

2023 Physics of Sensing Program Review

Dr. Michael Yakes | November 13-16, 2023 | Arlington, VA - hybrid

Basic Research Innovation Collaboration Center (BRICC)
4100 N Fairfax Drive, Suite 450 | Arlington VA 22203

Agenda Day 1 | Monday, November 13, 2023

Time	Topic	Speaker
12:30	Check-in /Zoom Log-in	
1:00	Space Domain Awareness in Cislunar Space	Dan Scheeres, Colorado
1:30	Remote sensing via multi-path optical interference of reflected light	Lauren Zarzar, Penn St.
2:00	Adaptive Data-Driven Actionable Intelligence for SSA in an Evidential Framework	Mrinal Kumar, Ohio St.
2:30	BREAK	
3:00	Innovative Single-Pixel Imaging Regularized by Event Data (InSPIRED)	Anthony Giljum, AFRL RV
3:30	Non-imaging advanced scene characterization	Nick Vamivakas, Rochester
4:00	MEETING ADJOURN	

Agenda Day 2 | Tuesday, November 14, 2023

Time	Topic	Speaker
8:00	Check-in /Zoom Log-in	
8:30	Profiling of Atmospheric Turbulence using Time-Lapse Imagery of Non-Cooperative Targets from Multiple Spatially Separated Cameras	Santasri Bose-Pillai, AFIT
9:00	All-Optical Transformations Performed Using Diffractive Materials	Aydogan Oscan, UCLA
9:30	Spectral NLOS imaging: towards photo-realistic NLOS reconstructions	Andreas Velten, Wisconsin
10:00	BREAK	

10:30	Resident Space Object Characterization by Fusing Polarized and Unpolarized Light Curves	John Crassidis, Buffalo
11:00	Optimizing Entanglement to attain Quantum Limit of Long-Baseline Imaging	Saikat Guha, Arizona
11:30	LAser guide Star Sensor Integrated Extreme Adaptive optics (LASSIE)	Lauren Schatz, AFRL RD
12:00	LUNCH	
1:00	Super-Resolution Imaging and Sensing with Relative Motion in Structured Illumination and Multiply-Scattered Light	Kevin Webb, Purdue
1:30	On the Problem of Deep Turbulence: Expanding the Field of View, Bandpass, and Observing Conditions of the Fresnel WFS	Justin Crepp, Notre Dame
2:00	The influence of boundary effects and type of environment on turbulence profiles	Miranda Van Irsel, Dayton
2:30	BREAK	
3:00	Ultra-broadband speckle imaging for space domain awareness	Stuart Jefferies, Georgia St.
3:30	Multi-Fidelity Uncertainty Propagation to Track Maneuvering Spacecraft	Brandon Jones, Texas
4:00	MEETING ADJOURN	

Agenda Day 3 Wednesday, November 15, 2023		
Time	Topic	Speaker
8:00	Check-in /Zoom Log-in	
8:30	HOTNMS: Harnessing Optomechanical effects for Tailoring Noise properties of Mechanical Sensors	Swati Singh, Delaware
9:00	A Comprehensive Sensor Data Processing Infrastructure for Local Domain Awareness of Space Objects	Andy Sinclair, AFRL RV
9:30	Electromagnetic Field Sensing Through Superradiance in 2D Materials	Shengxi Huang, Rice
10:00	BREAK	
10:30	Center for Space Situational Awareness Research (CSSAR)	Francis Chun, USAFA
11:00	The Science of Non-Resolved Space Object Signatures for Space Domain Awareness	Miguel Velez- Reyes, UTEP

11:30	Fundamental Bounds of Information in Photon Starved Passive Multidimensional Imaging and Recognition in the Presence of Environmental Degradation	Bahram Javidi, Connecticut
12:00	LUNCH	
1:00	Photonic nanocomposite films made by pulsed laser deposition	Abdalla Darwish, Dillard
1:30	Unravelling dependencies on turbulence strength and propagation geometry in models of optical scintillation	Jeremy Bos, Michigan Tech
2:00	Computationally-driven search for new infra-red absorbing semiconductors with long carrier lifetime	Geoffroy Hautier, Dartmouth
2:30	BREAK	
3:00	BRICC's Technology Transfer and Transition Capabilities	Sunny Shariar, VT-ARC
3:30	Sensing with Fractal, Diffraction-encoded Beams	Luat Vuong, UC-Riverside
4:00	MEETING ADJOURN	

Agenda Day4 Thursday, November 16, 2023		
Time	Topic	Speaker
8:00	Check-in /Zoom Log-in	
8:30	SHADOW IMAGING: Research in Fundamental Issues for a New Capability in Space Domain Awareness	Peter McMahan-Crabtree, AFRL RV
9:00	Ultrafast Automatic Event Recognition Using Multiphoton Atomic Transitions	Selim Shariar, Northwestern
9:30	A fine-wire sensor array for ground-based and airborne in-situ measurements of optical turbulence in the atmosphere	Andreas Muschinski, NWRA
10:00	BREAK	
10:30	Color Resolved Spacecraft Observations as a Tool for Sensing Material Identity and Chemical State	Ryan Hoffman, AFRL RV
11:00	End-to-End Design of Low-cost Computational Telescopes	Laura Waller, UC Berkeley
11:30	Improved BRDF Measurement and Modeling with Out-of- Plane and Wavelength Dependence	Todd Small, AFIT

12:00	LUNCH	
1:00	Statistically Inferred Multi-Modal Photon Information Content Quantification and Assessment Via Quanta Photogrammetry	Moriba Jah, Texas
1:30	Dynamics of Charge and Energy Transport in 2D/3D Mixed-dimensional Heterostructures enabled by Remote Epitaxy and Layer Resolved Splitting	Kyusang Lee, VA
2:00	Touchless Charge Control of Neighboring Spacecraft in Geostationary and Cislunar Space	Hanspeter Schaub, Colorado
2:30	BREAK	
3:00	Autonomous Distributed Angles-Only Orbit Determination using Multiple Observers	Simone D'Amico, Stanford
3:30	High-resolution Imaging in Heterogeneous Media	Alexei Novikov, Penn St.
4:00	Atomically precise exfoliation of single-crystalline oxide thin-films and its pyroelectric properties	Jeewan Kim, MIT
4:30	MEETING ADJOURN	