Raymond & Beverly Sackler Faculty of Exact Sciences
Raymond & Beverly Sackler Institute of Theoretical Physics
Raymond & Beverly Sackler Institute of Condensed-Matter Physics
Mortimer & Raymond Sackler Institute of Advanced Studies

Iby & Aladar Fleischman Faculty of Engineering
Center for Light-Matter Interaction
Center for Physics & Chemistry of Living Systems

Condensed Matter Analogies in Mechanics, Optics and Cold Atoms

Lectures: ***Steinhardt Museum of Natural History***

Lunch & Posters: ***Porter School of Environmental Studies***

Monday, April 1

8:00-9:15 **Registration and Refreshments**

9:15-9:30 Yaron Oz (Rector, Tel Aviv University)
Opening

9:30-10:00 Leo Radzihovsky (University of Colorado at Boulder)
Fractonicity from Elasticity

10:00-10:30 Mordechai (Moti) Segev (Technion - Israel Institute of Technology)
Topological Photonics

10:30-11:00 **Coffee Break**

11:00-11:30 Vincenzo Vitelli (University of Chicago)
Odd Elasticity

11:30-12:00 Ling Lu (Chinese Academy of Sciences)
One-Way Fiber of Second Chern Number

12:00-12:30 Valerio Peri (ETH Zürich)
Axial Gauge Field in a Weyl Metamaterial

12:30-14:30 **Lunch**

14:30-15:00 Duncan Haldane (Princeton University) - **IAS Sackler Lecturer**
Physics of Flux Attachment and Composite Particles

15:00-15:30 Eric Akkermans (Technion - Israel Institute of Technology)
Vacancies in Graphene : Dirac Physics and Fractional Vacuum Charge

15:30-16:00 Martin van Hecke (Leiden University & AMOLF)
Complex Mechanical Metamaterials

16:00-18:00 **Poster Session**

Tuesday, April 2

8:30-9:00 **Gathering and Refreshments**

9:00-9:30 Andrei Bernevig (Princeton University)
First Series of Exact States Violating Eigenstate Thermalization Hypothesis

9:30-10:00 Cristiano Nisoli (Los Alamos National Laboratory)
Topology by Design in Artificial Spin Ice

10:00-10:30 Christof Weitenberg (Universität Hamburg)
New Approaches to Topological States with Ultracold Atoms

10:30-11:00 **Coffee Break**

11:00-11:30 Yan-Feng Chen (Nanjing University)
Acoustic Topological States: Effects and Materials

11:30-12:00 Ari Turner (Technion - Israel Institute of Technology)
Edge Modes of a Thicket of Gyroscopes

12:00-12:30 Monika Aidelsburger (Ludwig Maximilian University Munich)
From Static to Dynamical Gauge Fields with Ultracold Atoms

12:30-14:30 **Lunch**

14:30-15:00 Tom Iadecola (University of Maryland)
Non-Abelian Braiding of Light

15:00-15:30 Moshe Goldstein (Tel Aviv University)
Topology by Dissipation: Novel Transport Properties and Disorder-Induced Criticality

15:30-16:00 **Coffee Break**

16:00-16:30 Hannah Price (University of Birmingham)
Simulating Higher Spatial Dimensions with Atoms and Photons

16:30-17:00 Zeb Rocklin (Georgia Institute of Technology)
Topological Corner Modes in Over-Constrained Mechanical Systems

19:00 **Workshop Dinner**

Wednesday, April 3

8:30-9:00 **Gathering and Refreshments**

9:00-9:30 Nigel Cooper (University of Cambridge)
Topological Phases of Matter Out of Equilibrium

9:30-10:00 Titus Neupert (University of Zürich)
Higher Order Topology in Electrical Circuits

10:00-10:30 Anton Souslov (University of Bath)
Topological Waves and Odd Viscosity in Chiral Active Fluids

10:30-11:00 **Coffee Break**

11:00-11:30 Maia Vergniory (University of the Basque Country)
Discovery and Categorization of Topological Materials

11:30-12:00 Yakir Hadad (Tel Aviv University)
Self-Induced Topological Transitions in Nonlinear Electronic Circuits

12:00-12:30 Pietro Tierno (University of Barcelona)
Engineering of Frustration in Colloidal Artificial Ices Realized on Microfeatured Grooved Lattices

12:30-14:30 **Lunch**

14:30-15:00 Netanel Lindner (Technion - Israel Institute of Technology)
Learning Quantum Hamiltonians: Local Inverse Problems in Condensed Matter

15:00-15:30 Florian Marquardt (Max Planck Institute for the Science of Light, Erlangen)
Dynamical Gauge Fields in Optomechanics

15:30-16:00 **Coffee Break**

16:00-16:30 Michael Moshe (Hebrew University)
Geometric Charges in Soft Mechanical Metamaterials

16:30-17:00 Patrick Sebbah (Bar-Ilan University)
Flexural Wave Localization in Disordered Thin Plates

Thursday, April 4

8:30-9:00 **Gathering and Refreshments**

9:00-9:30 Tom Lubensky (University of Pennsylvania) - **IAS Sackler Lecturer**
Elasticity and Waves in Maxwell and near Maxwell Lattices

9:30-10:00 Julian Léonard (Harvard University)
Quantum Matter Under the Microscope: From Topology to Many-Body Localization

10:00-10:30 Xiao Hu (National Institute for Materials Science, Japan)
Artificial Graphene and Synthetic Topology for Photons and Electrons

10:30-11:00 **Coffee Break**

11:00-11:30 Emanuele Dalla Torre (Bar-Ilan University)
Quantum-Inspired Prethermalization in Classical Many-Body Kicked Rotors

11:30-12:00 Corentin Coulais (University of Amsterdam)
Unidirectional Transport and Non-Reciprocity in Robotic Metamaterials

12:00-12:30 Ronny Thomale (Julius-Maximilians-Universität Würzburg)
Topolectrical Circuits

12:30-14:30 **Lunch**

14:30-15:00 Natalia Lera (Universidad Autónoma de Madrid)
Topologically Bound Modes in a Phononic Vortex

15:00-15:30 Wladimir Benalcazar (Pennsylvania State University)
Corner-Induced Filling Anomalies and Higher-Order Topological Bands

15:30-16:00 **Coffee Break**

16:00-16:30 Nir Davidson (Weizmann Institute of Science)
Simulating XY Spins with Coupled Lasers

16:30-17:00 Qian Niu (University of Texas at Austin)
Particle Dynamics in Bloch-Floquet Crystals

Poster Presentations:

1) Luca Barbiero (Université libre de Bruxelles)
Coupling Ultracold Matter to Dynamical Gauge Fields in Optical Lattices: From Flux-Attachment to Z_2 Lattice Gauge Theories

2) Alon Beck (Tel Aviv University)
Disorder Effects on Dissipation-Induced Topological Systems

3) Lea Beilkin (Tel Aviv University)
Feedback-Based Active Mechanical Metamaterials

4) Moshe-Ishay Cohen (Technion - Israel Institute of Technology)
Experimental Observation of Generalized Snell's Law in an Interface between Different Photonic Artificial Gauge Fields

5) Marco Di Liberto (Université Libre de Bruxelles)
Aharonov-Bohm Cages in Photonic Lattices

6) Tena Dubcek (ETH Zürich)
Non-Local Weyl Orbits in Real and Axial Magnetic Fields

7) Iliya Esin (Technion – Israel Institute of Technology)
Metal to Insulator Phase Transitions in Floquet-Bloch Systems

8) Noa Feldman (Tel Aviv University)
Symmetry-Resolved Entanglement after a Local Quantum Quench

9) Ananya Ghatak (University of Amsterdam)
Feedback Induced Robotic Topological Insulator

10) Omri Golan (Weizmann Institute of Science)
Boundary Central Charge from Bulk Hall Viscosity - Chiral Superfluids

11) Eliska Greplova (ETH Zürich)
Exploring Condensed Matter with Machine Learning

12) Moritz Hirschmann (Max Planck Institute for Solid State Research)
Topology in Non-Hermitian Weyl Semimetals

13) Natalia Lera (Universidad Autónoma de Madrid)
Topological Maxwell Lattices

14) Eyal Leviatan (Weizmann Institute of Science)
Duality and Non-Parton Approaches for Frustrated Magnets

15) Yaakov Lumer (Technion - Israel Institute of Technology)
Observation of Light Guiding using Artificial Gauge Fields

16) Eran Lustig (Technion - Israel Institute of Technology)
Photonic Topological Insulator in Synthetic Dimensions

17) Santosh Maurya (Bar Ilan University)
Numerical Study of Frozen Modes in a Finite Size Magnetic Photonic Crystal

18) Anne Meeussen (AMOLF)
Topological Defects in Mechanical Metamaterials

19) Omrie Ovdat (Technion - Israel Institute of Technology)
Observing a Scale Anomaly and a Universal Quantum Phase Transition in Graphene

20) Yiming Pan (Weizmann Institute of Science)
Beyond Adiabatic Elimination in Topological Floquet Engineering

21) Anatoly Patsyk (Technion - Israel Institute of Technology)
Branched Flow of Light

22) Ben Pisanty (Tel Aviv University)
Frustration in Aperiodic Hexagonal Mechanical Metamaterials

23) Raquel Queiroz (Weizmann Institute of Science)
Partial Lattice Defects in Higher Order Topological Insulators

24) Mor Roses (Bar Ilan University)
Signatures of "Counter-Lasing" Transition

25) Grazia Salerno (Université Libre de Bruxelles)
The Quantized Hall Conductance of a Single Atomic Wire: A Proposal Based on Synthetic Dimensions

26) Kingshuk Sarkar (Ben Gurion University)
Effects of Different Lead Magnetizations on the Datta-Das Spin Field-Effect Transistor

27) Marc Serra-Garcia (ETH Zürich)
Higher-Order Topology with Classical Systems

28) Gal Shavit (Weizmann Institute of Science)
Topology by Dissipation: Transport Properties

29) Hadas Shem-Tov (Tel Aviv University)
Degeneracy Partially Restored in Sheared Colloidal Square Ice

30) Kun Tang (Bar Ilan University)
Transformation Elastodynamics

31) Zhaoju Yang (Technion - Israel Institute of Technology)
Mode-Lock Topological Insulator Laser in Synthetic Dimensions

32) Yaakov Yudkin (Bar Ilan University)
A Coherent Superposition of Feshbach Dimers and Efimov Trimers

33) Sina Zeytinoglu (ETH Zürich)
Tunable Flux Vortices in 2D Superconductors

34) Tobias Holder (Weizmann Institute of Science)
Unified Description of the Classical Hall Viscosity