

FY2021 DEFENSE UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM - SELECTED PROJECTS

Principal Investigator	Institution	State	Brief Description of Instrumentation or Research it Supports	Awarding Office
Abouraddy, Ayman	University of Central Florida	FL	Studying Classical Optical Entanglement in Space and Time	ONR
Agarwal, Arvind	Florida International University	FL	Correlation of Texture and Mechanical Properties in Engineered Materials and Composites	ARO
Akinwande, Akintunde	Massachusetts Institute of Technology	MA	Scanning Maxwell Stress Microscopy for Ultrahigh Vacuum Applications	AFOSR
Allen, Monica	University of California, San Diego	CA	MilliKelvin Electronic Characterization of Quantum Materials	AFOSR
Alvi, Farrukh	Florida State University	FL	Synchronous Spatiotemporal Scanning of Compliant Surfaces Under Unsteady Aerodynamic Loading	ONR
Anderson, Allison / Kong, Zhaodan	University of Colorado / University of California, Davis	CO / CA	Network-based Neurophysiological and Psychophysiological Metrics of Human Trust Dynamics When Teamed with Autonomy	AFOSR
Antil, Harbir	George Mason University	VA	Optimization, Control, Networks and Learning from Data	AFOSR
Apelian, Diran	University of California, Irvine	CA	Advanced metrology and diagnostic capabilities for in-depth analysis of material and structural characteristics and properties by	ONR
Babbitt, William	Montana State University	MT	Enhanced Active Imaging Through Fog	ONR
Banta, Scott	Columbia University	NY	Multi-Mode Microplate Reader	ARO
Baser, Tugce	University of Illinois, Urbana-Champaign	IL	Mechanics of Multiphase Materials Subjected to Combined External Fields	AFOSR
Bayram, Can	University of Illinois, Urbana-Champaign	IL	High-voltage Characterization on Next Generation Power Electronics	AFOSR
Bediako, Daniel	University of California, Berkeley	CA	Magnetic imaging of two-dimensional quantum materials	AFOSR
Bejder, Lars	University of Hawaii	HI	Marine Mammal Health Assessment System (MMHA) Phase II: Expanding Field Research Capacity	ONR
Berger, Thomas	University of Colorado	CO	Space Weather Forecasting for Machine Learning	AFOSR
Bheemasetti, Tejo	South Dakota School of Mines and Technology	SD	Fundamental Behavior of Seasonally Frozen Ground	ARO
Bogale, Tadiilo	North Carolina Agricultural and Technical State University	NC	Massive Multiple Input, Multiple Output and Millimeter Wave Integrated Tactical Communication for Swarm Networks	ARO
Bowersox, Rodney	Texas A&M University	TX	Boundary Layer Turbulence Surface Sensor Array for Hypersonic Flight and Ground Test	AFOSR
Bredas, Jean-Luc	University of Arizona	AZ	Design of Organic and Hybrid Organic-Inorganic Materials for Electronic Applications	ONR
Bringsjord, Selmer	Rensselaer Polytechnic Institute	NY	Cognitive Robot Manipulation by Visual Question-Answering for Advanced Micro-environments	AFOSR
Cappelli, Mark	Leland Stanford Junior University	CA	High Framing Rate Camera and Superconducting Magnet for the Study of Magnetized Plasmas	AFOSR
Chabanov, Andrey	University of Texas at San Antonio	TX	Microwave/Millimeter-Wave Measurement for Advanced Electromagnetic Materials and Devices	AFOSR
Chen, Yong	University of California, Los Angeles	CA	Brain-Inspired Networks for Multifunctional Intelligent Systems	AFOSR
Cherukuri, Paul	William Marsh Rice University	TX	Smart Helmet: Sensor Integrated Personalized Defense System	ONR
Choi, Wonbong	University of North Texas	TX	Charge Transport in Two-Dimensional Materials Based Integrated Flexible Energy System	AFOSR
Chun, Francis	U.S. Air Force Academy	CO	Falcon Telescope Network for Space Domain Awareness Research	AFOSR
Churchland, Anne	University of California, Los Angeles	CA	Laser Upgrade for Enhanced Brain Imaging During Multisensory Decisions	ARO
Clarke, Amy	Colorado School of Mines	CO	Multiscale In-situ/Ex-situ Microstructural Characterization to Accelerate the Development of High-Performance Materials for Defens	ONR
Cocker, Tyler	Michigan State University	MI	Novel Ultrafast Imaging Concepts	ONR
Cohen, Jonathan	Princeton University	NJ	Computational Resource for Multidisciplinary Neuroscience Research	ARO
Combs, Christopher	University of Texas at San Antonio	TX	High-Speed Imaging in Hypersonic, High-Temperature and Supersonic Flows	AFOSR
Dalton, Larry	University of Washington	WA	Versatile Testbed for Integrated Nanophotonics	AFOSR
DeMauro, Edward	Rutgers University	NJ	High-Speed Pressure-Sensitive Paint System for Mach 3.4 Wind Tunnel	AFOSR
Dixon, Warren	University of Florida	FL	Validation and Verification of Autonomous Multi-Agent Systems in Outdoor Contested Environments	AFOSR
Dlott, Dana	University of Illinois, Urbana-Champaign	IL	Fast Multiframe Camera to Measure Hot Spots in Shocked Energetic Microstructures	AFOSR
Doyle, John	Harvard University	MA	Laser Cooling of Polyatomic Molecules	AFOSR
Driggers, R.	University of Memphis	TN	Multi-Drone, Multi-Sensor Concept Research	ARO
Dziedziuch, Matthew	University of California, San Diego	CA	Low-Frequency Sound Sources for Acoustic Thermometry and Navigation in the Arctic	ONR

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EIBidweihy, Hatem	United States Naval Academy	MD	Aerosol Jet Printing for Microfabrication and 3D-Printed Electronics	ONR
Elwany, Alaa Mohamed	Texas Engineering Experiment Station	TX	Accelerating Material Design, Process Optimization, and Feedback Control	ARO
Engle, Randall	Georgia Institute of Technology	GA	Physiological Underpinnings of Attention Control, Working Memory Capacity, and Fluid Intelligence	ONR
Farha, Omar	Northwestern University	IL	High-throughput Synthesis of Metal-Organic Frameworks	ARO
Farnsworth, John	University of Colorado	CO	Time-resolved Velocity Measurement System for the Study of Gusts	AFOSR
Fasel, Hermann	University of Arizona	AZ	Simulations and Machine Learning of Transonic Laminar-Turbulent Transition	ARO
Feng, Milton	University of Illinois, Urbana-Champaign	IL	High-speed Four-level Pulse Amplitude Modulation and Quadrature Amplitude Modulation Complex Waveform Modulation	ARO
Ferrari, Silvia	Cornell University	NY	Artificial Intelligence-supported Real-time Human-Autonomous Systems Collaborations (RealTHASC)	ONR
Fields, Matthew	Montana State University	MT	Enhanced Biofilm Imaging	ARO
Fisichella, David	Woods Hole Oceanographic Institution	MA	Deep Water Bathymetry Mapping	ONR
Frederick, Robert	University of Alabama - Huntsville	AL	Characterizing Reaction Dynamics and Decomposition Pathways of New Solid Fuels for SCRAMJET and RAMJET Combustors	ARO
Friedlaender, Ari	University of California, Santa Cruz	CA	Ecological Research on Cetaceans	ONR
Gandhi, Farhan	Rensselaer Polytechnic Institute	NY	Modular Reconfigurable Multi-Rotor/Wing Testbed for Data Generation, Analysis, and Model Development	AFOSR
Gebre-Egziabher, Demoz	University of Minnesota	MN	Hypersonic Configurable Unit Ballistic Experiment (HyCUBE)	AFOSR
Gedik, Nuh	Massachusetts Institute of Technology	MA	Ultrafast Titanium-Sapphire Amplifier for Studying Floquet-Bloch States in Novel Quantum	ARO
Gedney, Stephen	University of Colorado	CO	Advanced System for Multi-Physical Ferromagnetic Property Measurement	ONR
Ghosh, Somnath	Johns Hopkins University	MD	High-Performance Computing for Multiscale-Multiphysics Analysis	AFOSR
Gomes, Carla	Cornell University	NY	Artificial Intelligence for Discovery Assistant (AIDA)	AFOSR
Goodson III, Theodore	University of Michigan	MI	Femtosecond Wavelength Tunable Quantum Light Microscopy and Spectroscopy	AFOSR
Grover, Dhruv	University of California, San Diego	CA	Novel Multi-photon Translational Microscope for Cellular Resolution In Vivo Brain Imaging in Drosophila	AFOSR
Gupta, Abhinav / Pinto, Lerrel	Carnegie Mellon University / New York University	PA / NY	D3RL: Distributed, Diverse Data for Robot Learning	ONR
Gupta, Subhanshu	Washington State University	WA	Modeling and Characterization of a High-Speed Superconducting and Cryogenic Complementary Metal Oxide Semiconductor Circuits	ONR
Gutmark, Ephraim	University of Cincinnati	OH	Continuous, High-repetition Rate Planar Laser Induced Fluorescence System	ONR
Haeffner, Hartmut	University of California, Berkeley	CA	High Fidelity Control of an Multi-Ion Register	ARO
Hafezi, Mohammad	University of Maryland	MD	Wide-Band Ultrafast Laser System for Solid-State-Photonic Hybrid Quantum Systems & Laser and Detection System for Topological Light Sources	AFOSR / ONR
Halpain, Shelley	University of California, San Diego	CA	Imaging-based Analyses of Subcellular Neuronal Energy Metabolism, Network Activity, and Synaptic Function	AFOSR
Hanson, Ronald	Leland Stanford Junior University	CA	Field-Deployable Mid-Infrared Tunable Diode Laser Absorption Spectroscopy Sensor	AFOSR
Hodgkiss, William	University of California, San Diego	CA	Acoustic Source Tow System	ONR
Jaeger, Heinrich	University of Chicago	IL	Dynamic Mechanical Analysis of Shear-Jammed Suspensions	ARO
Jagannathan, Arunkumar	University of Southern California	CA	Flexible Quantum Limited Sensing Testbed	ARO
Jayich, Andrew	University of California, Santa Barbara	CA	Micro-3-dimensional Printed Ion Traps	ONR
Jefferies, Stuart	Georgia State University	GA	Advanced Reconnaissance of Earth-Orbiting Satellites	AFOSR
Jena, Debdeep	Cornell University	NY	Cryogenic Radio Frequency Probe Station for Superconductor/Semiconductor Electronics	ONR
Joester, Derk	Northwestern University	IL	Unlocking the Cryo-Domain: Bio-Cryo-Tomography from Micro to Atomic Scale	ARO
Johnson, Eric	Clemson University	SC	Spatiotemporal Testbed for High Photon Density Beams	ONR
Joshi, Chan	University of California, Los Angeles	CA	Two-color 0.8 and 10 Micron Ultrafast Laser System	ONR
Kante, Boubacar	University of California, Berkeley	CA	Dynamic Characterization of Light Sources and Metamaterials	ONR

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Kaplan, David	Tufts University	MA	Characterization of Soft Materials	AFOSR
Karniadakis, George	Brown University	RI	Graphics Processing Unit Cluster for Physics-Informed Neural Networks	ARO
Kassas, Zak	University of California, Irvine	CA	Harnessing Terrestrial and Space-Based Millimeter-Wave Signals for Resilient and Accurate Positioning, Navigation, and Timing	ONR
Keene, Joseph	Mercer University	GA	Atomic and Molecular Investigation of Corrosion for Prevention and Control	ONR
Keitz, Benjamin	University of Texas at Austin	TX	High Throughput Mechanical Characterization of Biological Materials	AFOSR
Khorrani, Farshad	New York University	NY	Hardware Trojan Detection	ONR
Kim, Brian	University of Central Florida	FL	Massively Parallel Bio-Security and Bio-Computing Research Using In Vivo Neurotransmitters and Synaptic Transmission	AFOSR
Kolkowitz, Shimon	University of Wisconsin - Madison	WI	Generating Spin-squeezed States in a Multiplexed Optical Lattice Clock	ARO
Korpela, Christopher	United States Military Academy	NY	Tactical Autonomous Maneuver Testbed for Multi-Agent Air-Ground Teams	ONR
Krushelnick, Karl	University of Michigan	MI	Enhancing Probing Capability for Zettawatt-Equivalent Ultrashort Pulse Laser System	AFOSR
Landes, Christy	William Marsh Rice University	TX	Snapshot Hyperspectral Imaging and Scanning Electrochemical Microscope for Nanoelectrode Reshaping Studies	ARO
Laurence, Stuart	University of Maryland	MD	Interactions of Supersonic Projectiles with Large Droplets and Aerosol-laden Flows	ONR
Lee, Tonghun	University of Illinois, Urbana-Champaign	IL	Burst-Mode Wavelength-Agile Laser System for Hypersonic Research	AFOSR
Lenain, Luc	University of California, San Diego	CA	Oceanic Microstructure Profilers for Autonomous Vehicles	ONR
Levenson-Falk, Eli	University of Southern California	CA	Superconducting Qubit Measurement, Control, and Feedback	AFOSR
Levitas, Valery	Iowa State University of Science and Technology	IA	Materials Study under High Pressure, Strain Rates, and Large Deformations	ARO
Li, Sheng	Georgia Institute of Technology	GA	Deep Learning Platform for Large-Scale Representation Learning and Visual Understanding	ARO
Likhachev, Maxim	Carnegie Mellon University	PA	Robocop: Robotic Platform for Forceful Mobility Through and Interactions with Dynamic Environments	ARO
Lin, Ming	University of Maryland	MD	Cloud-based Intelligent Virtual Reality Systems	ARO
Madhukar, Anupam	University of Southern California	CA	Measurements of Indistinguishability of Single Photons Emitted from Novel Semiconductor Quantum Dots	AFOSR
Mahoney, Michael	University of California, Berkeley	CA	Scalable Hessian Based Methods for Deep Neural Networks	ONR
Mangelson, Joshua	Brigham Young University	UT	Re-configurable Testbed for Autonomous Heterogeneous Marine Mapping, Sensing, and Search	ONR
Mason, Jarad	Harvard University	MA	Advanced Catalytic, Porous, and Magnetic Materials	ONR
Meng, Ellis	University of Southern California	CA	Precision Laser Micromachining System for Advanced Microneedle-Based Molecular-Level Physiological Monitoring	ONR
Merrifield, Sophia	University of California, San Diego	CA	Networked Sensors for Observing the Air-Sea Interface	ONR
Ming, Li	University of Arizona	AZ	Wireless Security and Networking Research	ARO
Moody, Galan	University of California, Santa Barbara	CA	Quantum Photonic Computing Testbed	AFOSR
Mookherjee, Shayan	University of California, San Diego	CA	Improved Detector System Scalability	ONR
Mukherjee, Dibyendu	University of Tennessee	TN	Large-scale Machine Learning Driven Composite Energetic Nanomaterials with Tunable Interfacial Activities	AFOSR
Negrut, Dan	University of Wisconsin - Madison	WI	Redefining the Concept of Large-Scale Computational Dynamics	ARO
Opila, Elizabeth	University of Virginia	VA	Microplasma Resistive Heating for Oxidation of Refractory Materials	AFOSR
Oxley, Jimmie	University of Rhode Island	RI	Upgrade to Isotope Ratio Mass Spectrometer	ARO
Pantoya, Michelle	Texas Tech University	TX	High Speed Thermal Imaging Diagnostics for Ballistic Impacts	ONR
Pathak, Sidhartha	Iowa State University of Science and Technology	IA	In-Situ Micro-Mechanical Testing of Advanced Materials under Extreme Conditions	ARO
Personick, Michelle	Wesleyan University	CT	Spectroscopic Characterization of the Surface of Multifunctional Bimetallic and Plasmonic Catalysts	ARO
Qing, Quan	Arizona State University	AZ	Precise Manipulation of Neuronal Differentiation and Neuroplasticity	AFOSR
Ratcliff, Erin	University of Arizona	AZ	Multi-Dimensional Imaging System for in Operando Characterization of Printable Photovoltaic Materials	ONR

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Ratliff, Bradley	University of Dayton	OH	Deep Learning Approaches to Hyperspectral and Polarimetric Scene Generation	AFOSR
Rattani, Ajita	Wichita State University	KS	Biometrics and Cybersecurity Research	AFOSR
Roth, Mark	Fred Hutchinson Cancer Research Center	WA	Ion Chromatography and Mass Spectroscopy for Trauma Ions	ARO
Roukes, Michael	California Institute of Technology	CA	Engines of Adaptation: Experimental Analyses of Emergent Thermodynamic Machines	ARO
Rowan, Stuart	University of Chicago	IL	Stress-Controlled Rheometry System for Multiplexed Characterization of Multifunctional, Adaptive Soft Materials	ARO
Schamiloglu, Edl	University of New Mexico	NM	High Power Microwave Amplifier Investigations	AFOSR
Scheutz, Matthias	Tufts University	MA	Versatile Legged Robots for Open-World Human-Robot Interaction in Mixed Initiative Teams	ONR
Seelig, Georg	University of Washington	WA	High Throughput Liquid Handling Platform for Molecular Computation and Data Storage	ONR
Shahriar, Selim	Northwestern University	IL	Ultrafast Automatic Image Recognition Using an Opto-Electronic Correlator	AFOSR
Shen, Sheng	Carnegie Mellon University	PA	High Spatial and Time Resolution Characterization of Nanostructured Infrared Materials	ONR
Son, Steven	Purdue University	IN	Multi-megahertz Imaging and Spectroscopy of Energetic Reactions and Detonating Flows	AFOSR
Stern, Frederick	University of Iowa	IA	Modeling and Validation Experiments for Free-running ONRT Surface Combatant Maneuvering	ONR
Subhash, Ghatu	University of Florida	FL	Dynamic Nanomechanical Tester for Characterization of Advanced Structural Materials	ARO
Suchalkin, Sergey	SUNY at Stony Brook University	NY	Ultra-Broad Range Infrared Spectroscopy	ARO
Tan, Choon Soi	Massachusetts Institute of Technology	MA	Small Ultra-high-speed Gas Turbine Engine Research	AFOSR
Tasan, Cemal	Massachusetts Institute of Technology	MA	Integrated Calorimetry-Spectrometry Analysis to Unravel Hydrogen Effects on Metastable Alloys	ONR
Tassioulas, Leandros	Yale University	CT	Service Provisioning over Wireless Networks in Highly Volatile Environments	ARO
Thynell, Stefan	Pennsylvania State University	PA	Species Measurements from High-pressure Decomposition	ARO
Tian, Bozhi	University of Chicago	IL	Super-resolution Imaging of Subcellular Structures and Dynamics During Non-genetic Biological Modulation	ARO
Tong, Hanghang	University of Illinois, Urbana-Champaign	IL	A Graphics Processing/Central Processing Unit Hybrid Cluster for Accelerating Network-of-X Research	ARO
Traokh, Vahid	Duke University	NC	Robust Inter/Intra-Subject Mapping of Brain Signals	ARO
Ukeiley, Lawrence	University of Florida	FL	Investigation of Flow Field Dynamics and Control	AFOSR
Upadhyaya, Pramey	Purdue University	IN	A milli-kelvin optical and microwave system for next generation quantum hybrids	ONR
Valladares, Cesar	University of Texas at Dallas	TX	Investigations of the Ionospheric Density Variability and Structuring	AFOSR
Vasu Sumathi, Subith	University of Central Florida	FL	Micro/Macro (PIV/LIF) High Speed System for Heat Transfer Experiments	ONR
Waks, Edo	University of Maryland	MD	Experimental Testbed for a Quantum Router Using Optical Quantum Memory	AFOSR
Walsh, Alexandra	Texas A&M University	TX	Biophysical Effects of Infrared Radiation	AFOSR
Wang, He	University of Miami	FL	Time Resolved Spectroscopy for Vibrational Dynamics and Imaging of Materials	AFOSR
Wang, Xueju	University of Missouri	MO	High-Performance Laser Etching System for Multi-Layer Soft Electronics	ONR
Weitering, Harm	University of Tennessee	TN	Acquisition of an MBE module for the synthesis of 2D chalcogenide materials	ONR
Weldon, Matthew	Pennsylvania State University	PA	Advanced Camera System for Measurement of Complex Flows	ONR
Wetz, David	University of Texas at Arlington	TX	Dielectric Strength of Altered Epoxy and Additively Manufactured Materials under High Continuous and Pulsed Electric Fields	ONR
Wilder, Aleta	University of Texas at Austin	TX	Broadband Molecular Dynamics for Kinetic Aging Research of Polymeric Materials	ONR
Will, Sebastian	Columbia University	NY	Detecting Ultracold Dipolar Molecules	ONR
Wisner, Brian	Ohio University	OH	Fiber Optic Laser Vibrometer for Research on Material Damage Evolution	ARO
Witherden, Freddie	Texas A&M University	TX	Next-generation Heterogeneous Computing for Massively Parallel High-order Compressible Computational Fluid Dynamics	AFOSR
Wu, Liang	University of Pennsylvania	PA	Scanning Magneto-Optical Microscope for Topological Materials	ARO
Zheng, Xiaoyu (Rayne)	University of California, Los Angeles	CA	3-Dimensional Scanning Laser Vibrometer for Additive Manufactured Transducers, Actuators, and Robotic Platforms	AFOSR