomalous Nernst effect. 12:27PM

F25.4 Zink, Barry: Spin transport in disordered materials via antiferromagnetic correlations. 01:03PM

F25.5 Baltz, Vincent: Electronic and magnonic spin current injection in fluctuating antiferromagnets. 01:39PM

F28: *Architectures for Semiconducting Quantum Computing.* Room: 405

F28.1 Malinowski, Filip: Long-range exchange coupling for spin qubits. 11:15AM

F29: *First-principles Modeling of Excited-State Phenomena in Materials V: Density Functional Theory for Excited States.* Room: 406A

F29.1 Gagliardi, Laura: Multiconfiguration Pair-Density Functional Theory for Excited-States in Molecules and Materials. 11:15AM

F32: FIAP-FPS invited session: Advancing Innovation for Industry and Society. Room: 408A

F32.1 Marinero, Ernesto: Fostering Innovation and Entrepreneurship at Purdue University: from the Laboratory to the Market. 11:15AM

F32.2 Johnson, Barry: Advancing Technology at NSF. 11:51AM

F32.3 Armbrust, Dan: Sustaining Innovation in the Semiconductor Industry. 12:27PM

F32.4 Villahermosa, Randy: Space Innovation: The Aerospace iLab Initiative. 01:03PM

F32.5 Thompson, Matthew C.: Innovating Towards a New Energy Future at TAE Technologies, Inc. 01:39PM

F33: *Superconducting Qubits: Novel Designs.* Room: 408B

F33.1 Luthi, Florian: Evolution of Nanowire Transmons and Their Quantum Coherence in Magnetic Field. 11:15AM

F34: *Machine Learning in Condensed Matter Physics II.* Room: 409A

F34.1 Van Nieuwenburg, Evert: Machine learning a dynamical phase diagram for many-body localization. 11:15AM

F37: *2D Materials—Optics and Excitons III.* Room: 411

F37.4 McCormick, Elizabeth: Imaging Spin Dynamics in Monolayer WS_2 by Time-Resolved Kerr Rotation Microscopy. 11:51AM

F38: *Materials in Extremes: Phase Transitions I.* Room: 501A

F38.6 Briggs, Richard: Phase transitions, including melting, during static and shock compression conditions. 12:15PM

F39: ***Microwave Photonics with Superconducting Circuits II.*** Room: 501B

F39.1 Campagne-Ibarcq, Phillipe: Microwave activated two-photon transition for remote entanglement of superconducting circuits. 11:15AM

F39.2 Wallraff, Andreas: Deterministic Quantum State Transfer and Generation of Remote Entanglement using Microwave Photons. 11:51AM

F41: ***Division of Chemical Physics Prize Session.*** Room: 502A

F41.1 Jonas, David: Earle K. Plyler Prize for Molecular Spectroscopy & Dynamics Talk: Two-Dimensional Femtosecond Spectroscopy. 11:15AM

F41.2 Weichman, Marissa: Justin Jankunas Doctoral Dissertation Award in Chemical Physics Talk: Slow photoelectron velocity-map imaging (SEVI) spectroscopy of cryo-cooled anions. 11:51AM

F42: Synthetic Physics: Synthetic Dimensions, Gauge Fields, and Spin-Orbit Coupling. Room: 502B

F42.1 Gadway, Bryce: Exploring the interplay of topology, disorder, kinetic frustration, and interactions in synthetic momentum-space lattices. 11:15AM

F42.2 Fallani, Leonardo: TBD. 11:51AM

F42.3 Juzeliunas, Gediminas: Omnidirectional spin Hall effect in a Weyl spin-orbit coupled atomic gas. 12:27PM

F42.4 Hazzard, Kaden: Synthetic dimensions in ultracold molecules: quantum strings, membranes, and dissipation-induced topology. 01:03PM

F42.5 Genkina, Dina: Using ultracold atoms to study microscopic behavior of topologically non-trivial systems. 01:39PM

F43: ***Advancing Polymer Physics by Integrating Simulation and Theory I: Dynamics and Coarse-Graining.*** Room: 503

F43.10 Riggleman, Robert: Exploring Nanoparticle Structure and Thermodynamics Using Field-Theoretic Simulations. 01:03PM

F49: ***Biomaterials 4: Structure, Function, Design.*** Room: 511A

F49.1 Kotov, Nicholas: Bioinspired Nanomaterials: from Clay and Graphene Composites to Chiral Nanostructures. 11:15AM

F50: ***Morphogenesis II.*** Room: 511B

F50.1 Pourquie, Olivier: Excitable dynamics of the segmentation clock. 11:15AM

F51: ***Self Organization in the Cytoskeleton I.*** Room: 511C

F51.6 Roll-Mecak, Antonina: Microtubule cryptography: the effects of tubulin diversity on polymer structure, dynamics and readout by cellular effectors. 12:15PM

F52: ***Architectural Design of Polymers I: Assembly, Adsorption and Dynamics.*** Room: 512

F52.4 Bang, Joona: Architectural effect of polymer nanoparticles on block copolymer ordering. 11:51AM

F54: ***Machine Learning in Nonlinear Physics and Mechanics.*** Room: 514

F54.1 Cubuk, Ekin: A unified perspective on disorder in atomic systems: machine learning material properties and design. 11:15AM

F56: ***Organic Electronics and Photonics II: Applications.*** Room: 515B

F56.1 Arias, Ana: The impact of organic phototransistors on large area image sensors. 11:15AM

F56.5 Chabinyc, Michael: Thermoelectric Properties of Semiconducting Polymers. 12:27PM

F57: ***Origami and Kirigami Metamaterials.*** Room: 518

F57.1 Murugan, Arvind: Towards a theory of self-folding. 11:15AM

F58: Implications of Single-cell Variability: From Cells to Populations. Room: PH C

F58.1 Lin, Jie: The effects of stochasticity at the single-cell level and cell size control on the population growth. 11:15AM

F58.2 Aldridge, Bree: Adding it up: mycobacteria growth heterogeneity and antibiotic susceptibility. 11:51AM

F58.3 Taheri-Araghi, Sattar: Population Dynamics of Antimicrobial Peptides are Driven by Single-cell Heterogeneities and Retention of Peptides in Dead Cells. 12:27PM

F58.4 Emonet, Thierry: How diversity modulates collective migration and vice versa. 01:03PM

F58.5 Kussell, Edo: Lineages, Growth, and Selection in Heterogeneous Populations. 01:39PM

F59: Recent Advances in Single Polymer Dynamics. Room: PH D

F59.1 Granick, Steve: Surprises Upon Watching Single Macromolecules in Real Time. 11:15AM

F59.2 Saleh, Omar: Low-force single-molecule elasticity of complex polymers. 11:51AM

F59.3 Boukany, Pouyan: Microscopic origin of the elastic instabilities during flow of polymer solutions. 12:27PM

F59.4 Leslie, Sabrina: How molecules behave in a squeeze. 01:03PM

F59.5 Sing, Charles: Conformational Averaging as a Route To Understanding Out-of-Equilibrium Polymer Solutions in Flow. 01:39PM

H02: ***Self-assembly of Nanomaterials: Porous Materials.*** Room: 150B

H02.1 Dichtel, William: Controlling Nucleation and Growth of 2D Covalent Organic Frameworks. 02:30PM

H02.3 Rimer, Jeffrey: Controlled Assembly of Nanoporous Materials: Addressing the Voids in our Understanding of Zeolite Crystallization. 03:18PM

H02.6 Molinero, Valeria: Self-assembly of mesophases and zeolitic crystals from nanoparticles. 04:18PM

H03: ***Supported Nano-Clusters IV: Cluster Catalysis and Electrocatalysis.*** Room: 150C

H03.1 Rahman, Talat: Supported Au nanoparticles: good for methanol decomposition or formation? 02:30PM

H03.4 Chen, Peng: Visualizing bimetallic effect and plasmonic catalytic hotspots on single nanocatalysts via correlated super-resolution and electron microscopy. 03:30PM

H04: Non-equilibrium Dynamics in Topological Phases of Matter. Room: 151

H04.1 Vishveshwara, Smitha: Quantum quench dynamics in topological systems. 02:30PM

H04.2 Chandran, Anushya: Dynamics in topological phases with constrained Hilbert spaces. 03:06PM

H04.3 Pereg-Barnea, Tami: Disentangling signatures of Floquet topological systems. 03:42PM

H04.4 Lanzara, Alessandra: Driving Topology with Light. 04:18PM

H04.5 Rudner, Mark: Topology and stability of anomalous Floquet insulators. 04:54PM

H05: The Legacy of Millie Dresselhaus: Women, Carbon, and Society. Room: 152

H05.1 Murray, Cherry: Millie as Mentor, Role Model and Inspiration. 02:30PM

H05.2 Terrones, Mauricio: Millie Dresselhaus: An Inspiration of Young Generations, a Great Carbon Scientist, a Role Model and Colleague. 03:06PM

H05.3 Kung, Harriet: The Legacy of Millie Dresselhaus: Women, Carbon, and Society. 03:42PM

H05.4 Budil, Kimberly: Millie Dresselhaus and the Climate for Women in Physics Site Visit Program. 04:18PM

H05.5 Graves, Amy: The Status of Women in Physics in the "Post-Millie" Era. 04:54PM

H09: ***Dielectric and Ferroic Oxides—Opto-Electric Responses.*** Room: 301A

H09.4 Ruello, Pascal: Ultrafast photostriction in ferroic compounds. 03:06PM

H10: ***Dirac/Weyl Semimetals—Transport and Anomalies.*** Room: 301B

H10.10 Ong, Nai-Phuan: The chiral anomaly in the Dirac semimetal Na_3Bi and the half-Heusler GdPtBi*. 04:18PM

H11: ***Dopants and Defects in Semiconductors—2D, Nano, and Novel Materials.*** Room: 303A

H11.1 Komsa, Hannu-Pekka: Engineering point and extended defects in transition metal dichalcogenides. 02:30PM

H12: ***Computational Materials Design—Carbon-Related Materials.*** Room: 303B

H12.4 Wei, Suhuai: Inhomogeneous Strain-induced Spin-splitting in Bent Zigzag Graphene Nanoribbons. 03:06PM

H13: ***New Theoretical Proposals for Topological Superconductivity.*** Room: 304A

H13.1 Law, Kam Tuen: Novel Superconducting Phases in Monolayer Transition Metal Dichacolgenides. 02:30PM

H14: ***Fe-based Superconductors—Topological Superconductivity and New Frontiers.*** Room: 304B

H14.1 Sun, Yujie: Superconductivity and topology of monolayer Fe(Se,Te). 02:30PM

H16: Physics Teaching in Gateway Classes: Global Perspective. Room: 305

H16.1 Helfand, David: Deriving Kepler's Laws as Kepler Did—From (simulated) Noisy Data. 02:30PM

H16.2 Siegel, Daniel: Physics and the Essence of Adolescence. 03:06PM

H16.3 Hafner, Jason: International Student Experiences in Introductory Physics MOOCs. 03:42PM

H16.4 Bekele, Mulugeta: Teaching Introductory Physics Courses to Freshmen and Sophomores at Addis Ababa University. 04:18PM

H16.5 Hossain, Syed: Physics teaching in the entry level: Prospects and challenges in the context of rural India. 04:54PM

H19: ***Spin Chains: Theory.*** Room: 308A

H19.1 Toskovic, Ranko: ATOMIC SPIN CHAINS AS EXPERIMENTAL TEST GROUND FOR STUDIES ON QUANTUM CRITICALITY. 02:30PM

H22: *Spin Transport and Magnons in Magnetic Insulators.* Room: 402A

H22.1 Du, Chunhui: Control and Local Measurement of the Spin Chemical Potential in a Magnetic Insulator. 02:30PM

H25: Topological Materials for Conversion between Charge and Spin Currents. Room: 403B

H25.1 Fert, Albert: Conversion between spin and charge currents by Rashba or Topological Insulator interfaces and perspective for low power spintronic devices. 02:30PM

H25.2 Shiomi, Yuki: Spin-charge conversion induced by spin pumping into topological materials. 03:06PM

H25.3 Otani, Yoshichika: Spin charge interconversion at surfaces of the topological insulator Bi-Sb-Te and the weyl antiferromagnet Mn_3Sn. 03:42PM

H25.4 Han, Wei: Spin and charge conversion in topological surface states and oxide interface states. 04:18PM

H25.5 Samarth, Nitin: Topological Spintronics. 04:54PM

H28: *Charge Noise Mitigation in Quantum Dot Qubits.* Room: 405

H28.1 Borselli, Matthew: Charge Noise Characterization in SiGe Triple-Dot Qubits. 02:30PM

H29: *First-principles Modeling of Excited-State Phenomena in Materials VI: Solids and Layered Materials.* Room: 406A

H29.1 Refaely-Abramson, Sivan: New Insights into Single- and Multi-Exciton Phenomena in Complex Materials from Ab Initio Many-Body Perturbation Theory. 02:30PM

H32: FIAP-GMED Invited Session: Physics Impact on Medicine. Room: 408A

H32.1 Tseng, Hsian-Rong: Nanostructure Embedded Substrates for Detection and Characterization of Circulating Tumor Cells. 02:30PM

H32.2 Tromberg, Bruce: Development of Wearable and Bedside Biophotonics Technologies for Personalized Health. 03:06PM

H32.3 Mackie, Thomas: Emerging Cancer Therapeutics. 03:42PM

H32.4 Hynynen, Kullervo: MRIguided focused ultrasound revolution in patient care. 04:18PM

H32.5 Zbijewski, Wojciech: High-Resolution Imaging of Bone Health. 04:54PM

H33: *Quantum Simulation with Superconducting Circuits.* Room: 408B

H33.1 Houck, Andrew: Many-body quantum optics with superconducting circuits. 02:30PM

H33.2 Ma, Ruichao: Synthetic quantum matter in superconducting circuits. 03:06PM

H34: *Precision Many Body Physics I.* Room: 409A

H34.1 Millis, Andrew: Precision many-body theory for the Hubbard model and beyond: the knowns, the known unknowns, and the unknown unknownns. 02:30PM

H35: *2D Materials—Passivation, Oxidation, and Functionalization.* Room: 409B

H35.1 Gao, H.-J.: Intrinsically Patterned Two-dimensional Materials for Selective Adsorption of Molecules and Nanoclusters. 02:30PM

H37: *2D Materials—Optics and Excitons IV.* Room: 411

H37.4 Sun, Zhipei: Nonlinear optics for characterization of 2D materials. 03:06PM

H38: *Materials in Extremes: Phase Transitions II.* Room: 501A

H38.10 Samanta, Amit: Quantitative insights into the mechanisms of nucleation during crystallization. 04:18PM

H39: *New Frontiers in Quantum Algorithms.* Room: 501B

H39.1 Jordan, Stephen: Quantum information tools for simulating quantum field theories. 02:30PM

H39.2 Brandao, Fernando: Quantum speed-ups for semidefinite programming. 03:06PM

H41: Electronic Nematicity in Superconductors. Room: 502A

H41.1 Zaanen, Jan: Observing many body entanglement in strange metals. 02:30PM

H41.2 Wu, Jie: Electronic nematicity in cuprates and ruthenates. 03:06PM

H41.3 Matsuda, Yuji: Thermodynamic evidence for nematic phase transition at the onset of pseudogap in cuprates. 03:42PM

H41.4 Palmstrom, Johanna: Finite Frequency and Nonlinear Elastoresistance Measurements in the Fe-based superconductors. 04:18PM

H41.5 Kivelson, Steven: Enhacement of Superconductivity by Nematic Fluctuations. 04:54PM

H42: Physical Approaches to Collective Cell Motility. Room: 502B

H42.1 Aronson, Igor: Confinement and substrate topography control 3D cell migration. 02:30PM

H42.2 Camley, Brian: Cell-to-cell variability, tissue rheology, and collective measurements. 03:06PM

H42.3 Mogilner, Alex: Collective cell migration in electric fields. 03:42PM

H42.4 Grant, Martin: Multiple scale model for cell migration in monolayers: Elastic mismatch between cells enhances motility. 04:18PM

H42.5 Verkhovsky, Alex: Minimal model for spontaneous cell polarization: traction forces mediate feedback between cell shape and edge activity. 04:54PM

H46: *Multi-Scale Flows and Pathways in the Climate System.* Room: 506

H46.1 Bracco, Annalisa: Multi-Scale Flows and Pathways in the Gulf of Mexico and South China Sea: implications of ocean submesoscale turbulence for oil dispersion, coral evolution and carbon uptake. 02:30PM

H46.6 Schneider, Tapio: Multiscale processes and instabilities in Earth's clouds: Why we must and how we can make progress in modeling them. 03:54PM

H47: *Morphable Structures.* Room: 507

H47.1 Pellegrino, Sergio: Kirigami-inspired Coiling of Plate-like Structures. 02:30PM

H48: *Thermal versus Athermal Plasticity.* Room: 510

H48.1 Ghoniem, Nasr: Strain Bursts and Dislocation Avalanches in Obstacle-Hardened Materials. 02:30PM

H49: *Evolutionary and Ecological Dynamics—II.* Room: 511A

H49.1 Kim, Minsu: Stochastic population dynamics induced by antibiotic treatment. 02:30PM

H49.6 Hallatschek, Oskar: Emergent evolutionary dynamics in dense cellular populations. 03:54PM

H50: *Physics of Proteins II: Experimental and Computational Studies on the Structure and Conformational Dynamics of Proteins.* Room: 511B

H50.1 Markelz, Andrea: Measuring Protein Intramolecular Dynamics with Terahertz Light: Functional Changes and Relevance to Biology. 02:30PM

H51: *Emergent Self-organization in Active Matter I.* Room: 511C

H51.1 Bracha, Dan: Using light to study localized phase separation in living cells. 02:30PM

H51.5 Fakhri, Nikta: TBD. 03:42PM

H53: *Fluid Mechanics for Soft Matter III: Cells, Particles, and Drops.* Room: 513

H53.1 Campas, Otger: Revealing the mechanical nature of active embryonic tissues with magnetic droplets. 02:30PM

H55: *Polymer Physics in Very Strongly Confined Environments I : Knots and Nanopores.* Room: 515A

H55.5 Doyle, Patrick: DNA knots in confinement. 03:18PM

H56: *Advanced Morphological Characterization of Polymeric Materials II: Emerging Microscopy and Spectroscopy Techniques.* Room: 515B

H56.2 Martin, David: In-Situ Imaging of Polymer and Organic Molecular Materials by Transmission Electron Microscopy. 02:42PM

H57: *Soft Matter in Industrial Applications.* Room: 518

H57.1 Halsey, Thomas: How Sand Gets to the Bottom of the Sea: Turbidity Currents and Deep Water Oil and Gas Reservoirs. 02:30PM

H58: First-Principles Modeling of Electron Transport in Materials. Room: PH C

H58.1 Singh, David: Boltzmann Transport Theory for Thermoelectric Compounds. 02:30PM

H58.2 Liu, Amy: Electron-Phonon Interaction in 2D Charge-Density-Wave Materials. 03:06PM

H58.3 Giustino, Feliciano: Predictive ab initio calculations of phonon-limited carrier mobilities in semiconductors. 03:42PM

H58.4 Swift, Michael: Conditions for T2 resistivity from electron-electron scattering. 04:18PM

H58.5 Bernardi, Marco: Advances in Computing Charge Transport and Hot Carrier Dynamics from First Principles. 04:54PM

H59: ***Dillon Medal Symposium.*** Room: PH D

H59.1 Olsen, Bradley: John H. Dillon Medal Talk: Skipping Polymer Physics. 02:30PM

K04: Tenth Anniversary of Iron-based High-temperature Superconductivity: Progresses and Opportunities. Room: 151

K04.1 Hosono, Hideo: Materials discovery for iron-based superconductivity. 08:00AM

K04.2 Si, Qimiao: Electron Correlations and Iron-based Superconductivity. 08:36AM

K04.3 Boehmer, Anna: Electronic nematicity in iron-based superconductors. 09:12AM

K04.4 Valenti, Roser: Fe-based superconductors from an ab initio prespective. 09:48AM

K04.5 Yang, Shuolong: Understanding the cooperative optimization of FeSe/$SrTiO_3$ thin films. 10:24AM

K05: Optically Driven Correlated Electron Systems: Theory. Room: 152

K05.1 Mitra, Aditi: Properties of transient superfluids. 08:00AM

K05.2 Kennes, Dante: Electronic Squeezing of Pumped Phonons: Negative U and Transient Superconductivity. 08:36AM

K05.3 Sentef, Michael: Theory of pump-probe spectroscopy: Ultrafast laser engineering of ordered phases and microscopic couplings. 09:12AM

K05.4 Claassen, Martin: Nonequilibrium Materials Design of Frustrated Mott Insulators. 09:48AM

K05.5 Eckstein, Martin: Non-equilibrium steady states and and transient dynamics of correlated electron systems. 10:24AM

K09: ***Ordering in Ferroic Oxides II.*** Room: 301A

K09.1 Ponomareva, Inna: Caloric effects in ferroics with antiferroelectric-ferroelectric phase competition and other materials. 08:00AM

K10: ***Dirac/Weyl Semimetals—Magnetism.*** Room: 301B

K10.1 Checkelsky, Joseph: Transport and Magnetism in Topological Semimetals. 08:00AM

K11: ***Dopants and Defects in Semiconductors—Nitrides.*** Room: 303A

K11.1 Thonke, Klaus: Identifying the source of deep defect luminescence bands in AlN and GaN: Slowly decaying DX center related emissions. 08:00AM

K12: ***Computational Materials Design—Batteries, Solid-State Ionics, and Catalysis.*** Room: 303B

K12.4 Ceder, Gerbrand: Creating a Novel Class of Li-ion Battery Cathodes Through Electronic Structure Design and Percolation Theory. 08:36AM

K13: ***Sr_2RuO_4 and Chiral Topological Superconductivity.*** Room: 304A

K13.1 Nair, Hari: Demystifying the growth of superconducting Sr_2RuO_4 thin films. 08:00AM

K14: ***Fe-based Superconductors—ARPES and STM.*** Room: 304B

K14.1 Yi, Ming: Emergent Electronic Orders in Hole-doped $BaFe_2As_2$. 08:00AM

K15: ***Post-Moore Computing.*** Room: 304C

K15.1 Roy, Kaushik: Stochastic Switching of Nanomagnets for Post-CMOS Computing. 08:00AM

K15.2 Palacios, Tomas: Gallium Nitride: Extreme Properties (and Opportunities) for Post-Moore Computing. 08:36AM

K15.6 Guha, Supratik: Materials challenges for non-silicon matrix multipliers and neuromorphic computing. 09:48AM

K19: ***Optical, Thermal and Mechanical Coupling to Spin Currents.*** Room: 308A

K19.4 Choi, Gyung-Min: Optical-helicity-driven optomagnetic field and photo-spin current in metallic systems. 08:36AM

K19.8 Nozaki, Yukio: Spin Current Generation by a Surface Acoustic Wave Injection. 09:48AM

K20: ***Solar Energy Conversion: Perovskite Materials.*** Room: 308B

K20.1 Whittaker-Brooks, Luisa: Stanford R. Ovshinsky Sustainable Energy Fellowship Talk: Materials for applications in solar energy conversion, thermoelectrics, batteries, and electronics. 08:00AM

K21: ***Magnetic Semiconductors: Materials and Properties.*** Room: 309

K21.1 Zhao, Jianhua: Control of Magnetic Properties of (Ga,Mn)As and GaAs-Compatible Ferromagnetic Heterostructures. 08:00AM

K22: ***Control and Detection of Skyrmions: from Fundamentals to Applications.*** Room: 402A

K22.1 Buettner, Felix: Structure, Energetics, and Deterministic Writing of Skyrmions in Thin Film Ferromagnets. 08:00AM

K23: *Spin Orbit Physics in Iridates and Other Bulk Oxides.* Room: 402B

K23.11 Picozzi, Silvia: Electrical control of spin-texture in non-magnetic ferroelectric oxide-based systems. 10:00AM

K23.4 Harter, John: Odd-parity electronic order in the strongly correlated and spin-orbit coupled metal $Cd_2Re_2O_7$. 09:00AM

K24: *Spin Liquids Theory and Application to Materials.* Room: 403A

K24.7 Motome, Yukitoshi: Thermal Fractionalization in Kitaev Quantum Spin Liquids. 09:12AM

K25: Journal of Chemical Physics Editors' Choice. Room: 403B

K25.1 Schenter, Gregory: Mass Density Fluctuations in Quantum and Classical Descriptions of Liquid Water. 08:00AM

K25.2 Selloni, Annabella: Photocatalysis on metal oxides: insights from simulations. 08:36AM

K25.3 Bluhm, Hendrik: Reversed interfacial fractionation of carbonate and bicarbonate evidenced by X-ray photoemission spectroscopy. 09:12AM

K25.4 Voth, Gregory: IR spectral assignments for the hydrated excess proton in liquid waterIR spectral assignments for the hydrated excess proton in liquid water. 09:48AM

K25.5 Frenkel, Anatoly: Advances in nanoparticle structure characterization by X-ray absorption spectroscopy. 10:24AM

K26: *Open Quantum Systems I.* Room: 404A

K26.1 Siddiqi, Irfan: Superconducting Circuits: Controlling the Bath. 08:00AM

K28: *Control and Calibration of Semiconducting Qubits.* Room: 405

K28.1 Kestner, Jason: Dynamically corrected entangling gates for spin qubits. 08:00AM

K28.11 Bertet, Patrice: Circuit qed enhanced magnetic resonance. 10:24AM

K29: *First-principles Modeling of Excited-State Phenomena in Materials VII: Organic and Hybrid Materials.* Room: 406A

K29.1 Blase, Xavier: Embedded many-body perturbation theory for organic and hybrid disordered systems. 08:00AM

K32: Data Science as the Driving Force for Industrial Physics. Room: 408A

K32.1 Johnson, Neil: How Big Data Unlocks the New Many-body Physics of Online Threats. 08:00AM

K32.2 Meredig, Bryce: Solving industrial materials problems by using machine learning across diverse computational and experimental data. 08:36AM

K32.3 Purdy, David: What physics does and doesn't teach you about data science. 09:12AM

K32.4 Yurgenson, Sergey: Machine Learning Models vs Physics Models: The Battle for acceptance. 09:48AM

K32.5 Das, Sundeep: A hitchhikers guide to Data Science. 10:24AM

K33: *Superconducting Gates.* Room: 408B

K33.1 Johnson, Blake: Scaling up a superconducting qubit lattice with parametric gates. 08:00AM

K33.2 Chou, Kevin: Deterministic teleportation of a quantum gate between two logical qubits. 08:36AM

K34: *Precision Many Body Physics II.* Room: 409A

K34.1 Hadzibabic, Zoran: Two- and three-body contacts in the unitary Bose gas. 08:00AM

K35: *2D Materials—Superconductivity and Charge Density Waves I.* Room: 409B

K35.7 Jarillo-Herrero, Pablo: Topology, correlations, and superconductivity in 2D. 09:12AM

K36: *2D Materials—Role of Defects.* Room: 410

K36.4 Barja, Sara: Electronic properties of defects in single-layer $MoSe_2$. 08:36AM

K37: *Devices from 2D Materials I—Electronics.* Room: 411

K37.7 Banerjee, Sanjay: Electronics in Flatland. 09:12AM

K38: *Materials in Extremes: Dynamic Compression.* Room: 501A

K38.4 Luo, Sheng-Nian: Resolving nanoscale dynamics with ultrafast small-angle x-ray scattering. 08:36AM

K38.8 Akin, Minta: The Temperature of Fe at 3 Mbar. 09:48AM

K39: *Characterizing and Controlling Superconducting Circuits I.* Room: 501B

K39.1 Epstein, Ryan: Protecting quantum information from noise a passive approach. 08:00AM

K39.2 Schreppler, Sydney: Quantum Information Processing with Stroboscopic Qubit Interactions. 08:36AM

K41: Topological Kondo Semimetals and Low Carrier Systems. Room: 502A

K41.1 Buehler-Paschen, Silke: Experimental Evidence for Weyl Semimetal Behavior in Kondo Systems. 08:00AM

K41.2 Lai, Hsin-Hua: Weyl-Kondo Semimetal in Heavy Fermion Systems. 08:36AM

K41.3 Yuan, Huiqiu: Evidence for topological Kondo semimetals. 09:12AM

K41.4 Chang, Po-Yao: New aspects in topological heavy fermion systems. 09:48AM

K41.5 Denlinger, Jonathan: ARPES investigations of proposed topological low carrier density Ce and Yb compounds. 10:24AM

K42: Simulating Magnetization Switching Across Multiple Time and Length Scales. Room: 502B

K42.1 Oppeneer, Peter: Ab initio theory and multiscale modeling of ultrafast laser-induced magnetic processes. 08:00AM

K42.2 Sharma, Sangeeta: Ab-initio description of all optical switching. 08:36AM

K42.3 Fechner, Michael: Magnetophononics: ultrafast spin control through the lattice. 09:12AM

K42.4 Wang, Xiaojia: Investigations of Spin Precession in Perpendicular Magnetic Materials Enabled by Time-Resolved Magneto-Optical Kerr Effect. 09:48AM

K42.5 Lounis, Samir: Magnetization dynamics from an ab-intio perspective: from single atoms to skyrmions. 10:24AM

K43: ***Architectural Design of Polymers II: Sequences, Branching and Networks.*** Room: 503

K43.4 Genzer, Jan: Does co-monomer sequence in random copolymers matter? 08:36AM

K48: ***Athermal Systems and Statistical Mechanics.*** Room: 510

K48.1 Herrmann, Hans: Percolation on correlated landscapes. 08:00AM

K48.5 Chakraborty, Bulbul: Fragile Matter: Stress Networks and Stability of Athermal Solids. 09:12AM

K49: ***Physics of Genome Organization: From DNA to Chromatin I.*** Room: 511A

K49.1 Bundschuh, Ralf: Nucleosome unwrapping may be easier than you think. 08:00AM

K50: ***Physics of Proteins III: Experimental and Computational Studies on the Structure and Conformational Dynamics of Proteins.*** Room: 511B

K50.1 Zhong, Dongping: Dynamics and Mechanism of UVR8 Photoreceptor. 08:00AM

K52: ***Extreme Deformation of Polymers and Soft Matter I: Cavitation and Fracture.*** Room: 512

K52.1 Ransom, Timothy: High Strain Rate, High Pressure Behavior of Polyurea. 08:00AM

K53: ***Nonequilibrium Statistical Mechanics and Hydrodynamics of Active Matter I.*** Room: 513

K53.1 Hagan, Michael: Simulations of bulk and topologically constrained active matter. 08:00AM

K55: ***Advancing Polymer Physics by Integrating Simulation and Theory III: Self-Assembly and Charged Polymers.*** Room: 515A

K55.1 Dzubiella, Joachim: Polyelectrolyte-protein interactions: connecting theory, simulations, and experiments. 08:00AM

K56: ***Organic Electronics and Photonics III: Organic Photovoltaics.*** Room: 515B

K56.4 Amassian, Aram: Nanoscale Energetic Mapping of Interfaces in Organic Bulk Heterojunction Solar Cells. 08:36AM

K57: ***Physics of Liquids I.*** Room: 518

K57.7 Tanaka, Hajime: The microscopic structural origin of water's anomalies. 09:12AM

K58: Delbruck Award Symposium. Room: PH C

K58.1 Giardina, Irene: Dynamic scaling in natural swarms. 08:00AM

K58.2 deRuyter van Steveninck, Robert: Field Potentials in the Flys Photoreceptor-LMC Synapse: A Possible Mechanism for Regularizing Vesicle Release. 08:36AM

K58.3 Kruglyak, Leonid: Quantitative genetics and the missing heritability problem. 09:12AM

K58.4 Tishby, Naftali: The Information Bottleneck Theory of Deep Neural Networks. 09:48AM

K58.5 Bialek, William: Max Delbrck Prize in Biological Physics Talk: Precision and emergence in the physics of biological function. 10:24AM

K59: Designing Biomacromolecules for Materials Assembly. Room: PH D

K59.1 Saven, Jeffery: Computational design of peptidic materials. 08:00AM

K59.2 Yeates, Todd: Designed Protein Cages: Theory and New Applications to Cryo-Electron Microscopy Scaffolding. 08:36AM

K59.3 Schurtenberger, Peter: Thermoresponsive Colloidal Molecules with Tunable Directional Interactions. 09:12AM

K59.4 Mezzenga, Raffaele: Materials Science & Nanotechnology with Protein Nanofibrils. 09:48AM

K59.5 Dogic, Zvonimir: Conformational switching in chiral self assembly. 10:24AM

K61: Diversity and Inclusion in Graduate Education. Room: WH B

K61.1 Hodapp, Theodore: APS Bridge Program: Changing the Face of Physics Graduate Education. 08:00AM

K61.2 Miller, Casey: Traditional admissions requirements fail to predict PhD completion in Physics. 08:36AM

K61.3 Pelz, Jonathan: Fostering a more diverse graduate program in physics: MS-to-PhD Bridge Program, holistic admissions, APS support, and institutional commitment. 09:12AM

K61.4 Posselt, Julie: Faculty Support and Student Wellbeing in High-Diversity STEM Graduate Programs. 09:48AM

L02: *Self-assembly of Nanomaterials: Supramolecular Self-assembly I.* Room: 150B

L02.1 Manoharan, Vinothan: How does a simple virus self-assemble? 11:15AM

L03: *Strong Light-matter Coupling and Enhanced Spectroscopy: Strong Coupling I.* Room: 150C

L03.1 Ebbesen, Thomas: The Alchemy of Vacuum—Hybridizing Light and Matter. 11:15AM

L03.4 Chikkaraddy, Rohit: Strong coupling of single molecules in plasmonic nano- and pico-cavities. 12:15PM

L03.7 Shegai, Timur: Modified excited states dynamics in the localized plasmon—molecular exciton hybrids. 01:15PM

L04: Lars Onsager Prize. Room: 151

L04.1 Sachdev, Subir: Lars Onsager Prize Talk: Quantum phase transitions in quantum matter. 11:15AM

L04.2 Harper, Angela: LeRoy Apker Award Talk: Laser Printed Flexible Electronics. 11:51AM

L04.3 Donnelly, Claire: Richard L. Greene Dissertation Award Talk: Resonant Ptychographic Tomography of Three Dimensional Magnetic Structures. 12:27PM

L04.4 Mueed, M A: Richard L. Greene Dissertation Award Talk: Probing Exotic Phases of Interacting Two-dimensional Carriers Using One-dimensional Potential Modulation. 01:03PM

L04.5 Cepellotti, Andrea: Nicholas Metropolis Award Talk: Hydrodynamics of Heat Transport in Crystals. 01:39PM

L05: The Changing Landscape of X-ray Facilities. Room: 152

L05.1 Brock, Joel: Changing model of CHESS operation: The Changing Landscape of X-ray Facilities. 11:15AM

L05.2 Hertz, Hans: Liquid-metal-jet x-ray sources and high-resolution biomedical imaging. 11:51AM

L05.3 Feser, Michael: The Lyncean Compact Light Source: The Cornerstone of a Local, Multi-discipline X-ray Facility. 12:27PM

L05.4 Yun, Wenbing: Innovations in Laboratory X-ray Technology Brings Synchrotron Capabilities to Your Lab. 01:03PM

L07: *Optical Spectroscopic Measurements of 2D Materials.* Room: 153B

L07.4 Seyler, Kyle: Ligand-field Helical Luminescence in a 2D Magnetic Insulator. 11:51AM

L07.8 Shi, Jinwei: Plasmonic modulation and control of optical properties in monolayer TMDCs. 01:03PM

L09: *Dielectric and Ferroic Oxides—Nanostructures and Surface.* Room: 301A

L09.1 Noheda, Beatriz: Domain dynamics in low strain $BaTiO_3$ thin films. 11:15AM

L10: *Strong Interactions in Topological Semimetals.* Room: 301B

L10.1 Gilbert, Matthew: Induced Superconductivity in Weyl Semimetals. 11:15AM

L11: *Dopants and Defects in Semiconductors—Complex Oxides and Oxide Interfaces.* Room: 303A

L11.1 Rabe, Karin: Doping and interfaces in complex oxide heterostructures and superlattices from first principles. 11:15AM

L13: *Dirac Semi-metal Based Topological superconductivity.* Room: 304A

L13.1 Finkelstein, Gleb: Supercurrent in the quantum Hall regime. 11:15AM

L14: *Fe-based Superconductors—Theory.* Room: 304B

L14.1 Moreo, Adriana: New Directions in Theoretical Studies of Iron-based Superconductors. 11:15AM

L15: *Moore's Law: More and Beyond.* Room: 304C

L15.4 Abel, Stefan: Non-von Neumann computing architectures using integrated optical reservoirs. 11:51AM

L15.8 Chen, Ray: TBD. 01:03PM

L16: Major Physics Organizations and Their Role in the Future of Physics. Room: 305

L16.1 Mtingwa, Sekazi: Lightsources for Africa, the Americas & Middle East Project (LAAMP): An IUPAP and IUCr ICSU-Funded Project. 11:15AM

L16.2 Bienenstock, Arthur: Physics and the Clinton White House Office of Science and Technology Policy. 11:51AM

L16.3 Flatten, Amy: APS Long-range Planning for International Physics. 12:27PM

L16.4 Quevedo, Fernando: International Scientific Cooperation: The ICTP Experience. 01:03PM

L16.5 Voss, Ruediger: EPS: Promoting Scientific Cooperation in Europe in a Global Context. 01:39PM

L19: *Magnetic Nanoparticles: Scattering and Fluctuations.* Room: 308A

L19.1 Roy, Sujoy: Fluctuation and dynamics of magnetic skyrmions. 11:15AM

L21: *Spins in 2D Materials.* Room: 309

L21.7 Zutic, Igor: Magnetic Proximity Effects in Two-Dimensional Materials. 12:27PM

L22: *Spin Dynamics, Damping and Domain Walls.* Room: 402A

L22.4 Kim, Kab-Jin: Fast domain wall motion induced by antiferromagnetic spin dynamics at the angular momentum compensation temperature of ferrimagnets. 11:51AM

L23: *Multiferroic Oxide Heterostructures.* Room: 402B

L23.1 Mundy, Julia: Atomic-resolution Imaging of Functional Electronic Inversion Layers at Ferroelectric Domain Walls. 11:15AM

L23.11 Bibes, Manuel: Imaging, controlling and harnessing non-collinear magnetism in perovskite oxides. 01:39PM

L25: Universality of Spin Glass Dynamics: Recent Advances. Room: 403B

L25.1 Orbach, Raymond: Glassy Dynamics: Spin Glasses at the Mesoscale. 11:15AM

L25.2 Seoane, Beatriz: Matching Microscopic and Macroscopic Responses in Glasses. 11:51AM

L25.3 Martin-Mayor, Victor: Time and length for spin glasses. 12:27PM

L25.4 Ladieu, Franois: Fifth-order susceptibility unveils growth of thermodynamic amorphous order in glass-formers. 01:03PM

L25.5 Hen, Itay: Can Analog Quantum Computers Solve Spin Glasses? 01:39PM

L26: *Quantum Foundations I.* Room: 404A

L26.1 Zurek, Wojciech: Quantum Theory of the Classical. 11:15AM

L29: *Thermoelectrics III.* Room: 406A

L29.1 Yang, Jiong: The High-throughput First-principles Materials Informatics Platform and the Applications on Thermoelectric Materials. 11:15AM

L32: Physics That Changed the World. Room: 408A

L32.1 Feng, Milton: Oxide-Confined VCSELs. 11:15AM

L32.2 Clarke, John: The Ubiquitous SQUID: History and Applications. 11:51AM

L32.3 Forrest, Stephen: How Organic Light Emitting Diodes Revolutionized Displays (and maybe lighting). 12:27PM

L32.4 Stipe, Barry: The Magnetic Hard Disk Drive—How Information is Stored in the Cloud. 01:03PM

L32.5 Yablonovitch, Eli: The Double-Heterostructure Concept in Lasers, LED's, and Solar Cells. 01:39PM

L33: *Fluxonium and Flux Tunable Qubits.* Room: 408B

L33.1 Vladimir, Manucharyan: TBA. 11:15AM

L34: *Precision Many Body Physics III.* Room: 409A

L34.1 Bakr, Waseem: Site-resolved microscopy of ultracold Fermi-Hubbard systems in new regimes. 11:15AM

L35: *2D Materials—Superconductivity and Charge Density Waves II.* Room: 409B

L35.1 Hunt, Benjamin: Ising superconductivity and quantum metal in the two-dimensional transition metal dichalcogenides TaS_2 and $NbSe_2$. 11:15AM

L36: *2D Materials—Topological States.* Room: 410

L36.4 Cobden, David: Two-dimensional topological insulator behavior in monolayer WTe_2. 11:51AM

L36.5 Shen, Zhi-Xun: Quantum spin Hall state in monolayer 1T TMDcs. 12:27PM

L37: *Devices from 2D Materials II—Electronics.* Room: 411

L37.7 Appenzeller, Joerg: Lateral and Vertical Electronic Transport in 2D Layered Materials. 12:27PM

L38: *Materials in Extremes: Strength and Plasticity.* Room: 501A

L38.3 Lane, J. Matthew: Integrated Modeling and Experiments for Strength in Tantalum: A Tri-lab Effort. 11:39AM

L38.7 Zaretsky, Eugene: Experimental studies of shock-induced plasticity and shock-wave structure in FCC and BCC metals. 12:51PM

L39: *Characterizing and Controlling Superconducting Circuits II.* Room: 501B

L39.1 Beck, Matthew: Measurement and Control of Superconducting Qubits Using Single Flux Quantum Digital Logic. 11:15AM

L41: Ultrafast Control of Correlated Materials by Terahertz Light. Room: 502A

L41.1 Taylor, Antoinette: Probing and Controlling Low Energy Excitations in Complex Materials with Using Terahertz Pulses. 11:15AM

L41.2 Wang, Jigang: Terahertz Light-Quantum-Tuning of a Metastable Correlated Phase Hidden by Superconductivity. 11:51AM

L41.3 Kaiser, Stefan: Ultrafast Optical Control of Complex Quantum Materials. 12:27PM

L41.4 Murakami, Yuta: Nonequilibrium steady states and transient dynamics of conventional superconductors under phonon driving. 01:03PM

L42: Physics of Life. Room: 502B

L42.1 Albert, Reka: Using networks to model cell behaviors. 11:15AM

L42.2 Bassett, Danielle: The physics of brain network architecture, function, and control. 11:51AM

L42.3 Goldenfeld, Nigel: Is there universality in biology? 12:27PM

L42.4 Sponberg, Simon: Insights from Insects: Emergent Dynamics in the Physics of Animal Locomotion. 01:03PM

L42.5 Garcia, Hernan: Physical Biology of Living Embryos. 01:39PM

L43: *Ferroelectricity in Thin Films and 2D Systems.* Room: 503

L43.10 Zhu, Wenguang: Theoretical Design of 2D Ferroelectric and Multiferroic Materials. 01:03PM

L51: *Quantum dots and other nanostructures.* Room: 511C

L51.1 Sargent, Ted: Assembling colloidal quantum dots for materials properties and device performance. 11:15AM

L55: *Quantum Dot/ Microwave Photon Entanglement.* Room: 515A

L55.1 Tahan, Charles: Quantum-limited measurement of spin qubits via curvature coupling to a cavity (and more). 11:15AM

L55.5 Ensslin, Klaus: Strong coupling of a microwave photon to spin and charge qubits in GaAs quantum dots. 12:27PM

L55.9 Samkharadze, Nodar: Strong Spin-Photon Coupling in Silicon. 01:39PM

L58: Near-Term Quantum Computing Platforms. Room: PH C

L58.1 Roetteler, Martin: Software libraries and applications for near-term quantum computers. 11:15AM

L58.2 Babbush, Ryan: OpenFermion: the Electronic Structure Package for Quantum Computers. 11:51AM

L58.3 Cross, Andrew: The IBM Q experience and QISKit open-source quantum computing software. 12:27PM

L58.4 Wootton, James: Quantum programming tutorials and benchmarking of near-term devices using games. 01:03PM

L58.5 Moehring, David: Reconfigurable and Programmable Ion Trap Quantum Computer. 01:39PM

L59: Supersolid Formation in Quantum Gases. Room: PH D

L59.1 Morales, Andrea: Supersolidity and intertwined order parameters in a quantum gas. 11:15AM

L59.2 Piazza, Francesco: Supersolid phases of ultracold neutral atoms with light-mediated interactions. 11:51AM

L59.3 Li, Jun-Ru: A stripe phase with supersolid properties in spinorbit-coupled BoseEinstein condensates. 12:27PM

L59.4 Wenzel, Matthias: Dipolar quantum droplets and striped states. 01:03PM

P02: ***Developments of DFT from Quantum to Statistical Mechanics (IV).*** Room: 150B

P02.1 Borgis, Daniel: Efficient molecular density functional theory using generalized spherical harmonics expansions. 02:30PM

P02.7 Miller, Thomas: DFT-based embedding theories: Wavefunction-embedding, dynamics, excited states, and applications. 04:06PM

P03: ***Self-assembly of Nanomaterials: Supramolecular Self-assembly II.*** Room: 150C

P03.1 Whitelam, Stephen: Intentional self-assembly of nonequilibrium structures: when can kinetic trapping be useful? 02:30PM

P03.2 Wiesner, Ulrich: Block Copolymer Self Assembly Directed Nanomaterials. 03:06PM

P09: ***Magnetism in Thin Film Oxides.*** Room: 301A

P09.4 Guo, Hangwen: Tailoring interface-induced emergent phases in magnetic complex oxides with atomic precision. 03:06PM

P10: ***Type II Weyl Semimetals.*** Room: 301B

P10.1 Cho, Suyeon: Te vacancy driven superconductivity in type II Weyl semimetal $MoTe_2$. 02:30PM

P11: ***Dopants and Defects in Semiconductors—Oxides.*** Room: 303A

P11.1 Look, David: Doping and Compensation in Wide-Band-Gap Oxides. 02:30PM

P12: ***Computational Materials Design—Databases and Tools.*** Room: 303B

P12.1 Hennig, Richard: Materials Informatics for the Discovery of Novel 2D Materials. 02:30PM

P13: ***Topological Insulator based Topological Superconductivity.*** Room: 304A

P13.1 Asaba, Tomoya: Rotational symmetry breaking in the superconducting state of doped bismuth selenides. 02:30PM

P14: ***Topological Materials—Theory and computation.*** Room: 304B

P14.1 Bansil, Arun: Where are we in the jungle of topological materials? 02:30PM

P17: ***Organic Interfaces from Single Molecules to Thin Films.*** Room: 306A

P17.1 Monti, Oliver: Electronic Structure and Spin Texture at Organic Semiconductor Interfaces. 02:30PM

P19: ***Magnetic Nanoparticles: Curved Geometries and Anisotropy.*** Room: 308A

P19.1 Bran, Cristina: Tailoring magnetic domain walls in cylindrical nanowires. 02:30PM

P20: ***Recent Advances in Solar Photovoltaics.*** Room: 308B

P20.1 Haney, Paul: An analytical model for polycrystalline photovoltaics. 02:30PM

P21: ***New Materials and Devices for Spin Logic.*** Room: 309

P21.1 Young, Ian: Material Targets for Scaling All-Spin Logic. 02:30PM

P24: ***3D Frustrated Spin Systems: Pyrochlores and Novel Geometries.*** Room: 403A

P24.4 Wan, Yuan: Non-equilibrium control of the effective free energy landscape in a frustrated magnet. 03:06PM

P27: ***Non-Equilibrium Physics in AMO Systems I: Quenches and Thermalization.*** Room: 404B

P27.1 Schmiedmayer, Joerg: Recurrences in an isolated quantum many-body system. 02:30PM

P28: ***Spin Qubit Readout.*** Room: 405

P28.1 Petta, Jason: Quantum Dot Circuit Quantum Electrodynamics. 02:30PM

P29: ***Electrons, Phonons, Electron Phonon Scattering and Phononics II.*** Room: 406A

P29.1 Zhou, Jiawei: Why do half-Heusler materials often have large thermoelectric power factor? 02:30PM

P32: Put Big Data in Your Physics Toolbox; APS-AIP Industrial Physics Forum. Room: 408A
P32.1 Stach, Eric: Improving Electron Microscopy with Artificial Intelligence and Big Data. 02:30PM
P32.2 Lott, Aaron: Quantum Computing at D-Wave. 03:06PM
P32.3 Pitera, Jed: Polymer Discovery Using Big Data and Analytics. 03:42PM
P32.4 Takeuchi, Ichiro: Combinatorial Experimentation and Machine Learning for Materials Discovery. 04:18PM
P32.5 Kassebaum, Paul: Making Big Data Work for Physicists. 04:54PM

P33: *Superconducting Parametric/Tunable Interactions.* Room: 408B
P33.1 Govia, Luke: Enhancing cavity QED via anti-squeezing: synthetic ultra-strong coupling. 02:30PM

P34: *Machine Learning in Condensed Matter Physics III.* Room: 409A
P34.1 Deng, Dong-Ling: Machine learning quantum states and many-body entanglement. 02:30PM

P35: *Novel 2D Materials.* Room: 409B
P35.4 Tongay, Sefaattin: Fundamental Insights and Perspectives into Novel 2D Anisotropic Materials. 03:06PM

P37: *Devices from 2D Materials III—Various Applications.* Room: 411
P37.4 Akinwande, Deji: Universal Non-volatile Resistance Switching Phenomenon in Atomic Monolayers. 03:06PM

P38: *Materials in Extremes: Complex Systems.* Room: 501A
P38.1 Bryk, Taras: Dynamics of supercritical fluids: Theory and simulations. 02:30PM

P39: *Quantum Advantage in Near-term Systems.* Room: 501B
P39.1 lukin, mikhail: Probing many-body dynamics on a large-scale quantum simulator. 02:30PM

P42: Recent Progress in Tensor Network Methods and Applications. Room: 502B
P42.1 Evenbly, Glen: Hyperinvariant tensor networks and holography. 02:30PM
P42.2 Bauls, Mari: Using Tensor Network States for Lattice Gauge Theories. 03:06PM
P42.3 Haegeman, Jutho: Post Matrix Product State Methods: from low-energy dynamics to thermalization. 03:42PM
P42.4 Kourtis, Stefanos: Iterative Compression-Decimation Scheme for Tensor Network Optimization. 04:18PM
P42.5 Rincon, Julian: Continuous matrix product density operators for quantum fields at finite temperature. 04:54PM

P43: *Extreme Deformation of Polymers and Soft Matter II: High Speeds, Rupture, and Large Deformation.* Room: 503
P43.1 Thomas, Edwin: Extreme Plastic Deformation of Glassy Polymer Thin Films at Ballistic Strain Rates. 02:30PM

P48: *Motion and Jamming of Cells.* Room: 510
P48.1 Bi, Dapeng: The influence of cellular rosettes on epithelial tissue mechanics and the jamming transition. 02:30PM
P48.6 Boromand, Arman: Dense packing of cell monolayers: Jamming of deformable polygons. 03:54PM

P49: *Evolutionary and Ecological Dynamics—III.* Room: 511A
P49.1 Frey, Erwin: Ecological feedback in quorum-sensing microbial populations. 02:30PM

P50: *Single Molecule Dynamics Inside and Outside of Cells.* Room: 511B
P50.7 Cisse, Ibrahim: Mediator and Pol II clusters co-associate in transcription-dependent dynamic condensates in living stem cells. 03:42PM

P51: *Single-Cell Variability and Dynamics.* Room: 511C
P51.1 Ribeiro, Andre: Regulatory mechanisms of the multi-scale effects of intrinsic and extrinsic noise in gene expression on single cells and cell populations. 02:30PM
P51.5 Salman, Hanna: Protein fluctuations in single cells and cell-to-cell variability. 03:42PM

P52: *Structure and Rheology of Hydrogels.* Room: 512
P52.4 Olsen, Bradley: Relating Monomer Sequence, Self-Assembly and Mechanical Response in Dual Associative Protein Hydrogels. 03:06PM
P52.8 Zia, Roseanna: Strong, tough, or fragile: Brownian motion and the osmotic pressure of colloidal gels. 04:18PM

P55: ***Block Copolymer Thin Films Integrated with New Material Platforms I: Surface, Interfaces and Lithography.*** Room: 515A

P55.4 Yokoyama, Hideaki: Dynamic Polymer Brush by Segregation of Amphiphilic Copolymers. 03:06PM

P56: ***Organic Electronics and Photonics IV: Structure & Morphology.*** Room: 515B

P56.1 Luscombe, Christine: Sequence-specific placement of defects in pi-conjugated semiconducting polymers. 02:30PM

P57: ***Physics of Liquids II.*** Room: 518

P57.1 Kob, Walter: On the structure of liquids and glasses: More order than expected. 02:30PM

P58: Self Organization in the Cytoskeleton. Room: PH C

P58.1 Subramanian, Radhika: Geometry of antiparallel microtubule bundles regulates relative sliding and stalling by PRC1 and Kif4A. 02:30PM

P58.2 Murrell, Michael: Mechanisms of actomyosin contractility. 03:06PM

P58.3 Blackwell, Robert: A biophysical model for the formation of mitotic spindle bipolarity. 03:42PM

P58.4 Elting, Mary: Mapping k-fiber load-bearing in the mammalian spindle reveals local anchorage that provides mechanical isolation and redundancy. 04:18PM

P58.5 Upadhyaya, Arpita: Arcs, flows and waves: how the cytoskeleton shapes forces in immune cells. 04:54PM

P61: Kavli Foundation Special Symposium: Frontiers of Physics. Room: WH B

P61.1 Barish, Barry: Einstein, Gravitational Waves and a New Science. 02:30PM

P61.2 Zhang, Shoucheng: Discovery of the chiral Majorana fermion and its application to topological quantum computing. 03:06PM

P61.3 Yi, Ming: Fantastic Emergent Orders and Where to Find Them. 03:42PM

P61.4 Prakash, Manu: Frugal science: A physicist view on tackling global health and education challenges. 04:18PM

P61.5 Abo-Shaeer, Amir: When a Weed is a Flower: Reimagining Our Classification System. 04:54PM

Special Session Q66: Public Lecture: The Physics and Materials Science of Superheroes. Room: PH C
Start times after first talk are approximate

Q66.1 Kakalios, James: The Physics and Materials Science of Superheroes. 06:30PM

R02: *Developments of DFT from Quantum to Statistical Mechanics (V).* Room: 150B

R02.1 Chan, Garnet: Finite temperature, classical DFT, and functionals from embedding. 08:00AM

R02.7 Maitra, Neepa: DFT beyond the ground-state: memory-dependent functionals and coupling to ions. 09:36AM

R03: *Challenges for Excited States and Dynamics I.* Room: 150C

R03.1 Gonzalez, Leticia: Challenges for excited states and dynamics in the presence of environment. 08:00AM

R03.5 Furche, Filipp: Optimized Ensemble Time-Dependent Density Functional Theory. 09:12AM

R03.9 Lindh, Roland: Non-Adabatic Chemiluminescent Dynamics of the Methyl-Substituted 1,2-Dioxetanes. 10:24AM

R04: Whither Pairing Correlations or Quantum Criticality driven Pseudogap in the Cuprate Superconductors? Room: 151

R04.1 Taillefer, Louis: The quantum critical point of cuprate superconductors. 08:00AM

R04.2 Pepin, Catherine: Topological skyrmion pseudogap in the cuprate superconductors. 08:36AM

R04.3 Harrison, Neil: Strong Magnetic Fields at the Crossroads of Superconductivity, Quantum Criticality and Fermi Surface Reconstruction in the Cuprates. 09:12AM

R04.4 Greven, Martin: New insight into the cuprate phase diagram from measurements of $HgBa_2CuO_{4+\delta}$. 09:48AM

R04.5 Georges, Antoine: Closing the gaps in our understanding of the pseudogap. 10:24AM

R05: Advances in Heavy Fermion Physics. Room: 152

R05.1 Saunders, John: The resistive transition to superconductivity in $YbRh_2Si_2$. 08:00AM

R05.2 Moll, Philip: Electronic in-plane symmetry breaking at field-tuned quantum criticality in $CeRhIn_5$. 08:36AM

R05.3 Sun, Liling: Superconductivity and anomalous connection between antiferromagnetic and superconducting phases in pressurized $CeRhGe_3$ and related non-centrosymmetric compounds. 09:12AM

R05.4 Osborn, Raymond: Coherent Band Excitations in $CePd_3$. 09:48AM

R05.5 Park, Hyowon: DFT+DMFT study of the dynamic magnetic susceptibility in heavy fermion materials. 10:24AM

R09: *Electronic Structure, Topological Effects and Magnetotransport in Complex Oxide Systems.* Room: 301A

R09.4 Vanderbilt, David: Theory of topologically induced properties of surfaces and interfaces. 08:36AM

R10: *Optics in Topological Semimetals.* Room: 301B

R10.1 Grushin, Adolfo: Quantization and enhancement of non-linear responses in topological matter. 08:00AM

R11: *Dopants and Defects in Semiconductors—Quantum Information.* Room: 303A

R11.1 De Leon, Nathalie: New color centers in diamond for long distance quantum networks. 08:00AM

R12: *Computational Materials Design—Machine Learning.* Room: 303B

R12.4 Hart, Gus: Machine Learning and Materials Discovery. 08:36AM

R14: *Topological Materials—Synthesis.* Room: 304B

R14.1 Yasuda, Kenji: Quantized chiral edge conduction on reconfigurable domain walls of a magnetic topological insulator. 08:00AM

R19: *2D Antiferromagnets, Layers and Magnetic Thin Films.* Room: 308A

R19.1 Hong, Tao: Exotic spin excitations in a two-dimensional quantum antiferromagnet near the quantum critical point. 08:00AM

R20: *Free Energy Mapping in Biology and Materials Science I.* Room: 308B

R20.1 Shell, M. Scott: Using the relative entropy to sample free energy landscapes with transferable coarse-grained models. 08:00AM

R21: *Spin Dynamics in Organic-Inorganic Hybrids and Semiconductor Nanostructures.* Room: 309

R21.1 Li, Yan: Spin-polarized exciton quantum beating in hybrid organic-inorganic perovskites. 08:00AM

R21.7 Yakovlev, Dmitri: Spin dynamics of carriers interacting with dangling bond spins in colloidal semiconductor nanostructures. 09:36AM

R23: ***Magnetic Phenomena in Bulk Nickelates and Other Oxides.*** Room: 402B

R23.13 Cao, Huibo: Complex spin orbital orders in vanadates. 10:24AM

R24: ***2D Frustrated Spin Systems: $YbMgGaO_4$ and Kagome.*** Room: 403A

R24.4 Chernyshev, Alexander: Topography and Mimicry of a Spin Liquid on a Triangular Lattice. 08:36AM

R25: Many-body Dynamics in Low-dimensional Quantum Systems. Room: 403B

R25.1 Weiss, David: Observation of Dynamical Fermionization in 1D Bose gases. 08:00AM

R25.2 Vidmar, Lev: Emergent eigenstate solution to quantum dynamics. 08:36AM

R25.3 Bloch, Immanuel: Probing Quantum Many-Body Dynamics—From Many-Body Localization to Rydberg Gases. 09:12AM

R25.4 De Nardis, Jacopo: Generalized Gibbs Ensembles and Generalized Hydrodynamics in quantum many-body systems. 09:48AM

R25.5 Polkovnikov, Anatoli: Fast forward and counter-diabatic protocols in many-particle systems. 10:24AM

R28: ***Polymer Physics in Very Strongly Confined Environments II : Nanoslits and Nanochannels.*** Room: 405

R28.4 Chen, Jeff: Where is the Odijk back-folding regime when a self-excluding wormlike polymer is confined by a cylindrical tube? 08:36AM

R29: ***Electrons, Phonons, Electron Phonon Scattering and Phononics III.*** Room: 406A

R29.7 Tse, John: Structure, structural evolution and Superconductivity of high pressure hydrogen-rich alloys. 09:12AM

R32: Effective Practices for Student Career Preparedness and Departmental Programmatic Assessment. Room: 408A

R32.1 Heron, Paula: Preparing Physics Students for 21st Century Careers: Recommendations from the PHYS21 Report. 08:00AM

R32.2 Arion, Douglas: Creating a Cultural Shift in Undergraduate Physics Education for 21st Century Outcomes. 08:36AM

R32.3 Birx, Donald: Building an Integrative Undergraduate Education: from Exploration and Discovery to Innovation and Entrepreneurship. 09:12AM

R32.4 Craig, David: APS Guide to Effective Practices in Undergraduate Physics Programs: What It Is and Why You Should Care. 09:48AM

R32.5 Lannert, Courtney: APS Guide to Effective Practices in Undergraduate Physics Programs: How will this help my Department? 10:24AM

R33: ***Superconducting Circuits: Design and Packaging.*** Room: 408B

R33.1 Pappas, David: Implementations of Superconducting Circuits for Quantum Computing. 08:00AM

R34: ***Machine Learning in Condensed Matter Physics IV.*** Room: 409A

R34.1 Stoudenmire, Edwin: Tensor Network Machine Learning Models. 08:00AM

R36: ***Synthesis and Properties of 2D Materials and Heterostructures.*** Room: 410

R36.4 Li, Lain-Jong: Janus monolayers of transition metal dichalcogenides. 08:36AM

R37: ***Devices from 2D Materials IV—Optoelectronics.*** Room: 411

R37.7 Koppens, Frank: Nano-optoelectronics with 2d material heterostructures: fundamentals and applications. 09:12AM

R38: ***Materials in Extremes: Energetic Materials.*** Room: 501A

R38.7 Perriot, Romain: Molecular Dynamics Simulations of Shock Induced Chemistry in Organic Materials. 09:12AM

R39: ***Superconducting Amplifiers.*** Room: 501B

R39.1 Vijayaraghavan, Rajamani: Broadband Parametric Amplification Using Impedance Engineering. 08:00AM

R40: ***2D Materials—Electronic Structure and Transport.*** Room: 501C

R40.1 Xing, Huili (Grace): Vertical Tunneling in Layered Materials and Its Applications. 08:00AM

R41: Liquid Crystalline Behavior at the Supramolecular Scale in Biopolymer and Colloidal Systems. Room: 502A

R41.1 Jamali, Vida: Morphology of Carbon Nanotube Liquid Crystalline Phases: Insights into Tactoids and Columnar Phase. 08:00AM

R41.2 Weirich, Kimberly: Self-organization in active, anisotropic biopolymer droplets. 08:36AM

R41.3 Van der Schoot, Paul: Geometric percolation in chiral nematic liquid crystals of hard particles. 09:12AM

R41.4 Janmey, Paul: Why aren't tissues like biopolymer networks? Packing colloidal particles in a fibrous matrix. 09:48AM

R41.5 Needleman, Daniel: Instabilities, Phase Transitions, and Thermodynamics of Active Matter. 10:24AM

R42: Progress in Quantum Thermodynamics. Room: 502B

R42.1 Pekola, Jukka: Progress in Thermodynamics of Superconducting and Hybrid Circuits. 08:00AM

R42.2 Sagawa, Takahiro: Fluctuation Theorem for Many-Body Pure Quantum States. 08:36AM

R42.3 Eisert, Q. Jens: Strong coupling quantum thermodynamics and beyond. 09:12AM

R42.4 Splettstoesser, Janine: Thermoelectrics of interacting nanosystems—Exploiting fermion-parity superselection instead of time-reversal symmetry. 09:48AM

R42.5 Esposito, Massimiliano: Quantum and Information Thermodynamics: A Unifying Framework Based on Repeated Interactions. 10:24AM

R43: *Mechanisms of Ionic Conduction and Diffusion in Polymeric Ion Conductors I.* Room: 503

R43.1 Long, Timothy: Ionic Liquids Inspiring the Design of Charged Polymers: The Allure of Phosphorus. 08:00AM

R48: *Physics of Intracellular Membranes and Organelles.* Room: 510

R48.1 Lippincott-Schwarz, Jennifer: TBD. 08:00AM

R48.11 Patel, Nipam: The Cellular and Genetic Basis for Structural Color in Butterflies. 10:24AM

R49: *Physics of Genome Organization: From DNA to Chromatin II.* Room: 511A

R49.1 Reid Jacobson, David: Award for Outstanding Doctoral Thesis Research in Biological Physics Talk: Single-stranded nucleic acid elasticity arises from internal electrostatic tension. 08:00AM

R50: *Physics of Development and Disease—I.* Room: 511B

R50.1 Gonzalez, Rodrigo: Dynamic force patterns promote coordinated cell movements during embryonic wound repair. 08:00AM

R51: *Self Organization in the Cytoskeleton II.* Room: 511C

R51.5 Schmidt, Christoph: Non-equilibrium dynamics in the actin cortex. 08:48AM

R52: *Smart Responsive Polymers II.* Room: 512

R52.10 Kremer, Kurt: The Puzzle of Smart Polymers in Miscible Solvent Mixtures. 09:48AM

R55: *Soft Materials Containing Synthetic Polymers, Peptides, Proteins, Biomachinery and Beyond I: Peptides and Assemblies.* Room: 515A

R55.7 Stellacci, Francesco: Wetting on patchy, protein-like surfaces. 09:12AM

R56: *Polymer Nanocomposites II: Functional Applications.* Room: 515B

R56.7 Vaia, Richard: Processing and Performance of Large-Area Polymer-Grafted Nanoparticle Assemblies. 09:12AM

R58: Controlling Space and Time in Biology: From Gene Regulation in a Single Cell to Pattern Formation in Cell Populations and Development. Room: PH C

R58.1 Cluzel, Philippe: Taking the pulse of flagellum synthesis in a single bacterium. 08:00AM

R58.2 Gustavsson, Anna-Karin: Induction and Entrainment of Glycolytic Oscillations in Single Yeast Cells. 08:36AM

R58.3 Tang, Lei-Han: Adapt to oscillate: a nonequilibrium thermodynamic view of dynamic quorum sensing. 09:12AM

R58.4 Tang, Chao: Reverse engineer spatial patterns in biology. 09:48AM

R58.5 Reinitz, John: Deciphering the cis-regulatory code: from Drosophildae to Sepsidae and back again. 10:24AM

R59: Athermal and Statistical Mechanics. Room: PH D

R59.1 Daniels, Karen: Force-based ensembles in granular materials. 08:00AM

R59.2 O'Hern, Corey: Stress anisotropy in quasistatically sheared granular packings. 08:36AM

R59.3 Maloney, Craig: Plastic flow in amorphous solids: from particle-scale to meso-scale. 09:12AM

R59.4 Dahmen, Karin: Universal avalanche dynamics: From nano-crystals, to bulk metallic glasses, to earthquakes and stars? 09:48AM

R59.5 Blumenfeld, Raphael: Granular Statistical Mechanics: Bridging Between Statics and Dynamics. 10:24AM

S02: *Developments of DFT: from Quantum to Statistical Mechanics (VI).* Room: 150B

S02.1 Gross, Eberhard K: Non-adiabatic dynamics on a single time-dependent potential energy surface. 11:15AM

S03: *Strong Light-matter Coupling and Enhanced Spectroscopy: Theory and Simulation.* Room: 150C

S03.1 Spano, Frank: Theory of Vibronic Polaritons in Optical Microcavities. 11:15AM

S03.4 Feist, Johannes: Exploiting polaritonic chemistry to manipulate molecular structure and dynamics. 12:15PM

S03.7 Yuen-Zhou, Joel: Molecules in cavities: topological phases and polariton chemistry. 01:15PM

S04: Dynamics of Chiral Spin Textures in Topological and Magnetic Materials. Room: 151

S04.1 Maslov, Dmitrii: A Fermi liquid with spin-orbit coupling. 11:15AM

S04.2 Perez, Florent: Spin-orbit twisted spin waves in magnetic quantum wells. 11:51AM

S04.3 Blumberg, Girsh: Chiral Spin Mode on the Surface of a Topological Insulator. 12:27PM

S04.4 Maciejko, Joseph: Helical Fermi liquids and their breakdown. 01:03PM

S04.5 Wu, Liang: Quantized Electro-dynamical Responses In Topological Materials. 01:39PM

S05: Quantum Criticality and Novel Phases in Multipolar Systems. Room: 152

S05.1 Kim, Yong-Baek: Novel phases in critical metallic systems with multipolar local moments. 11:15AM

S05.2 McCollam, Alix: The influence of nuclear-electronic order on quantum criticality in antiferroquadrupolar $PrOs_4Sb_{12}$. 11:51AM

S05.3 Severing, Andrea: X-ray probes of orbital configurations in f-electron systems. 12:27PM

S05.4 Inosov, Dmytro: Magnetic excitations in the quadrupolar ordered CeB_6. 01:03PM

S05.5 Ronning, Filip: Emergent magnetic anisotropy in the Ce-115 compounds. 01:39PM

S06: *Neural Control of Behavior.* Room: 153A

S06.1 Brunton, Bing: The brain outside the lab: Exploring the neural basis of long-term, naturalistic human behaviors. 11:15AM

S06.11 Carey, Megan: Cerebellar circuit mechanisms for coordinated locomotion in mice. 01:39PM

S09: *Complex oxide heterostructures—Ferroelectrics.* Room: 301A

S09.1 Santamaria, Jacobo: Resonant transport assisted by a charged domain wall in a ferroelectric tunnel junction. 11:15AM

S10: *New Phenomena In Dirac and Other Topological Semimetals.* Room: 301B

S10.1 Trivedi, Nandini: Fermi arc mediated entropy transport in topological semimetals. 11:15AM

S11: *Fe-based Superconductivity Under Extreme Conditions.* Room: 303A

S11.1 Cheng, Jinguang: High pressure route to high-T_c superconductivity in the FeSe-based materials. 11:15AM

S12: *Computational Materials Design—Novel Oxides and Chalcogenides.* Room: 303B

S12.4 Ong, Shyue Ping: Mining Unexplored Chemistries for Phosphors for High-Color-Quality White-Light-Emitting Diodes. 11:51AM

S13: *Majorana Bound States I.* Room: 304A

S13.1 Xia, Jing: Chiral Majorana Modes. 11:15AM

S14: *Topological Materials—Transport.* Room: 304B

S14.1 Goldhaber-Gordon, David: Chiral 1D transport in magnetic topological insulators: precise quantization and manipulation. 11:15AM

S20: *Free Energy Mapping in Biology and Materials Science II.* Room: 308B

S20.1 Mueller, Marcus: Computing free-energy landscapes of co-operative structure changes in soft, biological matter. 11:15AM

S21: *Spin-Orbit Coupling and Spin Coherence in Semiconductor Heterostructures.* Room: 309

S21.4 Zumbuhl, Dominik: Stretching and Breaking the Persistent Spin Helix. 11:51AM

S22: *Spin Nernst and Spin Seebeck Effects.* Room: 402A

S22.7 Park, Byong-Guk: Transverse spin Nernst magnetoresistance induced by thermal spin current in ferromagnet/non-magnet bilayers. 12:27PM

S23: *Multiferroic and Magnetoelectric Oxides.* Room: 402B

S23.1 Kimura, Tsuyoshi: Multiferroic oxides with multiple magnetic order parameters and domain structures. 11:15AM

S24: *Spin Frustration and Disorder.* Room: 403A

S24.1 Samarakoon, Anjana: A further classification of glassy magnets: spin jam and spin glass. 11:15AM

S25: Materials and Fuels for the New Energy Economy. Room: 403B

S25.1 Meng, Y. Shirley: Quantifying the unusual anion redox activity in lithium intercalation compounds. 11:15AM

S25.2 Khamis, Ibrahim: Nuclear Hydrogen Production: Enhancing the Climate Change—Nuclear Energy Nexus. 11:51AM

S25.3 Ryan, Dominic: MnxGa: Understanding a magnet in the hope of designing better magnets. 12:27PM

S25.4 Haile, Sossina: Reversible Electrochemical Cells for Fuel to and from Electricity. 01:03PM

S25.5 Alberi, Kirstin: Novel Semiconductors for High Efficiency Photovoltaics. 01:39PM

S26: *Quantum Resource Theories I.* Room: 404A

S26.1 Marvian, Iman: Quantum Resource Theories. 11:15AM

S26.2 Gour, Gilad: Mathematical structures and features of quantum resource theories. 11:51AM

S28: *Quantum Annealing: Algorithms & Applications.* Room: 405

S28.1 Crosson, Elizabeth: Universal quantum computation in thermal equilibrium. 11:15AM

S29: *Electrons, Phonons, Electron Phonon Scattering and Phononics IV.* Room: 406A

S29.1 Henry, Asegun: TBD. 11:15AM

S32: FIAP Physicists as Entrepreneurs Session. Room: 408A

S32.1 Nordine, Paul: Containerless Research, Inc., a Niche Science Enterprise. 11:15AM

S32.2 Chen, George: Patent Law That Every Physicist Should Know? 11:51AM

S32.3 Bradlehy, Kenneth: Exciting Opportunities for Physicists: Bridging the Chaos Between Science and Markets. 12:27PM

S32.4 Green, Daniel S.: Entrepreneurial Physics: Finding Support for Research and Commercialization. 01:03PM

S32.5 Campman, Ken: Small to Big Company Entrepreneurship. 01:39PM

S33: *Hybrid Quantum Systems.* Room: 408B

S33.1 Teufel, John: TBD. 11:15AM

S34: *Precision Many Body Physics IV.* Room: 409A

S34.1 Barthel, Thomas: Typical 1d quantum systems at finite temperatures can be simulated efficiently on classical computers. 11:15AM

S35: *2D Materials—Metals, Semiconductors, and Correlated Materials.* Room: 409B

S35.1 Tomanek, David: Low-Dimensional Semiconductors beyond Graphene: An Insight from Theory. 11:15AM

S37: *Devices from 2D Materials V—Optoelectronics.* Room: 411

S37.7 Ahn, Jong-Hyun: 2D Materials in 3D Architectures with Photodetector Applications. 12:27PM

S41: Neuromorphic Systems: Concepts, Materials and Devices. Room: 502A

S41.1 Stiles, Mark: Spintronic devices for neuromorphic computing. 11:15AM

S41.2 Ramanathan, Shriram: Quantum matter for artificial intelligence and brain sciences. 11:51AM

S41.3 Strukov, Dmitri: Analog Neurocomputing with Emerging Memory Devices. 12:27PM

S41.4 Williams, Stanley: Nonlinear dynamics and imaging of current density and electric field bifurcations caused by electronic instabilities. 01:03PM

S41.5 Ielmini, Daniele: Spiking neural networks with resistive-switching synapses for STDP-based unsupervised learning. 01:39PM

S42: Experimental Progress in Quantum Information Processing with Neutral Atoms. Room: 502B

S42.1 Saffman, Mark: Quantum gates and interfaces with atomic Rydberg interactions. 11:15AM

S42.2 Regal, Cindy: Interfering and entangling neutral atoms in optical tweezers. 11:51AM

S42.3 Biedermann, Grant: Entangling Atomic Spins with a Strong Rydberg-Dressed Interaction. 12:27PM

S42.4 Kumar, Aishwarya: Quantum Computing with Neutral Atoms: Quantum Gates and Maxwells Demons. 01:03PM

S42.5 Bernien, Hannes: Exploring many-body dynamics on a 51-atom quantum simulator. 01:39PM

S43: *Mechanisms of Ionic Conduction and Diffusion in Polymeric Ion Conductors II.* Room: 503

S43.7 Hall, Lisa: Effect of Ion-Polymer Solvation Strength on Ion Diffusion in Model Diblock Copolymers. 12:27PM

S49: *Evolutionary Dynamics of Genomes I.* Room: 511A

S49.1 Brenner, Naama: Exploratory adaptation in gene regulatory networks. 11:15AM

S49.5 Acar, Murat: Negative feedback as a facilitator of gene network evolution. 12:27PM

S50: *Physics of proteins IV: Intrinsically Disordered and Aggregated States of Proteins.* Room: 511B

S50.1 Hurley, Jennifer: The Importance of Disorder in the Highly Ordered Circadian Clock. 11:15AM

S50.6 Silva, Jerson: Targeting the Prion-like Aggregation of α-synuclein in Parkinson's Disease and Mutant p53 in Cancer. 12:39PM

S51: *Emergent self-organization in Active Matter II.* Room: 511C

S51.6 Shaevitz, Joshua: Self-driven phase transitions in living matter. 12:15PM

S55: *Block Copolymer Thin Films Integrated with new Material Platforms II: Annealing, Architecture, and Multi-Layers.* Room: 515A

S55.4 Karim, Alamgir: Directed Self-Assembly (DSA) of Block Copolymer Films with Direct Immersion Annealing. 11:51AM

S56: *Polymer Nanocomposites III: Fundamentals.* Room: 515B

S56.10 Benicewicz, Brian: Polymer grafted nanoparticles for designed interfaces and controlled assembly in polymer nanocomposites. 01:03PM

S57: *Self-assembly in Liquid Crystals and other Complex Solvents I.* Room: 518

S57.1 Abbott, Nicholas: Topological defects in liquid crystals as templates for molecular self-assembly. 11:15AM

S58: Engaging Physicists in Science Policy. Room: PH C

S58.1 Johnson, Neil: Joseph A. Burton Forum Award Talk: New Terrorism Reveals New Physics. 11:15AM

S59: Super Resolution Microscopy and Lithography of Polymers. Room: PH D

S59.1 Liddle, James: Nanoscale structure and deformation in soft materials revealed by single-molecule localization and orientation. 11:15AM

S59.2 Woell, Dominik: Superresolved fluorescence microscopy of soft matter: from the development of novel photoswitches to the visualization of compartmentalized microgels. 11:51AM

S59.3 King, John: Studying Nanoscale Dynamics with Super-Resolved Microscopy. 12:27PM

S59.4 Fourkas, John: Multicolor superresolved lithography. 01:03PM

S59.5 Han, Kyu Young: Counting biomolecules using single-molecule imaging technique. 01:39PM

V02: ***Strong Light-matter Coupling and Enhanced Spectroscopy: Enhanced Spectroscopy and Dynamics.*** Room: 150B

V02.1 Halas, N: Antenna-Reactor Complexes Support Plasmonic Photocatalysis. 02:30PM

V02.4 Huck, Christian: Strong Coupling between Surface Phonon-Polaritons and Surface Plasmon-Polaritons. 03:30PM

V02.6 Mukamel, Shaul: Nonlinear optical molecular spectroscopy with quantum light and in microcavities. 04:18PM

V03: ***Challenges for excited states and dynamics II.*** Room: 150C

V03.1 Krylov, Anna: Non-adiabatic couplings in the EOM-CC framework. 02:30PM

V03.5 Subotnik, Joseph: Open challenges in nonadiabatic dynamics: photons and electron-hole pairs. 03:42PM

V03.6 Truhlar, Donald: Quantum Mechanical Photochemistry. 04:18PM

V04: Dirac Electron Physics and Nanoscale Scanning Probes of Quantum Dynamics in Graphene: Atomic Defects, Topology and Geometry. Room: 151

V04.1 Andrei, Eva: Quantum Critical Transition and Kondo Screening of Magnetic Moments in Graphene. 02:30PM

V04.2 Rodriguez Nieva, Joaquin: Berry phase jumps and giant nonreciprocity in Dirac quantum dots. 03:06PM

V04.3 Velasco Jr., Jairo: Characterization and Control of Dirac Fermions Within Nanoscale p-n Junctions. 03:42PM

V04.4 Walkup, Daniel: Quantized States, Berry Phases, and Wedding Cakes in Graphene Quantum Dots. 04:18PM

V04.5 Morgenstern, Markus: Tunable giant valley splitting in edge-free graphene quantum dots on boron nitride. 04:54PM

V05: Pairing in the Most Dilute Superconductor. Room: 152

V05.1 Hemberger, Joachim: A ferroelectric quantum phase transition inside a superconducting dome. 02:30PM

V05.2 Swartz, Adrian: Insights on dilute superconductivity in $SrTiO_3$ from electron tunneling spectroscopy. 03:06PM

V05.3 Balatsky, Alexander: Superconductivity and quantum paraelectric fluctuations in STO. 03:42PM

V05.4 Ruhman, Jonathan: Superconductivity at ultra low-densities. 04:18PM

V05.5 Prakash, Om: Discovery of superconductivity in a low carrier density system: Bismuth. 04:54PM

V07: ***Van der Waals bonding in advanced materials—From van der Waals to Casimir.*** Room: 153B

V07.1 Kardar, Mehran: Casimir and van der Waals forces near gently curved surfaces. 02:30PM

V07.8 Palasantzas, George: Casimir interactions of complex surfaces and materials. 04:18PM

V09: ***Complex Oxide Heterostructures—Multiferroic Effects and Metal-Insulator Transitions.*** Room: 301A

V09.1 Guo, Er-Jia: Interface magnetism in complex oxides heterostructures and manufactured magnetoelectric coupling. 02:30PM

V10: ***Topological Semimetals Beyond Weyl And Dirac.*** Room: 301B

V10.1 Cano, Jennifer: From local symmetry to band structure topology. 02:30PM

V11: ***Fe-based superconductors—Material synthesis and discovery.*** Room: 303A

V11.1 Johrendt, Dirk: Progress and perspectives in materials chemistry of iron-based superconductors. 02:30PM

V13: ***Majorana Bound States II.*** Room: 304A

V13.1 Wang, Kang: Quantized Signature of Majorana Fermion: Particle being its own Anti-particle. 02:30PM

V14: ***Topological Materials—Spectroscopy.*** Room: 304B

V14.1 Chen, Yulin: Topological electronic structures in metallic phases. 02:30PM

V14.2 Sato, Takafumi: Novel electronic states of topological nodal semimetals studied by ARPES. 03:06PM

V19: ***Magnetic Nanoparticles: Spin Waves and Strain.*** Room: 308A

V19.4 Macia, Ferran: Direct imaging of delayed magneto dynamic modes induced by surface acoustic waves. 03:06PM

V20: ***Energy Storage: Hydrogen Production and Storage.*** Room: 308B

V20.12 Rodriguez-Lopez, Joaquin: Elucidating the Impact of Polyelectrolyte Dynamics on the Reactivity of Novel Redox-Active Polymers for a New type of Size-Exclusion Flow Battery. 04:42PM

V21: ***Spin-Photon Coupling in Semiconductor Quantum Dots.*** Room: 309

V21.1 Mi, Xiao: Strong-coupling Cavity QED with Single Electron Charge and Spin Qubits in Silicon1. 02:30PM

V22: *Spin-Orbit Coupling and Antisymmetric Exchange at Metal Interfaces.* Room: 402A

V22.10 Tacchi, Silvia: Interfacial Dzyaloshinskii-Moriya Interaction in Pt/CoFeB Films: Effect of the Heavy-Metal Thickness. 04:18PM

V23: *Oxide Thin Film Magnetoelectrics.* Room: 402B

V23.1 Yu, Pu: Magnetoelectric coupling through the electric-field controlled ionic evolution. 02:30PM

V24: *Low Dimensional Spin Systems, Nematicity.* Room: 403A

V24.1 Orlova, Anna: Nuclear Magnetic Resonance Signature of the Spin-Nematic Phase in $LiCuVO_4$ at High Magnetic Fields. 02:30PM

V24.8 Dally, Rebecca: GMAG Student Dissertation Award: Amplitude mode in a spatially anisotropic 2D lattice: α-$NaMnO_2$. 04:18PM

V25: Spin-Orbit, Interface, and Domain Wall Physics in Magnetic Iridates. Room: 403B

V25.1 Yi, Di: Emergent Magnetic Phenomena in Iridate-Based Superlattices. 02:30PM

V25.2 Dean, Mark: Magnetism in artificial Ruddlesden-Popper iridates leveraged by structural distortions, interlayer coupling and ultra-fast optical excitation. 03:06PM

V25.3 Okamoto, Satoshi: Investigating Interfacial Spin Orbit Physics with Density Functional Theory. 03:42PM

V25.4 Yamaji, Youhei: Metallicity and Topology in Iridate Domain Walls. 04:18PM

V25.5 Lee, Ho Nyung: Spin orbit coupled 3d5d quantum oxide heterostructures. 04:54PM

V26: *Quantum Resource Theories II.* Room: 404A

V26.1 Yunger Halpern, Nicole: Resource-theory models for thermodynamics. 02:30PM

V26.4 Kraus, Barbara: Local manipulation of multipartite entanglement. 03:30PM

V28: *Spin-Based Quantum Computing.* Room: 405

V28.1 Watson, Thomas: A programmable two-qubit quantum processor in silicon. 02:30PM

V28.2 Zajac, David: Quantum CNOT Gate for Spins in Silicon [1]. 03:06PM

V29: *Electrons, Phonons, Electron Phonon Scattering and Phononics V.* Room: 406A

V29.4 Wu, Junqiao: Electronic and Phononic Thermal Conduction in Materials with Metal-Insulator Phase Transitions. 03:06PM

V32: Joseph F. Keithley and Industrial Physics Awards. Room: 408A

V32.1 Stroscio, Joseph: Joseph F. Keithley Award For Advances in Measurement Science Talk: Development of Scanning Probe Instruments and Application to the Graphene 2D Electron System. 02:30PM

V32.2 Ho, Wilson: Joseph F. Keithley Award For Advances in Measurement Science Talk: STM Inelastic Electron Tunneling Spectroscopy and Microscopy. 03:06PM

V32.3 Heinrich, Andreas: From Inelastic Tunneling Spectroscopy to Electron Spin Resonance of single atom spins on a surface. 03:42PM

V32.4 Kleinberg, Robert: Distinguished Lectureship on the Applications of Physics Talk: mK to km: How Millikelvin Physics is Reused to Explore the Earth Kilometers Below the Surface. 04:18PM

V32.5 Boudreault, Richard: George E. Pake Prize Talk: An Ecosystem Approach to Industrial Physics: Atmospheric Moisture Harvesting Through High Temperature Plasma Surface Modification, A Case Study. 04:54PM

V33: *Error Correction with Superconducting Qubits.* Room: 408B

V33.1 Albert, Victor: Filling cavities to prevent decay: bosonic quantum error correction. 02:30PM

V33.2 Mirrahimi, Mazyar: Dissipation as a resource for stabilizing quantum states with superconducting qubits. 03:06PM

V34: *Precision Many Body Physics V.* Room: 409A

V34.1 Iadecola, Thomas: Floquet Supersymmetry. 02:30PM

V35: *2D Materials—Magnetism and Magnetotransport I.* Room: 409B

V35.7 McGuire, Michael: Magnetism in Cleavable Transition Metal Halides. 03:42PM

V36: *2D Materials—Semimetals and Orbital Order.* Room: 410

V36.1 Stiehl, Gregory: Control of spin-orbit torques through crystal symmetry. 02:30PM

V37: *Devices from 2D Materials VI—Quantum Materials.* Room: 411

V37.4 Englund, Dirk: 2D Quantum Materials for Quantum Information Processing and Sensing. 03:06PM

V38: *Materials in Extremes: Geophysics and Planetary Science.* Room: 501A

V38.1 Kraus, Dominik: Formation of diamonds in laser-compressed hydrocarbons at planetary interior conditions. 02:30PM

V39: *Quantum Foundations II.* Room: 501B

V39.1 Sainz, Ana: Einstein-Podolsky-Rosen Steering in Quantum Theory and Beyond. 02:30PM

V41: Spatiotemporal behavior of soft active materials. Room: 502A

V41.1 Balazs, Anna: Patterning with Loops to Dynamically Reconfigure Polymer Gels. 02:30PM

V41.2 White, Timothy: Shape Programmable Materials via the Directed Self Assembly of Liquid Crystalline Elastomers. 03:06PM

V41.3 Qi, H.: Direct 4D printing by using multimaterial additive manufacturing. 03:42PM

V41.4 Studart, Andre: 4D Printing of Morphing Soft Materials Inspired by Nature. 04:18PM

V41.5 Xie, Tao: Enriching morphing behavior of shape memory polymer via spatiotemporal controls. 04:54PM

V42: Open Quantum Systems. Room: 502B

V42.1 Daley, Andrew: Controlled open system dynamics in AMO quantum simulators. 02:30PM

V42.2 de Vega, Ines: Dynamics of single and many-body open quantum systems beyond the Markov approximation. 03:06PM

V42.3 Maniscalco, Sabrina: Saving the Quantum: How to make friends with the Environment. 03:42PM

V42.4 Parigi, Valentina: Multimode resources based on optical frequency combs and implementation of quantum complex networks. 04:18PM

V42.5 Landini, Manuele: Bose-Einstein Condensate in a cavity, phase transitions in an open quantum system. 04:54PM

V46: *Physics in Medicine: Modeling, Imaging, and Treatment.* Room: 506

V46.1 Jeraj, Robert: Advances in Modeling, Imaging, and Treatment of Cancer. 02:30PM

V47: *Dynamical Pattern Formation in Synchronization of Complex Networks.* Room: 507

V47.1 Abrams, Daniel: Unexpected Patterns: Chimera States on Networks. 02:30PM

V47.6 D'Souza, Raissa: Patterns of synchronization, broken symmetries, and attractor switching in a ring of nanoelectromechanical oscillators. 03:54PM

V49: *Evolutionary Systems Biology I.* Room: 511A

V49.1 Torpak, Erdal: Protein Evolution Under Multiple Opposing Selection Factors. 02:30PM

V49.7 Lambert, Guillaume: Quantitative single cell biophysics: Unraveling bacterial adaptation dynamics under fluctuating environments. 04:06PM

V50: *Physics of Development and Disease—II.* Room: 511B

V50.1 McGavern, Dorian: Visualizing traumatic brain injury in vivo. 02:30PM

V51: *Biophysics of Cellular Organization and Dynamics Across Multiple Spatial Scales—II.* Room: 511C

V51.1 Chen, Yun: Developing microtissue-building toolbox to study biophysical effects at multiple scales. 02:30PM

V55: *Soft Materials Containing Synthetic Polymers, Peptides, Proteins, Biomachinery and Beyond II: Nucleic Acids and Solutions.* Room: 515A

V55.1 Alexander-Katz, Alfredo: Lessons from In-Silico Experiments. 02:30PM

V56: *Polymers for Energy Applications I.* Room: 515B

V56.4 Lutkenhaus, Jodie: Charge Transfer and Mass Transport in Organic Radical Polymers. 03:06PM

V58: Predicting Viral Evolution. Room: PH C

V58.1 Koelle, Katia: Predicting the evolution of influenza viruss defective interfering genomes. 02:30PM

V58.2 Luksza, Marta: A minimal fitness model for evolutionary predictions. 03:06PM

V58.3 Deem, Michael: Estimation of Vaccine Effectiveness and Early Recognition of Emerging Flu Strain Clusters. 03:42PM

V58.4 Shraiman, Boris: Forecasting evolution from the shape of genealogical trees. 04:18PM

V58.5 Shakhnovich, Eugene: Biophysical Walks on Fitness Landscapes. 04:54PM

V59: Structure/Property Relationships in Polyolefins. Room: PH D

V59.1 Rastogi, Sanjay: Linking synthesis with entanglement state in Ultra High Molecular Weight Polyethylene; a route for solvent free processing. 02:30PM

V59.2 Habersberger, Brian: Deuterium-labeled polyolefins: Exchange, characterization, and applications. 03:06PM

V59.3 Schieber, Jay: Can the failure of tube models in blends of branched polymers be salvaged by slip-link models? 03:42PM

V59.4 Rutledge, Gregory: Molecular simulation of polyolefin crystallization: Nucleation Phenomena. 04:18PM

V59.5 Soulages, Johannes: Polymer Modeling At ExxonMobil: Reaction Kinetics And Computational Rheology. 04:54PM

X02: *Strong Light-matter Coupling and Enhanced Spectroscopy: Strong Coupling II.* Room: 150B

X02.1 Atwater, Harry: Hot Carrier Dynamics in Photoexcited Metal Nanostructures: Carrier Transport and Approaches to Photocatalysis. 08:00AM

X02.4 Coe, James: Cavity-Vibration Mixed States. 09:00AM

X03: *Challenges for excited states and dynamics III.* Room: 150C

X03.1 Schapiro, Igor: A QM/MM study of photoisomerization in artificial molecular switches. 08:00AM

X03.3 Burghardt, Irene: High-Dimensional Quantum Dynamics of Functional Organic Polymer Materials: Coherence, Confinement, and Disorder. 08:48AM

X03.5 Neuscamman, Eric: Excited State Variational Principles for Real Solids. 09:36AM

X03.7 Berkelbach, Timothy: Linear and nonlinear spectroscopy in the condensed phase. 10:24AM

X04: Superconductivity in j=3/2 Semimetals. Room: 151

X04.1 Paglione, Johnpierre: High-spin superconductivity in topological half-Heusler semimetals. 08:00AM

X04.2 Brydon, Philip: The fourth superconducting gap: intrinsic Bogoliubov Fermi surfaces. 08:36AM

X04.3 Roy, Bitan: Pairing of spin-3/2 carriers in three-dimensional a doped Luttinger semimetal: Confluence of topology, interaction and disorder. 09:12AM

X04.4 Savary, Lucile: Superconductivity in Three-Dimensional Spin-Orbit Coupled Semimetals. 09:48AM

X04.5 Herbut, Igor: Theory of complex tensor superconducting order in quadratic-band-touching Luttinger semimetals. 10:24AM

X05: Hydrodynamic electron flow in topological materials. Room: 152

X05.1 Mackenzie, Andrew: Experiments on electron hydrodynamics with and without applied magnetic fields. 08:00AM

X05.2 Hartnoll, Sean: Electron hydrodynamics beyond momentum and viscosity. 08:36AM

X05.3 Sachdev, Subir: Transport without quasiparticles in graphene and Weyl semi-metals. 09:12AM

X05.4 Gooth, Johannes: Hydrodynamic flow of electrons in topological semimetals. 09:48AM

X05.5 Krishna, Roshan: Viscous electron flow in graphene. 10:24AM

X09: *Vacancies and Defects/Structure of Complex Oxide Heterostructures.* Room: 301A

X09.4 Borisevich, Albina: Engineering complex oxide properties via interface control. 08:36AM

X10: *4d/5d materials I.* Room: 301B

X10.7 Jackeli, George: Spin-orbital interplay in $J_{\text{eff}} = 3/2$ Mott insulators. 09:12AM

X11: *Fe-based superconductivity—Neutron scattering and magnetism.* Room: 303A

X11.1 Li, Shiliang: Interplay between Nematicity, Antiferromagnetism and Superconductivity in Iron-Based Superconductors. 08:00AM

X13: *Majorana Bound States III.* Room: 304A

X13.1 Ding, Hong: Majorana bound state in iron-based superconductor Fe(Te,Se). 08:00AM

X14: *Topological Materials—Heterostructures and spectroscopy.* Room: 304B

X14.1 Madhavan, Vidya: Interplay of orbital effects and nanoscale strain in topological crystalline insulators. 08:00AM

X21: *NV Centers in Diamond.* Room: 309

X21.1 Jerger, Paul: Single-spin holonomic quantum gates with coherent optical control in diamond. 08:00AM

X22: *Spin-Orbit Effects at Metal/Insulator Interfaces.* Room: 402A

X22.4 Yang, Hyunsoo: Anomalous Current-Induced Spin-Orbit Torques in Ferrimagnets. 08:36AM

X25: Magnon BEC and Spin Superfluidity. Room: 403B

X25.1 Hillebrands, Burkard: Observation of room-temperature magnon supercurrents. 08:00AM

X25.2 Sonin, Edouard: Spin superfluidity: superfluid 3He, solids, spinor BEC. 08:36AM

X25.3 Xie, Xincheng: Spin superconductor and electric dipole superconductor. 09:12AM

X25.4 Tserkovnyak, Yaroslav: Magnon condensation and hydrodynamics. 09:48AM

X25.5 Brataas, Arne: Spin Superfluidity in Uniaxial and Biaxial Antiferromagnetic Insulators. 10:24AM

X27: *Disorder and Localization in AMO Systems I.* Room: 404B

X27.1 DeMarco, Brian: Measuring Localization from Disorder and Strong Interactions: Ultracold Atoms in Optical Lattices. 08:00AM

X28: *Quantum Annealing: Theory.* Room: 405

X28.1 Marvian Mashhad, Milad: Error suppression for Hamiltonian-based quantum computation. 08:00AM

X29: *Electrons, Phonons, Electron Phonon Scattering and Phononics VI.* Room: 406A

X29.1 Gu, Xiaokun: Phononic thermal properties of two-dimensional materials. 08:00AM

X32: Computational approaches for far-from-equilibrium quantum systems. Room: 408A

X32.1 Rigol, Marcos: Numerical Linked Cluster Expansions for Quantum Quenches in the Thermodynamic Limit. 08:00AM

X32.2 Werner, Philipp: Nonequilibrium Dynamical Mean Field Theory. 08:36AM

X32.3 Gull, Emanuel: Diagrammatic Monte Carlo for real-time propagation. 09:12AM

X32.4 Konik, Robert: Studies of the Loschmidt Echo and Entanglement Spreading in Two Dimensional Anisotropic Spin Systems. 09:48AM

X32.5 Pollmann, Frank: Efficient Simulation of Quantum Thermalization Dynamics. 10:24AM

X35: *2D Materials—Magnetism and Magnetotransport II.* Room: 409B

X35.1 Zhang, Xiang: Discovery of intrinsic ferromagnetism in two-dimensional van der Waals crystals. 08:00AM

X36: *2D Materials—van der Waals Bonding, Thermal Properties and Friction.* Room: 410

X36.4 Balandin, Alexander: Van der Waals Bonded Materials: From Quasi-2D to Quasi-1D. 08:36AM

X37: *Devices from 2D Materials VII—Scalable devices.* Room: 411

X37.7 Warner, Jamie: Large scale ultrathin opto-electronics using 2D materials grown by chemical vapour deposition. 09:12AM

X38: *Materials in Extremes: Hydrogen and Superconductivity.* Room: 501A

X38.1 Ackland, Graeme: Relating DFT MD simulations of high-pressure hydrogen to experiment. 08:00AM

X41: New Insights into Quantum Criticality in Metallic Systems. Room: 502A

X41.1 Belitz, Dietrich: Metallic Quantum Ferromagnets. 08:00AM

X41.2 Taufour, Valentin: The T-p-H phase diagram of metallic quantum ferromagnets. 08:36AM

X41.3 Sales, Brian: Quantum Critical Behavior in the Asymptotic Limit of High Disorder. 09:12AM

X41.4 Morosan, Emilia: Crystal field anisotropy in a new Ytterbium heavy fermion ferromagnet. 09:48AM

X41.5 Poudel, Lekhanath: Multiple fluctuations near an unconventional quantum critical point. 10:24AM

X42: Topology, Geometry, and Physics of Elastic Networks. Room: 502B

X42.1 Das, Moumita: Structure function properties of cytoskeletal and extracellular networks: Mechanics and crack propagation. 08:00AM

X42.2 Durand, Marc: Elastic networks with optimal mechanical properties. 08:36AM

X42.3 Ronceray, Pierre: Cell contraction induces long-ranged stress stiffening in the extracellular matrix. 09:12AM

X42.4 Vitelli, Vincenzo: Odd viscosity in chiral active materials. 09:48AM

X42.5 Sageman-Furnas, Andrew: Topology counts: Force distributions in random spring networks. 10:24AM

X47: *Noise-Driven Dynamics in Far-From-Equilibrium Systems.* Room: 507

X47.1 Bonilla, Luis: Stochastic modeling and analysis of tumor-induced blood vessel formation. 08:00AM

X49: *Evolutionary Dynamics of Genomes II.* Room: 511A

X49.1 Bai, Lu: Identification and functional study of nucleosome-depleting factors. 08:00AM

X51: *Cell wall organization, growth and mechanics.* Room: 511C

X51.1 Lindeboom, Jelmer: The role of microtubule organization in directional plant cell growth. 08:00AM

X51.5 Rojas, Enrique: For Whom the Cell Tolls: Regulation of Bacterial Growth and Division by Turgor Pressure. 09:12AM

X54: *Active Mechanics of Networks and Gels I.* Room: 514

X54.1 Mao, Xiaoming: Topological modes in disordered fiber networks under active driving. 08:00AM

X56: *Polymers for Energy Applications II.* Room: 515B

X56.7 Frischknecht, Amalie: Structure and Dynamics in Ion-Conducting Polymers from MD Simulations. 09:12AM

X57: *Physics of Bioinspired Soft Materials I.* Room: 518

X57.1 Hu, David: The amazing elephant trunk. 08:00AM

X58: Lessons from Biological Soft Materials and Their Applications. Room: PH C

X58.1 Korley, LaShanda: Hierarchy and architecture—tailoring physical associations toward functional networks and gels. 08:00AM

X58.2 Arzt, Eduard: Bioinspired micropatterned adhesives from micromechanics to robotic function. 08:36AM

X58.3 Lee, Seung-Wuk: Biomimetic Self-Templating Materials and Applications. 09:12AM

X58.4 Omenetto, Fiorenzo: Dynamic optical materials—Painting opals with water and light. 09:48AM

X58.5 Jung, Sunghwan: Diving birds and wettability-tunable leaves. 10:24AM

Y04: Vortex Matter in Superconducting Materials and Devices: Structure, Organization, and Dynamics. Room: 151

Y04.1 Anahory, Yonathan: Imaging super-fast vortex dynamics and mapping pinning potential of individual vortices. 11:15AM

Y04.2 Roditchev, Dimitri: STM spectroscopy of vortices in atomic monolayers of lead on Si(111). 11:51AM

Y04.3 Willa, Roland: Strong-pinning regimes by spherical inclusions in anisotropic type-II superconductors. 12:27PM

Y04.4 Pasquini, Gabriela: Dynamic reorganization and thermal history effects in vortex matter. 01:03PM

Y04.5 Gurevich, Alexander: Nonlinear surface resistance and reduction of dissipation in superconductors in the Meissner state under strong RF fields. 01:39PM

Y05: Novel optical responses in topological semimetals and other materials. Room: 152

Y05.1 Orenstein, Joseph: Giant nonlinear optical response in transition metal monopnictide Weyl semimetals. 11:15AM

Y05.2 Souza, Ivo: Optical gyrotropy as a probe of the Berry curvature and intrinsic orbital moment on the Fermi surface. 11:51AM

Y05.3 Pesin, Dmytro: Theory of nonlocal transport in metals with nontrivial band geometry. 12:27PM

Y05.4 Morimoto, Takahiro: Topological aspects of nonlinear optical effects. 01:03PM

Y05.5 Mihailovic, Dragan: Unexpected emergent states of matter created out of equilibrium in tantalum disulphide. 01:39PM

Y10: ***4d/5d materials II.*** Room: 301B

Y10.1 Batista, Cristian: Comprehensive Study of the Dynamics of a Classical Kitaev Spin Liquid. 11:15AM

Y10.9 Takayama, Tomohiro: Exotic honeycomb magnets with strong spin-orbit coupling. 01:15PM

Y12: ***Computational Materials Design—Solar Cells and Solid State Lighting Materials.*** Room: 303B

Y12.3 Zunger, Alex: Discovery of Halide Perovskites and superlattices as a Design Problem. 11:39AM

Y22: ***Switching, Torques and Spin Transport in Insulators.*** Room: 402A

Y22.1 Avci, Can Onur: Switching, Torques, and Spin Transport in Magnetic Insulators with Perpendicular Anisotropy. 11:15AM

Y24: ***Artificial Frustrated Spin Systems.*** Room: 403A

Y24.3 Gliga, Sebastian: Emergent dynamic chirality in a thermally driven artificial spin ratchet. 11:39AM

Y25: Novel Ordering and Collective Modes in URu_2Si_2. Room: 403B

Y25.1 Maple, M Brian: Novel Electronic Phases and Competing Interactions in the Correlated f-Electron Compound URu_2Si_2. 11:15AM

Y25.2 Kung, Hsiang-Hsi: Hidden Orders: The Chirality Density Wave and Orbital Antiferromagnetism in URu_2Si_2. 11:51AM

Y25.3 Van Der Marel, Dirk: Electronic structure and collective modes of URu_2Si_2 as revealed by optical probes. 12:27PM

Y25.4 Williams, Travis: Hidden order signatures in the antiferromagnetic phases of URu_2Si_2 under chemical and hydrostatic pressure. 01:03PM

Y25.5 Haule, Kristjan: Chiral density wave with local hexadecapole order parameter as the hidden order in URu_2Si_2. 01:39PM

Y29: ***Multiscale simulation of complex fluid flows.*** Room: 406A

Y29.1 Moin, Parviz: Numerical Simulation of Turbulent Flows. 11:15AM

Y29.5 Karniadakis, George: TBD. 12:27PM

Y32: Condensed Matter Experiments on the ISS. Room: 408A

Y32.1 MacLennan, Joseph: Smectic Liquid Crystal Bubbles in Microgravity: Fluid Physics in Two Dimensions. 11:15AM

Y32.2 Furst, Eric: Overcoming Kinetic Bottlenecks of Colloidal Self-Assembly. 11:51AM

Y32.3 Weitz, David: Colloid Physics Experiments on the ISS. 12:27PM

Y32.4 Goree, John: Dusty Plasma Research under Microgravity Conditions on the ISS. 01:03PM

Y32.5 Thompson, Robert: Coolest Spot in the Universe: Facility for Ultracold Atom Experiments Aboard the ISS. 01:39PM

Y34: *Precision Many Body Physics VI.* Room: 409A

Y34.1 Zgid, Dominika: Self-energy embedding theory (SEET). 11:15AM

Y36: *van der Waals effects in low dimensional systems.* Room: 410

Y36.4 Dobson, John: van der Waals interactions in low-dimensional nanostructures (2D, 1D, 0D) and layered solids. 11:51AM

Y37: *Devices from 2D Materials VIII—Energy Applications.* Room: 411

Y37.1 Banerjee, Kaustav: 2D Materials for Smart Life. 11:15AM

Y38: *Materials in Extremes: Warm Dense Matter.* Room: 501A

Y38.1 Barnes, Cris: MaRIE: Matter-Radiation Interactions in Extremes Capability and Fulfilling the Requirements of Future Multi-Scale Materials Modeling. 11:15AM

Y41: Characterizing Large-Scale Quantum Systems. Room: 502A

Y41.1 Sheldon, Sarah: How do we verify and validate a quantum computer? 11:15AM

Y41.2 da Silva, Marcus: Characterization of Pauli Error Models. 11:51AM

Y41.3 Flammia, Steven: Comparing experiments to the fault tolerance threshold. 12:27PM

Y41.4 Emerson, Joseph: Cycle Benchmarking for Scalable Verification of Quantum Circuit Performance. 01:03PM

Y41.5 Monz, Thomas: Characterizing multi-qubit gates on an ion traps quantum computer. 01:39PM

Y42: Spatio-temporal dynamics of complex networks: From mean field to large deviations. Room: 502B

Y42.1 Assaf, Michael: Noise-Induced Rare Events in Population Dynamics: The Effect of Spatial Heterogeneity. 11:15AM

Y42.2 Hellmann, Frank: Probabilistic stability measures and the dynamics of power grids. 11:51AM

Y42.3 Danziger, Michael: Spatio-temporal propagation of cascading failures in complex networks. 12:27PM

Y42.4 Hindes, Jason: Making rare events happen: prediction and control of network extinction, switching, and other extreme processes. 01:03PM

Y42.5 Redner, Sidney: Densification, Emergent Modularity, and Related Mysteries of Complex Networks. 01:39PM

Y49: *Evolutionary Systems Biology II.* Room: 511A

Y49.1 Huang, Sui: Bifurcations and critical transitions in cell population dynamics: Why it is so hard to control cancer? 11:15AM

Y49.5 Francois, Paul: Untangling the biological hairball: Network evolution and fitness based reduction. 12:27PM

Y51: *Fluids, Proteins, Microbes.* Room: 511C

Y51.1 Leheny, Robert: Particle-Tracking Studies of Protein Layer Formation at Fluid Interfaces. 11:15AM

Y51.5 Cieplak, Marek: Structural Changes in Proteins at Air-Water Interfaces. 12:27PM

March Meeting Invited Talks.

Focus Sessions in italics, **Invited Sessions** in bold.