8:00AM MONDAY

A01 (1) *Advances in Scanned Probe Microscopy I.* 150A
A02 (2) *Developments of DFT from Quantum to Statistical Mechanics (I).* 150B
A03 (3) *Supported Nano-Clusters I: Tuning Reactivity Through Cluster-Support Support Interactions.* 150C
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A05 (5) **Solids in Strong Laser Fields.** 152
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A10 (1) *Dirac/Weyl Semimetals—Disorder and Novel Phenomena.* 301B
A11 (1) *Organometal Halide Perovskites I.* 303A
A12 (1) *Nanostructures and Metamaterials 1.* 303B
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A24 (1) *2D Frustrated Spin Systems: Shastry Sutherland and Bipartite Lattices.* 403A
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A27 (1) *Optomechanics I.* 404B
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A30 (0) Lattice Models of High-T_c Superconductors. 406B
A31 (0) Superconductivity: Vortex Phases and Dynamics. 407
A32 (5) **Machine Learning in Classical and Quantum Many-body Physics.** 408A
A33 (2) *Scaling Superconducting Circuits.* 408B
A34 (1) *Petascale Science and Beyond: Applications and Opportunities for Materials, Chemical, and Bio Physics I.* 409A
A35 (2) *2D Materials—Spins and Valleys.* 409B
A36 (1) *2D Materials—Strain and Mechanical Properties.* 410
A37 (1) *2D Materials—TMDCs I.* 411
A38 (1) *Advances in Computational Statistical Mechanics and their Applications: Part 1.* 501A
A39 (1) *Superconducting Circuits: Measurement I.* 501B
A40 (0) Graphene Properties. 501C
A41 (5) **Anomalous Low-Energy Bulk Excitations in Kondo Insulator SmB_6.** 502A
A42 (5) **Physics of Biofilms.** 502B
A43 (1) *Polymer Crystallization from Classical to Functional Systems I.* 503
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A52 (2) *Mechano-Responsive Polymers and Soft Materials.* 512
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A56 (2) *Symposium Honoring William W. Graessley I.* 515B
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A59 (5) **Bridging New Polymer Chemistry and Polymer Physics.** PH D

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B10 (1) *Magnetotransport and Quantum Oscillations in Topological Semimetals.* 301B
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B18 (0) Graphene and van der Waals Materials I. 306B
B19 (2) *Magnetic Nanoparticles and Biomedical Applications.* 308A
B20 (1) *Energy Storage: Electrolytes and Interfaces.* 308B
B21 (1) *Electrons, Phonons, Electron Phonon Scattering and Phononics I.* 309
B22 (0) *Chiral Magnetism in Single Crystals and Bulk Materials.* 402A
B23 (1) *Controlling Magnetism in Oxide Heterostructures I.* 402B
B24 (1) *Spin Frustration: Kitaev Systems.* 403A
B25 (5) **Ultrafast Laser Techniques for Molecular Photochemistry and Photophysics.** 403B
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B27 (0) Optomechanics II. 404B
B28 (2) *Quantum Thermodynamics—from Quantum Information Theory to Statistical Mechanics.* 405
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B32 (5) **Computational Modeling of Electronic Materials for Energy Applications.** 408A
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B36 (2) *2D Materials—Heterostructures I.* 410
B37 (1) *2D Materials—TMDCs II.* 411
B38 (1) *Advances in Computational Statistical Mechanics and their Applications: Part 2.* 501A
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B40 (0) Graphene Quantum Hall Effect. 501C
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B42 (5) **Biomaterials 2: Structure, function, design.** 502B
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B46 (0) Turbulence, Instabilities, Pattern Formation and Nonlinear Dynamics. 506
B47 (2) *Physics of Multicellular Information Processing.* 507
B48 (0) Extreme Mechanical Instabilities, Defects, and Large Deformations I. 510
B49 (1) *Biophysics of Cellular Organization and Dynamics Across Multiple Spatial Scales—I.* 511A
B50 (1) *Robophysics: Robotics Meets Physics.* 511B
B51 (1) *Physical Force Regulation of Cells and Tissue—II.* 511C
B52 (1) *Polymer Crystallization from Classical to Functional Systems II.* 512
B53 (0) Mechanics of Networks II. 513
B54 (1) *Soft Interface Mechanics II.* 514
B55 (1) *Confined Polymer Glasses II: Mobility Gradients.* 515A
B56 (1) *Symposium Honoring William W. Graessley II.* 515B
B57 (1) *Physics of Granular Media.* 518
B58 (5) **Stick, Slip, and Interfacial Dynamics in Soft Systems.** PH C
B59 (5) **Polymer Physics from Academia to Industry and Back.** PH D

2:30PM MONDAY

C01 (0) Applications: Semiconductors. 150A
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C03 (2) *Self-assembly of Nanomaterials: Hierarchical assembly of nanoparticles.* 150C
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C05 (4) **Patents, Innovations, and Wars!** 152
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C09 (1) *Dielectric and Ferroic Oxides—Elastic Phenomena.* 301A
C10 (1) *Topological Nodal Line and Point Semimetals.* 301B
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C14 (1) *Fe-based Superconductors—Quantum Criticality and Quantum Phase Transitions.* 304B
C15 (2) *Exciton and Photo-induced Charge Dynamics.* 304C
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C18 (0) Graphene and van der Waals Materials II. 306B
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C20 (1) *Energy Storage: Towards High Capacity Electrodes.* 308B
C21 (1) *Thermoelectrics II.* 309
C22 (1) *Antiferromagnetic and Topological Spintronics.* 402A
C23 (2) *Controlling Magnetism in Oxide Heterostructures II.* 402B
C24 (1) *3D Frustrated Spin Systems: Pyrochlores and Spinels.* 403A
C25 (0) Outreach Workshop and Discussion. 403B
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C27 (0) Optomechanics III. 404B
C28 (1) *Silicon Spin Qubits.* 405
C29 (1) *First-principles Modeling of Excited-State Phenomena in Materials III: Phonons, Spins, Dynamics.* 406A
C30 (0) Superconductivity: Less Common Materials. 406B
C31 (0) Superconductivity in Chalcogenides and Related Compounds. 407
C32 (4) **DMP Prize Session.** 408A
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C36 (2) *2D Materials—Heterostructures II.* 410
C37 (1) *2D Materials—Optics and Excitons I.* 411
C38 (1) *Advances in Computational Statistical Mechanics and their Applications: Part 3.* 501A
C39 (2) *Scaling up Quantum Computers.* 501B
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C41 (5) **Magnetism, Unconventional Superconductivity and Pressure Effects in $CaKFe_4As_4$.** 502A
C42 (5) **Emergent Dynamics in Neural Systems.** 502B
C43 (5) **Jonathan F. Reichert and Barbara Wolff-Reichert Award for Excellence in Advanced Laboratory Instruction.** 503
C44 (0) Topological Protection in Correlated Electron Systems 1. 504
C45 (0) Metal Insulator Transitions: VO_2, Vanadates, and Nickelates. 505
C46 (1) *Advanced Morphological Characterization of Polymeric Materials I: Soft and Hard X-ray, and Neutron Scattering.* 506
C47 (0) Disordered and Glassy Systems. 507
C48 (1) *Extreme Mechanical Instabilities, Defects, and Large Deformations II.* 510
C49 (2) *Biomaterials 3: Structure, Function, Design.* 511A
C50 (0) Robophysics II. 511B
C51 (2) *Coherence and Quantum Aspects of Living Systems I.* 511C
C52 (1) *Physics of 3D Printing and Additive Manufacturing.* 512
C53 (0) Mechanics of Networks III. 513
C54 (0) Jamming, Fracture, and Deformation. 514
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C56 (1) *Organic Electronics and Photonics I: Charge Transport.* 515B
C57 (1) *Soft Interface Mechanics III.* 518
C58 (5) **Large Deviations and the Butterfly Effect.** PH C
C59 (4) **Gels and Networks.** PH D

8:00AM TUESDAY

E01 (1) *Advances in Scanned Probe Microscopy II.* 150A
E02 (2) *Developments of DFT from Quantum to Statistical Mechanics (III).* 150B
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E09 (0) Multiferroic Oxides. 301A
E10 (1) *Dirac/Weyl Semimetals—Thin Films, Surfaces and Interfaces.* 301B
E11 (1) *Dopants and Defects in Semiconductors—Experimental techniques.* 303A
E12 (1) *Nanostructures and Metamaterials 4.* 303B
E13 (1) *Non-centro Symmetric Materials Based Topological Superconductivity.* 304A
E14 (1) *Fe-based Superconductors—Electron Correlation and Orbital Selectivity.* 304B
E15 (1) *Coupled Electron and Phonon Dynamics at the Nanoscale.* 304C
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E17 (0) Solid-Liquid Interfaces. 306A
E18 (0) Quantum Wires and 1-Dimensional Nanostructures: Fabrication and Characterization. 306B
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E20 (1) *Energy Storage: Mn-based Cathodes.* 308B
E21 (1) *Current-induced Spins, Spin-orbit Torques and Magnetoresistance in Topological Insulators.* 309
E22 (0) *Chiral Magnetism in Thin Films.* 402A
E23 (0) *Bulk Iridates.* 402B
E24 (1) *3D Frustrated Spin Systems: Ising Pyrochlores and Spin Ice.* 403A
E25 (4) **The Author in Dialogue: A. Douglas Stone's Einstein and the Quantum.** 403B
E26 (0) Bose-Einstein Condensates and Nonlinear Waves. 404A
E27 (1) *Topological Physics in AMO Systems I.* 404B
E28 (2) *Experiment and Theory of Quantum Input-output Networks.* 405
E29 (1) *First-principles Modeling of Excited-State Phenomena in Materials IV: Nanoscale Systems.* 406A
E30 (0) Superconductivity: Disorder, Impurities, and Shape Effects. 406B
E31 (0) Josephson Effects. 407
E32 (5) **Innovative Ideas for Engaging the Public.** 408A
E33 (2) *Applications with Near-Term Superconducting Quantum Devices.* 408B
E34 (1) *Machine Learning in Condensed Matter Physics I.* 409A
E35 (0) Phase Transitions in 2D Materials. 409B
E36 (1) *2D Materials—Heterostructures III.* 410
E37 (1) *2D Materials—Optics and Excitons II.* 411
E38 (0) Quantum Many-Body Systems and Methods. 501A
E39 (2) *Microwave Photonics with Superconducting Circuits I.* 501B
E40 (0) Properties of Bilayer Graphene. 501C
E41 (5) **Atomic Origami, Kirigami and Crumpling.** 502A
E42 (5) **Chemotaxis Meets Physiology.** 502B
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E45 (0) Mott Insulators. 505
E46 (0) Multiphase Flows. 506
E47 (0) Statistical Mechanics of Social Systems. 507
E48 (1) *Mechanical Metamaterials I.* 510
E49 (1) *Evolutionary and Ecological Dynamics—I.* 511A
E50 (1) *Morphogenesis I.* 511B
E51 (2) *Physics of Intracellular Transport.* 511C
E52 (0) Thermodynamics and Physics of Polymer Films. 512
E53 (0) Fluid Mechanics for Soft Matter I: Flows. 513
E54 (1) *Thermocapillary and Solvocapillary Methods for the Manipulation of Soft Matter.* 514
E55 (1) *Smart Responsive Polymers I.* 515A
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E58 (5) **Quantum Foundations.** PH C
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F01 (0) Applications: Electromagnetic Radiation, Detectors and Antennae. 150A
F02 (0) Public Outreach and Physics History: Exploring physics topics beyond the lab. 150B
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F05 (5) **Field Induced Phenomena in Alpha-$RuCl_3$.** 152
F06 (0) Semicrystalline Polymers and Polymer Blends. 153A
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F09 (1) *Dielectric and Ferroic Oxides—New Materials.* 301A
F10 (1) *Three Dimensional Dirac and Weyl Materials.* 301B
F11 (1) *Dopants and Defects in Semiconductors—Theory.* 303A
F12 (1) *Nanostructures and Metamaterials 5.* 303B
F13 (1) *High T_c superconductor based topological superconductivity.* 304A
F14 (1) *Fe-based Superconductors—Nematic order and fluctuations.* 304B
F15 (1) *Phonon dynamics and thermal conductivity at the nanoscale.* 304C
F16 (5) **Energy Flows in The Climate System.** 305
F17 (1) *Organic Interfaces and Adsorption Phenomena.* 306A
F18 (0) Quantum Wires and 1-Dimensional Nanostructures: Transport and Electronic Properties. 306B
F19 (2) *Magnetic Clusters and Molecular Magnets II.* 308A
F20 (0) Topics in Physics Education I. 308B
F21 (1) *First Principles Design of Magnetic Oxides.* 309
F22 (1) *Spin Transport, Spin Logic and Spin Memories.* 402A
F23 (1) *Magnetism and Magnetic Coupling at Oxide Interfaces.* 402B
F24 (1) *Kitaev and Other Spin Orbit Coupled Systems.* 403A
F25 (5) **Spin Current in Antiferromagnets.** 403B
F26 (0) AMO Quantum Information. 404A
F27 (0) Nanophotonics. 404B
F28 (1) *Architectures for Semiconducting Quantum Computing.* 405
F29 (1) *First-principles Modeling of Excited-State Phenomena in Materials V: Density Functional Theory for Excited States.* 406A
F30 (0) Copper Oxide Superconductors: ARPES and Tunneling. 406B
F31 (0) Novel Superconductors. 407
F32 (5) **FIAP-FPS invited session: Advancing Innovation for Industry and Society.** 408A
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F34 (1) *Machine Learning in Condensed Matter Physics II.* 409A
F35 (0) Adatoms, Dopants, and Defects in 2D Materials. 409B
F36 (0) 2D Materials—van der Waals Heterostructures I. 410
F37 (1) *2D Materials—Optics and Excitons III.* 411
F38 (1) *Materials in Extremes: Phase Transitions I.* 501A
F39 (2) *Microwave Photonics with Superconducting Circuits II.* 501B
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F41 (2) *Division of Chemical Physics Prize Session.* 502A
F42 (5) **Synthetic Physics: Synthetic Dimensions, Gauge Fields, and Spin-Orbit Coupling.** 502B
F43 (1) *Advancing Polymer Physics by Integrating Simulation and Theory I: Dynamics and Coarse-Graining.* 503
F44 (0) URu_2Si_2 and Related Actinides/Lanthanides. 504
F45 (0) Normal State Properties of Superconductors. 505
F46 (0) General Fluid Dynamics. 506
F47 (0) Nonlinear Dynamics and Hamiltonian Systems. 507
F48 (0) Mechanical Metamaterials II. 510
F49 (1) *Biomaterials 4: Structure, Function, Design.* 511A
F50 (1) *Morphogenesis II.* 511B
F51 (1) *Self Organization in the Cytoskeleton I.* 511C
F52 (1) *Architectural Design of Polymers I: Assembly, Adsorption and Dynamics.* 512
F53 (0) Fluid Mechanics for Soft Matter II: Soft Interfaces. 513
F54 (1) *Machine Learning in Nonlinear Physics and Mechanics.* 514
F55 (0) Padden Award Symposium. 515A
F56 (2) *Organic Electronics and Photonics II: Applications.* 515B
F57 (1) *Origami and Kirigami Metamaterials.* 518
F58 (5) **Implications of Single-cell Variability: From Cells to Populations.** PH C
F59 (5) **Recent Advances in Single Polymer Dynamics.** PH D

2:30PM TUESDAY

H01 (0) Biosensing Techniques with Advanced Materials. 150A
H02 (3) *Self-assembly of Nanomaterials: Porous Materials.* 150B
H03 (2) *Supported Nano-Clusters IV: Cluster Catalysis and Electrocatalysis.* 150C
H04 (5) **Non-equilibrium Dynamics in Topological Phases of Matter.** 151
H05 (5) **The Legacy of Millie Dresselhaus: Women, Carbon, and Society.** 152
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H07 (0) Interferometry, Tunneling, and Edge Physics. 153B
H08 (0) Electronic Structure: Topological Insulators and beyond. 153C
H09 (1) *Dielectric and Ferroic Oxides—Opto-Electric Responses.* 301A
H10 (1) *Dirac/Weyl Semimetals—Transport and Anomalies.* 301B
H11 (1) *Dopants and Defects in Semiconductors—2D, Nano, and Novel Materials.* 303A
H12 (1) *Computational Materials Design—Carbon-Related Materials.* 303B
H13 (1) *New Theoretical Proposals for Topological Superconductivity.* 304A
H14 (1) *Fe-based Superconductors—Topological Superconductivity and New Frontiers.* 304B
H15 (0) Phonon Dynamics in Nanomaterials. 304C
H16 (5) **Physics Teaching in Gateway Classes: Global Perspective.** 305
H17 (0) Surface and Interface Studies of Transition Metal Chalcogenides. 306A
H18 (0) Plasmons and Polaritons in Superlattices, Nanaostructures, and other Artificially Structured Materials. 306B
H19 (1) *Spin Chains: Theory.* 308A
H20 (0) Topics in Physics Education II. 308B
H21 (0) *Magnetic Phenomena in Bulk Oxides I.* 309
H22 (1) *Spin Transport and Magnons in Magnetic Insulators.* 402A
H23 (0) *Excitations in Magnetic Oxides (Bulk).* 402B
H24 (0) *2D Frustrated Spin Systems: Kagome and Honeycomb.* 403A
H25 (5) **Topological Materials for Conversion between Charge and Spin Currents.** 403B
H26 (0) Few-Body, Molecular, and Long-Range Interacting Systems. 404A
H27 (0) Topological Physics in AMO Systems II. 404B
H28 (1) *Charge Noise Mitigation in Quantum Dot Qubits.* 405
H29 (1) *First-principles Modeling of Excited-State Phenomena in Materials VI: Solids and Layered Materials.* 406A
H30 (0) Superconductivity Theory: Intertwined Orders. 406B
H31 (0) Superconductivity in Layered Chalcogenides. 407
H32 (5) **FIAP-GMED Invited Session: Physics Impact on Medicine.** 408A
H33 (2) *Quantum Simulation with Superconducting Circuits.* 408B
H34 (1) *Precision Many Body Physics I.* 409A
H35 (1) *2D Materials—Passivation, Oxidation, and Functionalization.* 409B
H36 (0) 2D Materials—van der Waals Heterostructures II. 410
H37 (1) *2D Materials—Optics and Excitons IV.* 411
H38 (1) *Materials in Extremes: Phase Transitions II.* 501A
H39 (2) *New Frontiers in Quantum Algorithms.* 501B
H40 (0) Properties of Carbon Nanotubes. 501C
H41 (5) **Electronic Nematicity in Superconductors.** 502A
H42 (5) **Physical Approaches to Collective Cell Motility.** 502B
H43 (0) Advancing Polymer Physics by Integrating Simulation and Theory II. 503
H44 (0) Topological Insulators Including SmB_6. 504
H45 (0) Charge Order. 505
H46 (2) *Multi-Scale Flows and Pathways in the Climate System.* 506
H47 (1) *Morphable Structures.* 507
H48 (1) *Thermal versus Athermal Plasticity.* 510
H49 (2) *Evolutionary and Ecological Dynamics—II.* 511A
H50 (1) *Physics of Proteins II: Experimental and Computational Studies on the Structure and Conformational Dynamics of Proteins.* 511B
H51 (2) *Emergent Self-organization in Active Matter I.* 511C
H52 (0) Polyelectrolyte Complexation III: Biology and Applications. 512
H53 (1) *Fluid Mechanics for Soft Matter III: Cells, Particles, and Drops.* 513
H54 (0) Aspherical Particles in Soft Matter Self-Assembly and Granular Matter II. 514
H55 (1) *Polymer Physics in Very Strongly Confined Environments I : Knots and Nanopores.* 515A
H56 (1) *Advanced Morphological Characterization of Polymeric Materials II: Emerging Microscopy and Spectroscopy Techniques.* 515B
H57 (1) *Soft Matter in Industrial Applications.* 518
H58 (5) **First-Principles Modeling of Electron Transport in Materials.** PH C
H59 (1) *Dillon Medal Symposium.* PH D

8:00AM WEDNESDAY

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K02 (0) General Theory, Computational Physics. 150B
K03 (0) Confined Polymer Glasses III: Influence of Interfaces on Material Properties. 150C
K04 (5) **Tenth Anniversary of Iron-based High-temperature Superconductivity: Progresses and Opportunities.** 151
K05 (5) **Optically Driven Correlated Electron Systems: Theory.** 152
K06 (0) Stochasticity in Biology. 153A
K07 (0) Optical Systems with Advanced Materials and Techniques. 153B
K08 (0) Topological Insulators: Transport and Optical properties. 153C
K09 (1) *Ordering in Ferroic Oxides II.* 301A
K10 (1) *Dirac/Weyl Semimetals—Magnetism.* 301B
K11 (1) *Dopants and Defects in Semiconductors—Nitrides.* 303A
K12 (1) *Computational Materials Design—Batteries, Solid-State Ionics, and Catalysis.* 303B
K13 (1) *Sr_2RuO_4 and Chiral Topological Superconductivity.* 304A
K14 (1) *Fe-based Superconductors—ARPES and STM.* 304B
K15 (3) *Post-Moore Computing.* 304C
K17 (0) Kinetics & Dynamics in Surfaces, Interfaces, and Thin Films. 306A
K18 (0) Electronic and Thermal Transport Phenomena in Superlattices, Nanostructures, and other Artificially Structured Materials. 306B
K19 (2) *Optical, Thermal and Mechanical Coupling to Spin Currents.* 308A
K20 (1) *Solar Energy Conversion: Perovskite Materials.* 308B
K21 (1) *Magnetic Semiconductors: Materials and Properties.* 309
K22 (1) *Control and Detection of Skyrmions: from Fundamentals to Applications.* 402A
K23 (2) *Spin Orbit Physics in Iridates and Other Bulk Oxides.* 402B
K24 (1) *Spin Liquids Theory and Application to Materials.* 403A
K25 (5) **Journal of Chemical Physics Editors' Choice.** 403B
K26 (1) *Open Quantum Systems I.* 404A
K27 (0) Topological Physics in AMO Systems III. 404B
K28 (2) *Control and Calibration of Semiconducting Qubits.* 405
K29 (1) *First-principles Modeling of Excited-State Phenomena in Materials VII: Organic and Hybrid Materials.* 406A
K30 (0) Magnetic Field Effects in Superconductors. 406B
K31 (0) Josephson Junctions. 407
K32 (5) **Data Science as the Driving Force for Industrial Physics.** 408A
K33 (2) *Superconducting Gates.* 408B
K34 (1) *Precision Many Body Physics II.* 409A
K35 (1) *2D Materials—Superconductivity and Charge Density Waves I.* 409B
K36 (1) *2D Materials—Role of Defects.* 410
K37 (1) *Devices from 2D Materials I—Electronics.* 411
K38 (2) *Materials in Extremes: Dynamic Compression.* 501A
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K47 (0) Spatio-Temporal Pattern Formation. 507
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K50 (1) *Physics of Proteins III: Experimental and Computational Studies on the Structure and Conformational Dynamics of Proteins.* 511B
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K58 (5) **Delbruck Award Symposium.** PH C
K59 (5) **Designing Biomacromolecules for Materials Assembly.** PH D
K61 (4) **Diversity and Inclusion in Graduate Education.** WH B

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L01 (0) Materials Synthesis. 150A
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L03 (3) *Strong Light-matter Coupling and Enhanced Spectroscopy: Strong Coupling I.* 150C
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L12 (0) Computational Materials Design—New Magnetic, Topological, and High-T_c Superconductor Materials. 303B
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L20 (0) Solar/Energy Conversion: Theory and Devices. 308B
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L29 (1) *Thermoelectrics III.* 406A
L30 (0) Copper Oxide Superconductors: Spectroscopy. 406B
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L32 (5) **Physics That Changed the World.** 408A
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L34 (1) *Precision Many Body Physics III.* 409A
L35 (1) *2D Materials—Superconductivity and Charge Density Waves II.* 409B
L36 (2) *2D Materials—Topological States.* 410
L37 (1) *Devices from 2D Materials II—Electronics.* 411
L38 (2) *Materials in Extremes: Strength and Plasticity.* 501A
L39 (1) *Characterizing and Controlling Superconducting Circuits II.* 501B
L40 (0) Substrate Effects on Monolayers. 501C
L41 (4) **Ultrafast Control of Correlated Materials by Terahertz Light.** 502A
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L52 (0) Liquids, Bio, and Interfacial Science. 512
L55 (3) *Quantum Dot/ Microwave Photon Entanglement.* 515A
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P03 (2) *Self-assembly of Nanomaterials: Supramolecular Self-assembly II.* 150C
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P13 (1) *Topological Insulator based Topological Superconductivity.* 304A
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P15 (0) Semiconductors: Beyond CMOS Materials & Ballistic Transport. 304C
P17 (1) *Organic Interfaces from Single Molecules to Thin Films.* 306A
P18 (0) Electronic Structure Methods and Quantum Many-body Systems. 306B
P19 (1) *Magnetic Nanoparticles: Curved Geometries and Anisotropy.* 308A
P20 (1) *Recent Advances in Solar Photovoltaics.* 308B
P21 (1) *New Materials and Devices for Spin Logic.* 309
P22 (0) *Novel Chiral Spin Textures and Materials.* 402A
P23 (0) *Magnetic Phenomena in Bulk Oxides: Theory.* 402B
P24 (1) *3D Frustrated Spin Systems: Pyrochlores and Novel Geometries.* 403A
P26 (0) Quantum Gases in Optical Lattices. 404A
P27 (1) *Non-Equilibrium Physics in AMO Systems I: Quenches and Thermalization.* 404B
P28 (1) *Spin Qubit Readout.* 405
P29 (1) *Electrons, Phonons, Electron Phonon Scattering and Phononics II.* 406A
P30 (0) Superconductivity Theory: Pairing Interactions. 406B
P31 (0) Superconducting/Magnetic Structures. 407
P32 (5) **Put Big Data in Your Physics Toolbox; APS-AIP Industrial Physics Forum.** 408A
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P36 (0) Synthesis and Properties of 2D Materials Beyond Graphene and TMD. 410
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P50 (1) *Single Molecule Dynamics Inside and Outside of Cells.* 511B
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P55 (1) *Block Copolymer Thin Films Integrated with New Material Platforms I: Surface, Interfaces and Lithography.* 515A
P56 (1) *Organic Electronics and Photonics IV: Structure & Morphology.* 515B
P57 (1) *Physics of Liquids II.* 518
P58 (5) **Self Organization in the Cytoskeleton.** PH C
P59 (0) Careers in Physics Workshop. PH D
P61 (5) Kavli Foundation Special Symposium: Frontiers of Physics. WH B

8:00AM THURSDAY

R01 (0) Advances in Scanned Probe Microscopy IV. 150A
R02 (2) *Developments of DFT from Quantum to Statistical Mechanics (V).* 150B
R03 (3) *Challenges for Excited States and Dynamics I.* 150C
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R07 (0) Computational Approaches to Phonons in Semiconductors. 153B
R08 (0) Superconductors, Correlated Materials, Spectroscopic Observations. 153C
R09 (1) *Electronic Structure, Topological Effects and Magnetotransport in Complex Oxide Systems.* 301A
R10 (1) *Optics in Topological Semimetals.* 301B
R11 (1) *Dopants and Defects in Semiconductors—Quantum Information.* 303A
R12 (1) *Computational Materials Design—Machine Learning.* 303B
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R18 (0) Quantum Dots and Artificial Molecules: Electronic properties. 306B
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R20 (1) *Free Energy Mapping in Biology and Materials Science I.* 308B
R21 (2) *Spin Dynamics in Organic-Inorganic Hybrids and Semiconductor Nanostructures.* 309
R22 (0) *Topological Hall Effect and Transport Phenomena in Chiral Magnets.* 402A
R23 (1) *Magnetic Phenomena in Bulk Nickelates and Other Oxides.* 402B
R24 (1) *2D Frustrated Spin Systems: $YbMgGaO_4$ and Kagome.* 403A
R25 (5) **Many-body Dynamics in Low-dimensional Quantum Systems.** 403B
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R27 (0) Non-Equilibrium Physics in AMO Systems II: Floquet Physics and Time Crystals. 404B
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R30 (0) Sr_2RuO_4 and other Triplet Superconductors. 406B
R31 (0) Superconductivity: Non-equilibrium. 407
R32 (5) **Effective Practices for Student Career Preparedness and Departmental Programmatic Assessment.** 408A
R33 (1) *Superconducting Circuits: Design and Packaging.* 408B
R34 (1) *Machine Learning in Condensed Matter Physics IV.* 409A
R35 (0) 2D Materials—Superconductivity and Charge Density Waves III. 409B
R36 (1) *Synthesis and Properties of 2D Materials and Heterostructures.* 410
R37 (1) *Devices from 2D Materials IV—Optoelectronics.* 411
R38 (1) *Materials in Extremes: Energetic Materials.* 501A
R39 (1) *Superconducting Amplifiers.* 501B
R40 (1) *2D Materials—Electronic Structure and Transport.* 501C
R41 (5) **Liquid Crystalline Behavior at the Supramolecular Scale in Biopolymer and Colloidal Systems.** 502A
R42 (5) **Progress in Quantum Thermodynamics.** 502B
R43 (1) *Mechanisms of Ionic Conduction and Diffusion in Polymeric Ion Conductors I.* 503
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R45 (0) Reduced Dimensionality. 505
R46 (0) Drops and Bubbles II. 506
R47 (0) Coalescence, Fragmentation, Mixing and Anomalous Diffusion. 507
R48 (2) *Physics of Intracellular Membranes and Organelles.* 510
R49 (1) *Physics of Genome Organization: From DNA to Chromatin II.* 511A
R50 (1) *Physics of Development and Disease—I.* 511B
R51 (1) *Self Organization in the Cytoskeleton II.* 511C
R52 (1) *Smart Responsive Polymers II.* 512
R53 (0) Physics of Liquids III. 513
R54 (0) Colloids. 514
R55 (1) *Soft Materials Containing Synthetic Polymers, Peptides, Proteins, Biomachinery and Beyond I: Peptides and Assemblies.* 515A
R56 (1) *Polymer Nanocomposites II: Functional Applications.* 515B
R57 (0) Active Matter I. 518
R58 (5) **Controlling Space and Time in Biology: From Gene Regulation in a Single Cell to Pattern Formation in Cell Populations and Development.** PH C
R59 (5) **Athermal and Statistical Mechanics.** PH D

11:15AM THURSDAY

S01 (0) Surfaces and Nanoscience of Solids. 150A
S02 (1) *Developments of DFT: from Quantum to Statistical Mechanics (VI).* 150B
S03 (3) *Strong Light-matter Coupling and Enhanced Spectroscopy: Theory and Simulation.* 150C
S04 (5) **Dynamics of Chiral Spin Textures in Topological and Magnetic Materials.** 151
S05 (5) **Quantum Criticality and Novel Phases in Multipolar Systems.** 152
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S07 (0) Electronic and Thermodynamic Properties of Semiconductors. 153B
S08 (0) Transport, Optical, and Thermodynamic Phenomena. 153C
S09 (1) *Complex oxide heterostructures—Ferroelectrics.* 301A
S10 (1) *New Phenomena In Dirac and Other Topological Semimetals.* 301B
S11 (1) *Fe-based Superconductivity Under Extreme Conditions.* 303A
S12 (1) *Computational Materials Design—Novel Oxides and Chalcogenides.* 303B
S13 (1) *Majorana Bound States I.* 304A
S14 (1) *Topological Materials—Transport.* 304B
S15 (0) Quantum Networks and Open Systems. 304C
S17 (0) Oxide Surfaces, Films, Defects, and Chemistry. 306A
S18 (0) Quantum Dots and Nanocrystals: Structural and Optical Properties. 306B
S19 (0) *Magnetic Nanoparticles: Dynamics, Domains and Vortices.* 308A
S20 (1) *Free Energy Mapping in Biology and Materials Science II.* 308B
S21 (1) *Spin-Orbit Coupling and Spin Coherence in Semiconductor Heterostructures.* 309
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S23 (1) *Multiferroic and Magnetoelectric Oxides.* 402B
S24 (1) *Spin Frustration and Disorder.* 403A
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S28 (1) *Quantum Annealing: Algorithms & Applications.* 405
S29 (1) *Electrons, Phonons, Electron Phonon Scattering and Phononics IV.* 406A
S30 (0) Copper Oxide Superconductors: Charge and Spin Excitations. 406B
S31 (0) Superconductivity: Films and interfaces. 407
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S34 (1) *Precision Many Body Physics IV.* 409A
S35 (1) *2D Materials—Metals, Semiconductors, and Correlated Materials.* 409B
S36 (0) Synthesis and Properties of 2D Materials and Nanoribbons. 410
S37 (1) *Devices from 2D Materials V—Optoelectronics.* 411
S38 (0) Materials in Extremes: Synthesis of Novel Materials. 501A
S39 (0) Superconducting Circuits: Modeling. 501B
S40 (0) Monolayer Devices. 501C
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S45 (0) Magnetic Frustration and Quantum Spin Liquids. 505
S46 (0) Drops and Bubbles III. 506
S47 (0) Networks. 507
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S51 (1) *Emergent self-organization in Active Matter II.* 511C
S52 (0) Polymeric Elastomers and Gels. 512
S53 (0) Nonequilibrium Statistical Mechanics and Hydrodynamics of Active Matter III. 513
S54 (0) Colloids, Emulsions and Foams. 514
S55 (1) *Block Copolymer Thin Films Integrated with new Material Platforms II: Annealing, Architecture, and Multi-Layers.* 515A
S56 (1) *Polymer Nanocomposites III: Fundamentals.* 515B
S57 (1) *Self-assembly in Liquid Crystals and other Complex Solvents I.* 518
S58 (1) **Engaging Physicists in Science Policy.** PH C
S59 (5) **Super Resolution Microscopy and Lithography of Polymers.** PH D

2:30PM THURSDAY

V02 (3) *Strong Light-matter Coupling and Enhanced Spectroscopy: Enhanced Spectroscopy and Dynamics.* 150B
V03 (3) *Challenges for excited states and dynamics II.* 150C
V04 (5) **Dirac Electron Physics and Nanoscale Scanning Probes of Quantum Dynamics in Graphene: Atomic Defects, Topology and Geometry.** 151
V05 (5) **Pairing in the Most Dilute Superconductor.** 152
V06 (0) Physics of Neural Networks. 153A
V07 (2) *Van der Waals bonding in advanced materials—From van der Waals to Casimir.* 153B
V08 (0) Quantum and Relativistic Frontiers. 153C
V09 (1) *Complex Oxide Heterostructures—Multiferroic Effects and Metal-Insulator Transitions.* 301A
V10 (1) *Topological Semimetals Beyond Weyl And Dirac.* 301B
V11 (1) *Fe-based superconductors—Material synthesis and discovery.* 303A
V12 (0) Computational Materials Design—Prediction of Novel Phases. 303B
V13 (1) *Majorana Bound States II.* 304A
V14 (2) *Topological Materials—Spectroscopy.* 304B
V15 (0) Non-Equilibrium Quantum Thermodynamics. 304C
V17 (0) Semiconductor Surfaces and Nanostructures. 306A
V19 (1) *Magnetic Nanoparticles: Spin Waves and Strain.* 308A
V20 (1) *Energy Storage: Hydrogen Production and Storage.* 308B
V21 (1) *Spin-Photon Coupling in Semiconductor Quantum Dots.* 309
V22 (1) *Spin-Orbit Coupling and Antisymmetric Exchange at Metal Interfaces.* 402A
V23 (1) *Oxide Thin Film Magnetoelectrics.* 402B
V24 (2) *Low Dimensional Spin Systems, Nematicity.* 403A
V25 (5) **Spin-Orbit, Interface, and Domain Wall Physics in Magnetic Iridates.** 403B
V26 (2) *Quantum Resource Theories II.* 404A
V27 (0) Non-Equilibrium Physics in AMO Systems III. 404B
V28 (2) *Spin-Based Quantum Computing.* 405
V29 (1) *Electrons, Phonons, Electron Phonon Scattering and Phononics V.* 406A
V30 (0) Superconductivity: General Theory. 406B
V31 (0) Metals and Metal Physics I. 407
V32 (5) **Joseph F. Keithley and Industrial Physics Awards.** 408A
V33 (2) *Error Correction with Superconducting Qubits.* 408B
V34 (1) *Precision Many Body Physics V.* 409A
V35 (1) *2D Materials—Magnetism and Magnetotransport I.* 409B
V36 (1) *2D Materials—Semimetals and Orbital Order.* 410
V37 (1) *Devices from 2D Materials VI—Quantum Materials.* 411
V38 (1) *Materials in Extremes: Geophysics and Planetary Science.* 501A
V39 (1) *Quantum Foundations II.* 501B
V40 (0) 2D materials: properties and devices. 501C
V41 (5) **Spatiotemporal behavior of soft active materials.** 502A
V42 (5) **Open Quantum Systems.** 502B
V43 (0) Polymer Glasses. 503
V44 (0) Theory of Topological Protection and Related Issues in Correlated Electron Materials. 504
V45 (0) Beyond Fermi Liquids I. 505
V46 (1) *Physics in Medicine: Modeling, Imaging, and Treatment.* 506
V47 (2) *Dynamical Pattern Formation in Synchronization of Complex Networks.* 507
V48 (0) Jamming and Clogging. 510
V49 (2) *Evolutionary Systems Biology I.* 511A
V50 (1) *Physics of Development and Disease—II.* 511B
V51 (1) *Biophysics of Cellular Organization and Dynamics Across Multiple Spatial Scales—II.* 511C
V52 (0) Polymer Melts and Solutions. 512
V53 (0) Nonequilibrium Statistical Mechanics and Hydrodynamics of Active Matter IV. 513
V54 (0) Membranes, Micelles and Vesicles. 514
V55 (1) *Soft Materials Containing Synthetic Polymers, Peptides, Proteins, Biomachinery and Beyond II: Nucleic Acids and Solutions.* 515A
V56 (1) *Polymers for Energy Applications I.* 515B
V57 (0) Self-assembly in Liquid Crystals and other Complex Solvents II. 518
V58 (5) **Predicting Viral Evolution.** PH C
V59 (5) **Structure/Property Relationships in Polyolefins.** PH D

8:00AM FRIDAY

X02 (2) *Strong Light-matter Coupling and Enhanced Spectroscopy: Strong Coupling II.* 150B
X03 (4) *Challenges for excited states and dynamics III.* 150C
X04 (5) **Superconductivity in j=3/2 Semimetals.** 151
X05 (5) **Hydrodynamic electron flow in topological materials.** 152
X06 (0) Physics of Behavior. 153A
X09 (1) *Vacancies and Defects/Structure of Complex Oxide Heterostructures.* 301A
X10 (1) *4d/5d materials I.* 301B
X11 (1) *Fe-based superconductivity—Neutron scattering and magnetism.* 303A
X12 (0) *Computational Materials Design—Novel 2D Materials.* 303B
X13 (1) *Majorana Bound States III.* 304A
X14 (1) *Topological Materials—Heterostructures and spectroscopy.* 304B
X15 (0) Quantum Error Correction and Fault-Tolerance. 304C
X17 (0) Thin Film and Surface Applications. 306A
X19 (0) *Magnetic Nanoparticles and Films.* 308A
X20 (0) Alternative Energy and Biofuels. 308B
X21 (1) *NV Centers in Diamond.* 309
X22 (1) *Spin-Orbit Effects at Metal/Insulator Interfaces.* 402A
X23 (0) *Spin-orbit Coupling and Topological Phenomena in Oxide Heterostructures.* 402B
X24 (0) *Spin Frustrated Systems: Novel Theories.* 403A
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X26 (0) General AMO Physics. 404A
X27 (1) *Disorder and Localization in AMO Systems I.* 404B
X28 (1) *Quantum Annealing: Theory.* 405
X29 (1) *Electrons, Phonons, Electron Phonon Scattering and Phononics VI.* 406A
X30 (0) Superconducting Devices & Applications. 406B
X31 (0) Metals and Metal Physics II. 407
X32 (5) **Computational approaches for far-from-equilibrium quantum systems.** 408A
X33 (0) Superconducting Qubits: Coherence. 408B
X34 (0) Machine Learning in Condensed Matter Physics V. 409A
X35 (1) *2D Materials—Magnetism and Magnetotransport II.* 409B
X36 (1) *2D Materials—van der Waals Bonding, Thermal Properties and Friction.* 410
X37 (1) *Devices from 2D Materials VII—Scalable devices.* 411
X38 (1) *Materials in Extremes: Hydrogen and Superconductivity.* 501A
X39 (0) Superconducting circuits: Fabrication and materials I. 501B
X40 (0) 2D Materials—Dielectrics and Stacking. 501C
X41 (5) **New Insights into Quantum Criticality in Metallic Systems.** 502A
X42 (5) **Topology, Geometry, and Physics of Elastic Networks.** 502B
X43 (0) Polymer Nanocomposites IV. 503
X44 (0) Kondo and Anderson Lattice Physics. 504
X45 (0) Beyond Fermi Liquids II. 505
X47 (1) *Noise-Driven Dynamics in Far-From-Equilibrium Systems.* 507
X48 (0) General Statistical Physics. 510
X49 (1) *Evolutionary Dynamics of Genomes II.* 511A
X50 (0) Nanoscale Biophysics and Single Molecule Techniques. 511B
X51 (2) *Cell wall organization, growth and mechanics.* 511C
X52 (0) Physics of Copolymers and Blends. 512
X53 (0) Liquid Crystals and Self-Assembly. 513
X54 (1) *Active Mechanics of Networks and Gels I.* 514
X55 (0) Surface and Interface Effects on Fluid and Particle Dynamics. 515A
X56 (1) *Polymers for Energy Applications II.* 515B
X57 (1) *Physics of Bioinspired Soft Materials I.* 518
X58 (5) **Lessons from Biological Soft Materials and Their Applications.** PH C

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Y02 (0) Structure and Spectroscopy. 150B
Y03 (0) Theoretical methods and studies. 150C
Y04 (5) **Vortex Matter in Superconducting Materials and Devices: Structure, Organization, and Dynamics.** 151
Y05 (5) **Novel optical responses in topological semimetals and other materials.** 152
Y06 (0) Inference and Microbiological Physics. 153A
Y09 (0) Two-Dimensional Phases in Oxide Heterostructures. 301A
Y10 (2) *4d/5d materials II.* 301B
Y12 (1) *Computational Materials Design—Solar Cells and Solid State Lighting Materials.* 303B
Y13 (0) Majorana Bound States IV. 304A
Y14 (0) Topological materials—Topology, symmetry and spin-orbit coupling. 304B
Y15 (0) Defect Center Qubits. 304C
Y17 (0) Thin Film Growth, Processing, and Surface Properties. 306A
Y18 (0) Materials at Extreme Conditions: Static High-Pressure. 306B
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Y20 (0) Statistical Mechanics and Thermodynamics of Quantum Systems. 308B
Y21 (0) *Spin Transport and Magnetism in 1D and 2D Materials.* 309
Y22 (1) *Switching, Torques and Spin Transport in Insulators.* 402A
Y23 (0) *Magnetic Phenomena in Bulk Oxides II.* 402B
Y24 (1) *Artificial Frustrated Spin Systems.* 403A
Y25 (5) **Novel Ordering and Collective Modes in URu_2Si_2.** 403B
Y26 (0) Interacting Quantum Gases. 404A
Y27 (0) Disorder and Localization in AMO Systems II. 404B
Y28 (0) Spin Qubits and Spin-to-Optical Transduction. 405
Y29 (2) *Multiscale simulation of complex fluid flows.* 406A
Y30 (0) Copper Oxide Superconductors: Transport. 406B
Y31 (0) Metals and Metal Physics III. 407
Y32 (5) **Condensed Matter Experiments on the ISS.** 408A
Y33 (0) Superconducting Circuits: General. 408B
Y34 (1) *Precision Many Body Physics VI.* 409A
Y35 (0) 2D Materials—Superconductivity and Ferroelectricity. 409B
Y36 (1) *van der Waals effects in low dimensional systems.* 410
Y37 (1) *Devices from 2D Materials VIII—Energy Applications.* 411
Y38 (1) *Materials in Extremes: Warm Dense Matter.* 501A
Y39 (0) Superconducting Circuits: Fabrication and Materials II. 501B
Y40 (0) Plasmons in Graphene and Optical Properties of 2D Materials. 501C
Y41 (5) **Characterizing Large-Scale Quantum Systems.** 502A
Y42 (5) **Spatio-temporal dynamics of complex networks: From mean field to large deviations.** 502B
Y44 (0) Quantum Phase Transitions. 504
Y47 (0) Nonequilibrium Thermodynamics. 507
Y48 (0) Active Matter II. 510
Y49 (2) *Evolutionary Systems Biology II.* 511A
Y50 (0) Microbiological Physics. 511B
Y51 (2) *Fluids, Proteins, Microbes.* 511C
Y53 (0) Liquid Crystals. 513
Y54 (0) Active Mechanics of Networks and Gels II. 514
Y57 (0) *Physics of Bioinspired Soft Materials II.* 518

12:00pm Monday
B61 (0) Meet Your Future: Careers in the Private Sector. J.W. Marriott Platinum DE

5:45pm Monday
D01 (0) APS Prizes and Awards Ceremonial Session. 411

6:00pm Monday
D02 (0) Building Your Undergraduate Physics Career. 153B

6:45pm Monday
D03 (0) Welcome Reception. WH A

7:30pm Monday
D04 (5) Special Outreach Session: Enabling Quantum Leap: Federal and Private Funding Opportunities in Condensed Matter Physics and Materials Science. PH C

12:30pm Tuesday
F61 (0) Students Lunch with the Experts. WH B

4:30pm Tuesday
J01 (0) Meet the Physical Review Editors Reception. Concourse Foyer

5:30pm Tuesday
J02 (0) Student Reception. WH B

6:45pm Tuesday
J65 (0) NSF Polymers Q&A and Decadal Workshop Summary. 515A

5:30pm Wednesday
Q02 (0) LGBTQ+ Roundtable Discussion. J.W. Marriott Platinum A

6:15pm Wednesday
Q62 (0) NSBP/NSHP Reception. J.W. Marriott Platinum J

6:30pm Wednesday
Q66 (1) Public Lecture: The Physics and Materials Science of Superheroes. PH C

7:00pm Wednesday
Q63 (0) Education and Diversity Networking Reception. J.W. Marriott Platinum I

8:00pm Wednesday
Q64 (0) A Staged Reading of the Play: Silent Sky. J.W. Marriott Platinum FG

9:00pm Wednesday
Q65 (0) Rock-n-Roll Physics Sing-along. J.W. Marriott Platinum D

12:00pm Thursday
S62 (0) Young Physicists Lunch. J.W. Marriott Gold III

1:00pm Thursday
T16 (0) Strategic Planning Town Hall Meeting. 305