

AFOSR 2023 Joint Review for Materials with Extreme Properties and Condensed Matter Physics

Long talks: 20 minute presentation + 10 minute Questions and discussion

Short talks: 10 minute presentation + 5 minute Questions and discussion

D1: Monday MAY 8

8:00		CHECK IN/LOGIN		
8:30	15 MIN	Welcome remarks	A. SAYIR AND J. LU	
8:45	15 min	Design and optimization of synthesizable materials with targeted quantum characteristics	GALLI, GIULIA	UNIVERSITY OF CHICAGO
9:00	15 min	Continuum/Lattice Strain Effects in SiC-NV Crystals	SEHITOGLU, HUSEYIN	UNIVERSITY OF ILLINOIS
9:15	15 min	Optically Active Semiconductor Spin Qubits with Long Coherence Times Using Single Donor Impurities in ZnSe	WAKS, EDO	UNIVERSITY OF MARYLAND
9:30	30 min	Search for deep center defects for quantum applications in ZnSe	IRVING, DOUGLAS	NORTH CAROLINA STATE UNIVERSITY
10:00	30 min	BREAK		
10:30	15 min	Optical imaging of magnetic quantum phase transitions in 2D materials	MAK, KIN FAI	CORNELL UNIVERSITY
10:45	15 min	Topological Quantum Electronics and Optoelectronics in Moire Superlattices	MA,QIONG	BOSTON COLLEGE
11:00	15 min	Tunable phases in charge-density-wave heteroepitaxial devices	FALSON, JOSEPH	CALIFORNIA INSTITUTE OF TECHNOLOGY
11:15	15 min	Enhancing Topology with Twistronics	CANO, JENNIFER	STONEY BROOK UNIVERSITY
11:30	30 min	High Temperature, Scalable Flat Bands	CHECKELSKY, JOSEPH	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
12:00	90 min	LUNCH		
13:30	30 min	Strongly Correlated Electrons for Topological Quantum Phases with Amplified Responses	SI,QIMIAO	RICE UNIVERSITY
14:00	15 min	Unusual physics in Dirac-Weyl materials with a flat band	LAI, YING-CHENG	ARIZONA STATE UNIVERSITY
14:15	15 min	Quantum Magnetotransport in Two-Dimensional Quartic Materials	SEVINCLI, HALDUN	IZMIR YUKSEK TEKNOLOJI ENSTITUSU

14:30	15 min	Topological superconductivity and induced phase transitions in strained Heusler membranes and twisted bilayers	KAWASAKI, JASON	UNIVERSITY OF WISCONSIN
14:45	15 min	Correlated orbital control of electronics, magnetism, and topological behavior in rhenates	AHN, CHARLES	YALE UNIVERSITY
15:00	30 min	BREAK		
15:30	30 min	Effects of disorder on electronic properties near nematic quantum phase transitions: model systems to explore fundamental physics relevant to the discovery of new superconducting phases	FISHER, IAN	STANFORD UNIVERSITY
16:00	15 min	Exotic Electronic Quantum Matter: Multipolar Order, Bogoliubov Fermi Surfaces, and Flat Bands	FERNANDES, RAFAEL	UNIVERSITY OF MINNESOTA
16:15	15 min	Functional Nanostructured Strongly Correlated Solids	SCHULLER, IVAN	UNIVERSITY OF CALIFORNIA, SAN DIEGO
16:30	15 min	Wavelet-enhanced quantum sensing with solid-state nuclear spins...	BULUTAY, CEYHUN	IHSAN DOGRAMACI BILKENT UNIVERSITESI
16:45	15 min	Materials Science for Local Heating of Electronic Nanostructures	STADLER, BETHANIE	UNIVERSITY OF MINNESOTA
17:00	10 min	Microstructural design of light-induced phase transformation materials	BALAKRISHNA, ANANYA	UNIVERSITY OF SOUTHERN CALIFORNIA
17:10		ADJOURN		

D2: Tuesday MAY 9

8:00		CHECK IN/LOGIN		
8:30	15 min	Exploring Correlated Topological States with Charge Density Waves	BURCH, KENNETH/SCHOOP, LESLIE	BOSTON COLLEGE/PRINCETON
8:45	15 min	Exploring Entanglement in Quantum Spin Liquids with Nonlinear Spectroscopy	HARTER, JOHN	UNIVERSITY OF CALIFORNIA, SANTA BARBARA
9:00	15 min	Ferroelectric Creation and Manipulation of Novel Topological States in 2D Heterostructures	GONG, CHENG	UNIVERSITY OF MARYLAND

9:15	15 min	Assessment of Dislocation Interaction Processes with Grain Boundaries by Nonlinear Optical Spectroscopy	GREENBAUM, STEVE	The City University Of New York
9:30	30 min	Dislocations as nature's quantum wires	GHAZISAEIDI, MARYAM	OHIO STATE UNIVERSITY
10:00	30 min	BREAK		
10:30	15 min	In situ nanoscale visualization of peritectic reactions	SHAHANI, ASHWIN	UNIVERSITY OF MICHIGAN
10:45	15 min	UNDOPhase: UNcertainty-DOMinated Phase Transitions in Magnetic Materials	ACAR, PINAR	VIRGINIA POLYTECHNIC
11:00	15 min	Advancing graph models for quantification of transparent ceramic microstructures	SUNDARARAGHAVAN, VEERA	UNIVERSITY OF MICHIGAN
11:15	15 min	Ion Channels in Geopolymers: Artificial Synapses with Unique Electro-mechanical Properties	LAMUTA, CATERINA	UNIVERSITY OF IOWA
11:30	30 min	Time reversal symmetry breaking in quantum materials without magnetism	MONTI, OLIVER	UNIVERSITY OF ARIZONA
12:00	90 min	LUNCH		
13:30	30 min	Parity time-symmetry breaking in biological active matter	KOCABAŞ, AŞKIN	KOC UNIVERSITESI
14:00	15 min	Discovery and Exploration of Quantum Nitrides	RONDINELLI, JAMES	NORTHWESTERN UNIVERSITY
14:15	15 min	Unraveling phonons at the atomic scale - a new tool to explore the science of thermal transport	LEBEAU, JAMES	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
14:30	15 min	Effect of Extreme Electric Fields on Thermal Transport in Wide-gap Semiconductors	LIAO, BOLIN	UNIVERSITY OF CALIFORNIA, SANTA BARBARA
14:45	15 min	Extreme Nonlinearity in Transition Metal Oxides	DEMKOV, ALEXANDER	UNIVERSITY OF TEXAS AT AUSTIN
15:00	30 min	BREAK		
15:30	30 min	Picocavity QED: A New Materials Platform for Room-Temperature Control of Quantum Coherence	RASCHKE, MARKUS	UNIVERSITY OF COLORADO
16:00	15 min	New Paradigms for Goniopolar Materials	GOLDBERGER, JOSHUA	OHIO STATE UNIVERSITY
16:15	15 min	Strongly correlated electronic structure in large alkali oxocobaltates	LAMBRECHT, WALTER	CASE WESTERN RESERVE UNIVERSITY
16:30	30 min	UV Photostimulation Effects on Semiconductor Defects and Transport	ERTEKIN, ELIF	UNIVERSITY OF ILLINOIS
17:00		ADJOURN		

D3: Wednesday MAY 10

8:00		CHECK IN/LOGIN		
8:30	15 min	Measurement - Only Quantum Bits with Bulk Nonabelian Anyons on Graphene	YOUNG, ANDREA	UNIVERSITY OF CALIFORNIA SANTA BARBARA
8:45	15 min	Nonlinear Infrared Light-Matter Interactions of Topological Quantum Materials	YANG, LI	WASHINGTON UNIVERSITY
9:00	15 min	Engineering Superconductivity in Germanium	SHABANI, JAVAD	NEW YORK UNIVERSITY
9:15	15 min	Effect of Strain on Surface Electronic Properties of MXenes	BAYKARA, MEHMET	UNIVERSITY OF CALIFORNIA, MERCED
9:30	15 min	Permittivity Gradients, Polarization, and Gas Dynamics in Composite Electromagnetic Heat Exchangers	TILLEY, BURT	WORCESTER POLYTECHNIC INST
9:45	15 min	Novel properties and topological phases in strongly correlated pyrochlore systems	WU, LIANG	UNIVERSITY OF PENNSYLVANIA
10:00		BREAK		
10:30	15 min	Magnetic-Free Nonreciprocal Photonic Structures	CHABANOV, ANDREY	UNIVERSITY OF TEXAS AT SAN ANTONIO
10:45	15 min	Direct visualization of topological superconducting states in the GHz regime	ALLEN, MONICA	UNIVERSITY OF CALIFORNIA, SAN DIEGO
11:00	15 min	Nanoscale Quantum Sensing and Imaging of Emergent Spin Behavior in an Antiferromagnetic Insulator	DU, CHUNHUI	UNIVERSITY OF CALIFORNIA, SAN DIEGO
11:15	15 min	Quantification of Atom Probe Tomography Data	WINDL, WOLFGANG	OHIO STATE UNIVERSITY
11:30	30 min	TWO-DIMENSIONAL MOLECULAR CRYSTALS FOR HYBRID QUANTUM SOLIDS	PARK, JIWOONG	UNIVERSITY OF CHICAGO
12:00	90 min	LUNCH		
13:30	30 min	Topological Flat Bands for Correlated Electron Systems (TOPFORCE)	STEMMER, SUSANNE	UNIVERSITY OF CALIFORNIA, SANTA BARBARA
14:00	15 min	High sensitivity magnetometer to study magnetic textures and topology in quantum materials	MOROSAN, EMILIA	RICE UNIVERSITY
14:15	15 min	New Magnetic Interfaces for Quantum Phenomena	PASUPATHY, ABHAY	COLUMBIA UNIVERSITY
14:30	15 min	Quantum Spin Dynamics, Coherence, and Disorder in Dense Magnetic Systems	SILEVITCH, DANIEL	CALIFORNIA INSTITUTE OF TECHNOLOGY

14:45	15 min	Correlated Phenomena in Layered Materials for Next-Generation Photonics and Microelectronics	RAO, RAHUL	AFRL/RX
15:00		BREAK		
15:30	30 min	Emergent Phenomena in Coupled Systems Driven by Acoustic Waves	NEWBURGER, MICHAEL	AFRL/RX
16:00	15 min	Unraveling the Multi-Scale Structure-Performance Correlation of Temperature Stable Relaxors at Extreme Conditions	ORTALAN, VOLKAN	UNIVERSITY OF CONNECTICUT
16:15	15 min	Metallic Glass/Nanocrystal Composites and NiTiHf Shape Memory Alloys for High Temperature Applications	KOCKAR, BENAT	Hacettepe University
16:30	15 min	Growth and Characterization of Gallium-Oxide Epitaxial Films for High Performance Contact Structures	RAMANA, CHINTALAPALLE	UNIVERSITY OF TEXAS AT EL PASO
16:45	15 min	Chemical Vapor Deposition System for Research on Gallium-Oxide and Related Semiconductors	PORTER, LISA	CARNEGIE MELLON UNIVERSITY
17:00		ADJOURN		
17:30		NO-HOST NETWORKING (LOCATION: TBD)		

D4: Thursday MAY 11

8:00		CHECK IN/LOGIN		
8:30	15 min	Wigner Crystals in Atomically Thin Heterostructures	PARK, HONGKUN	HARVARD UNIVERSITY
8:45	15 min	AFRL-Cornell Center for Epitaxial SolutionS (ACCESS)	THOMPSON, MICHAEL	CORNELL UNIVERSITY
9:00	15 min	Fundamental Study of p-Type Doping in MOCVD-Grown Ga ₂ O ₃	RAZEGHI, MANIJEH	NORTHWESTERN UNIVERSITY
9:15	15 min	Terahertz Electron Paramagnetic Resonance Ellipsometry defect characterization in ultrawideband gap monoclinic gallium oxide and related alloys	SCHUBERT, MATHIAS	UNIVERSITY OF NEBRASKA
9:30	30 min	Semiconducting AlN: A New Pathway to High Voltage, Power and Temperature Ultra-Wide Bandgap Power Electronic Components	DOOLITTLE, WILLIAM	GEORGIA TECH
10:00		BREAK		
10:30	15 min	EXPOLORING OPTICAL CAVITES BASED ON GALLIUM OXIDE NANOMATERIALS	MENDEZ, BIANCHI	COMPLUTENSE UNIVERSITY OF MADRID

10:45	15 min	Electromagnetically induced modification of metal optical properties	BERG, MATTHEW	KANSAS STATE UNIVERSITY
11:00	15 min	Millimeter Wave Interactions with High Temperature Materials	COHICK, ZANE	AFRL/RD
11:15	15 min	Short Range Order and Electronic Entropy: from Melts to Solids	ALLANORE, ANTOINE	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
11:30	30 min	Ferroelectric control of conductivity in beta-Ga2O3 for power electronics	BARRETT, NICHOLAS	COMMISSARIAT L'ENERGIE ATOMIQUE
12:00		LUNCH		
13:30	15 min	Novel Materials and Nanostructures for use in High-Power Electromagnetic Systems	BACK, TYSON	AFRL/RX
13:45	15 min	Window Development Tools for Hypersonic Applications	HAY, RANDALL	AFRL
14:00	15 min	Towards Dissipation-less Conduction in Oxide Topological Insulators	SUZUKI, YURI	STANFORD UNIVERSITY
14:15	30 min	BREAK		
14:45	10 min	Extreme limits of diatom-enabled two-phase thermal management	ZHANG, LENAN	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
	10 min	OPERANDO STUDIES OF ATOMICALLY PRECISE MATERIALS	AGARWAL, RITESH	UNIVERSITY OF PENNSYLVANIA
	10 min	Supercritical Phase Transformations for Multiferroic Materials	BUCSEK, ASHLEY	UNIVERSITY OF MICHIGAN
	10 min	Topological vortex structure and piezoelectric enhancements in low dimensional ferroelectrics	EDWIN, FOHTUNG	RENSSELAER POLYTECHNIC INSTITUTE
	10 min	Unraveling ultrafast magnetization dynamics of nanoscale magnetic textures	KUKREJA, ROOPALI	UNIVERSITY OF CALIFORNIA, DAVIS
	10 min	High-temperature infrared nanoceramics for hypersonic applications.	PIERRE, LUCAS	UNIVERSITY OF ARIZONA
	10 min	Ultra-low oxygen activity environment for metastable oxide phase synthesis	RAMANATHAN, SHRIRAM	RUTGERS UNIVERSITY
	10 min	Spin Entropy in Strain-Tuned Rashba Semiconductors	SHI, JIAN	RENSSELAER POLYTECHNIC INSTITUTE
	10 min	Spin Configuration, Chemical Reactions, and Synthesis under EM Field	VASHAEE, DARYOOSH	NORTH CAROLINA STATE UNIVERSITY

	10 min	EXPLORATION OF NOVEL ULTRAWIDE-BAND-GAP HETEROVALENT TERNARY OXIDE LIGAO ₂ FOR EXTREME ENVIRONMENT	ZHAO, HONGPING	OHIO STATE UNIVERSITY
	30 min	DISCOVERING NEW ATOMICALLY LAMINATED TRANSITION METAL BORIDES WITH DIVERSE PROPERTIES	CAKIR, DENIZ	University of North Dakota
17:00		ADJOURN		

D5: Friday MAY 12

9:00		One-on-One Meetings With POs		
12:00		MEETING ADJOURN		

