2022 Early Career Research Program Awards				
Program Office	**PI (Last, First)**	**Institution**	**City, State**	**Title**
HEP	Ammigan, Kavin	Fermi National Accelerator Laboratory	Batavia, IL	Advanced Materials to Enable Next-Generation High-Power Accelerators
NP	Austregesilo, Alexander	Thomas Jefferson National Accelerator Facility	Newport News, VA	Advanced methods for hybrid meson searches
HEP	Bechtol, Keith	University of Wisconsin-Madison	Madison, WI	Vera C. Rubin Observatory: from Commissioning to Cosmology
BES	Beckingham, Lauren	Auburn University	Auburn, AL	Mechanisms of hydrogen interaction with earth materials in subsurface storage formations
BES	Berkelbach, Timothy	Columbia University	New York, NY	Ab Initio Vibrational Dynamics of Strongly Anharmonic Materials
ASCR	Bosler, Peter	Sandia National Laboratories	Albuquerque, NM	High performance adaptive multiscale simulation with data-driven scale selective subgrid parameterizations
BER	Budin, Itay	University of California San Diego	La Jolla, CA	Synthetic membrane biology in microbial cell factories
FES	Casali, Livia	University of Tennessee, Knoxville	Knoxville, TN	Innovative Core-Edge Solutions for Tokamaks
FES	Cereceda Senas, David	Villanova University	Villanova, PA	Unraveling transmutation effects in tungsten-based plasma facing materials: a computational approach that integrates nuclear transmutation, first-principles calculations, and Machine Learning
NP	Chatziioannou, Katerina	California Institute of Technology	Pasadena, CA	Studying the properties of supranuclear matter with neutron stars
NP	Chien, Yang-Ting	Georgia State University	Atlanta, GA	Probing Quark Matter and Hadronization Using Energy Flow Substructure
BES	Dares, Christopher	Florida International University	Miami, FL	Modulating Actinide Redox Chemistry with Metal Oxide Electrodes
BES	Davidson, Emily	Princeton University	Princeton, NJ	Molecular and Network Design of Liquid Crystal Elastomer Elastocalorics
NP	Despotopulos, John	Lawrence Livermore National Laboratory	Livermore, CA	Measurement of Neutron-Induced Cross Sections of Nuclides Produced at FRIB using NIF

ASCR	Doerfert, Johannes	Argonne National Laboratory	Lemont, IL	HPC-OMP-CAR: HPC OpenMP Compiler and Runtimes
BES	Du, Chunhui	University of California San Diego	La Jolla, CA	Nanoscale Quantum Sensing and Imaging of Topological Magnets
BES	Edelen, Auralee	SLAC National Accelerator Laboratory	Menlo Park, CA	Integrated Physics Modeling and Online Machine Learning for Characterization and Tuning of Particle Accelerator Systems
ASCR	Ekin, Sabit	Oklahoma State University	Stillwater, OK	CommAwareNet: Towards Communication-Aware Smart Facilities: Designing an Energy-efficient High-data-rate and Reliable Hybrid THz/VLC Comm. Arch. Reinforced with Intelligent Surfaces for Future Network
FES	Frolov, Timofey	Lawrence Livermore National Laboratory	Livermore, CA	Grain Boundary Structure Engineering of Resilient Tungsten Alloys for Fusion Applications
FES	Gebhart III, Trey	Oak Ridge National Laboratory	Oak Ridge, TN	Solutions For a More Efficient and Economical Fusion Fuel Cycle
BER	Graham, Emily	Pacific Northwest National Laboratory	Richland, WA	Urban Resilience across the Terrestrial-Aquatic Continuum: Mechanisms to Mass Balance
ASCR	Guo, Hanqi	Argonne National Laboratory	Lemont, IL	Multidimensional Parameter-Space Feature Tracking, Analysis, and Visualization
BES	Hadt, Ryan	California Institute of Technology	Pasadena, CA	Connecting Molecular Electronic Structure and Electron Spin Decoherence Mechanisms for Quantum Information Science
FES	Hammond, Kenneth	Princeton Plasma Physics Laboratory	Princeton, NJ	Pellet fueling and profile control in Wendelstein 7-X
FES	Haskey, Shaun	Princeton Plasma Physics Laboratory	Princeton, NJ	Main Ion Transport and Fueling in the DIII-D Pedestal: From Formation to Sustainment
BES	Hayes, Dugan	University of Rhode Island	Kingston, RI	Reusable molecular platforms for on-demand photochemical dihydrogen production
HEP	Hearin, Andrew	Argonne National Laboratory	Lemont, IL	AI-Accelerated Discovery of Dark Energy Physics with LSST, DESI, and CMB-S4 Cross-Correlations
BER	Herndon, Elizabeth	Oak Ridge National Laboratory	Oak Ridge, TN	Biogeochemical controls on phosphorus cycling in urban-influenced coastal ecosystems
HEP	Holmes, Tova	University of Tennessee, Knoxville	Knoxville, TN	Expanding Sensitivity to New Physics at the LHC Through Unconventional Track Signatures
ASCR	Islam, Tanzima	Texas State University	San Marcos, TX	INTELYTICS: An Efficient Data-Driven Decision-Making Engine for Performance In the Era of Heterogeneity

FES	Jorns, Benjamin	University of Michigan	Ann Arbor, MI	Understanding the Spatiotemporal Spectra of Transport-Inducing Instabilities in Low Temperature Plasmas
IP	Kidambi, Piran	Vanderbilt University	Nashville, TN	Understanding Enhanced Isotope Sieving Through Defects in 2D Membranes
BES	Kim, Jae Chul	Stevens Institute of Technology	Hoboken, NJ	Designing Chemical Disorder in Solid-State Superionic Conductors
NP	Knospe, Anders	Lehigh University	Bethlehem, PA	Heavy Flavor at RHIC
BES	Kombaiah, Boopathy	Idaho National Laboratory	Idaho Falls, ID	Fundamental Mechanisms of Newtonian Diffusional Creep in Structural Alloys
HEP	Kurinsky, Noah	SLAC National Accelerator Laboratory	Menlo Park, CA	Superconducting Qubit-Based Sensors for meV-Scale Particle Detection
BES	Leonard, Aeriel	Ohio State University	Columbus, OH	The Role of Strain Localization at Interfaces on Fatigue Crack Initiation in Highly Textured Magnesium Alloy
BES	Li, Yuzhang	University of California, Los Angeles	Los Angeles, CA	Revealing sensitive battery liquid-solid interfaces via cryogenic-electron microscopy
BES	Liu, Chong	University of Chicago	Chicago, IL	Probing the coordination in confinement for electrochemical separation among rare earth elements
ASCR	Lu, Lu	University of Pennsylvania	Philadelphia, PA	Physics-informed neural operators for fast prediction of multiscale systems
HEP	Luo, Xiao	University of California, Santa Barbara	Santa Barbara, CA	Searching for New Physics with Advanced Liquid Argon Detector Capabilities at Neutrino Experiments
BES	Matthews, Devin	Southern Methodist University	Dallas, TX	Practical Tensor Hypercontraction Coupled Cluster Methods for Excited State Dynamics
BES	Mitrano, Matteo	Harvard University	Cambridge, MA	Ultrafast Control of Spin Fluctuations in Light-driven Quantum Materials
NP	Monahan, Christopher	College of William & Mary	Williamsburg, VA	The three-dimensional structure of the proton
BES	Moridi, Atieh	Cornell University	Ithaca, NY	Isotropic microstructure and defect tolerance in additive manufacturing by leveraging metastability in alloy design
BES	Mounce, Andrew	Sandia National Laboratories	Albuquerque, NM	Topological Phases Unraveled by Spin Noise Magnetometry with a Single Spin Qubit
HEP	Nachman, Benjamin	Lawrence Berkeley National Laboratory	Berkeley, CA	Allowing Collider Data to Tell Their Own Story with Deep Learning

ASCR	Nair, Aditya	University of Nevada	Reno, Nevada	Network-based modeling and simulation of coupled multi-physics systems
BES	Olshansky, Lisa	University of Illinois at Urbana-Champaign	Urbana, IL	Photo-Induced Conformational Gating for Long-Lived Charge Separation
NP	Pagano, Guido	Rice University	Houston, TX	Trapped-Ion Quantum Simulation for Nuclear Physics
ASCR	Pan, Chenyun	The University of Texas at Arlington	Arlington, TX	Scalable Reconfigurable Computing Circuit Using Emerging Device Technologies
BES	Papa Lopes, Pietro	Argonne National Laboratory	Lemont, IL	Elucidating the Electrochemically Enhanced Surface Diffusion Mechanism in Materials for Clean Energy
HEP	Paquette, Natalie	University of Washington	Seattle, WA	The Mathematical Foundations of Holography
HEP	Penington, Geoffrey	University of California, Berkeley	Berkeley, CA	Spacetime from Information
BES	Popolan-Vaida, Denisia	University of Central Florida	Orlando, FL	Mechanistic understanding of the Criegee intermediates reaction network in atmospheric and combustion systems
ASCR	Proctor, Tim	Sandia National Laboratories	Livermore, CA	Quantum Capability Learning
HEP	Pyle, Matthew	University of California, Berkeley	Berkeley, CA	Developing TES with Sensitivity to meV Scale Excitations for Light Mass Dark Matter Searches and other Applications
BES	Ramasesha, Krupa	Sandia National Laboratories	Albuquerque, NM	Unraveling the Ultrafast Chemical Dynamics Governing Non-Equilibrium Molecule-Nanoparticle Interactions
BES	Reppert, Michael	Purdue University	West Lafayette, IN	Structural Tuning of Photosynthetic Light Harvesting
BES	Riviere, Jacques	Pennsylvania State University	University Park, PA	Unraveling the Physics of Earthquake Precursors Using Ultrasonic Imaging and Physics-Informed Machine Learning
BES	Rotskoff, Grant	Stanford University	Stanford, CA	Characterizing the limits of nonequilibrium control for dissipative self-assembly
BES	Schulz, Michael	Virginia Tech	Blacksburg, VA	Polymeric chelators for rare-earth element extraction and separation
FES	Sironi, Lorenzo	Columbia University	New York, NY	The interplay of reconnection and turbulence in relativistic plasmas: the case of black hole accretion flows and coronae
BES	Sooby, Elizabeth	University of Texas at San Antonio	San Antonio, TX	Integration of in situ Monitoring and Artificial Intelligence in the Synthesis of Uranium Alloys and Compounds to inform Performance Following Melt Fabrication Processes
BES	Stoerzinger, Kelsey	Oregon State University	Corvallis, OR	Electrocatalytic nitrate reduction: controlling adsorbate affinity to tailor reaction products

BES	Stolper, Daniel	University of California, Berkeley	Berkeley, CA	Stable hydrogen isotopes as tracers of H2 reactivity during geological storage
ASCR	Summa, Brian	Tulane University	New Orleans, LA	Efficient and Accessible Interactive Visual Analytics of Exacscale Scientific Data
NP	Tang, Zhaowen	Los Alamos National Laboratory	Los Alamos, NM	Understanding the 10 second neutron lifetime discrepancy
HEP	Turner, Marlene	Lawrence Berkeley National Laboratory	Berkeley, CA	Energy Recycling for a Green Plasma Based Collider
BER	Villa, Jorge	University of Louisiana at Lafayette	Lafayette, LA	Assessing greenhouse gas structural and functional resilience of freshwater coastal wetlands subject to persistent saltwater intrusion events
BES	Vlaisavljevich, Bess	University of South Dakota	Vermillion, SD	CASPT2 Geometries, Spectra, and Relativistic Electronic Structures of Actinide Species
BES	Wang, Yao	Clemson University	Clemson, SC	Analog Quantum Simulation for Solid-State Spectroscopies
BES	Weichman, Marissa	Princeton University	Princeton, NJ	Polariton Reaction Dynamics: Exploiting Strong Light-Matter Interactions for New Chemistry
BES	Wojdyla, Antoine	Lawrence Berkeley National Laboratory	Berkeley, CA	DREAM beam: Diffraction-limited Radiation Enhancement with Adaptive Mirrors for x-ray coherent beamlines
BES	Yang, Shuolong	University of Chicago	Chicago, IL	Disentangling Quantum Electronic States Layer-by-layer via Space-Frequency Lock-in
BER	Yung, Mimi	Lawrence Livermore National Laboratory	Livermore, CA	Investigation of Encapsulin Nanocompartment Systems as a Scaffold for Biomaterials Synthesis in Rhodococcus jostii
BES	Zaletel, Michael	University of California, Berkeley	Berkeley, CA	Quantum simulation and state preparation for two-dimensional materials
BES	Zhai, Zhiyang	Brookhaven National Laboratory	Upton, NY	Exploring the Role of TOR kinase in the Regulation of Central Metabolism and Lipid Synthesis
ASCR	Zhang, Guannan	Oak Ridge National Laboratory	Oak Ridge, TN	Advanced Uncertainty Quantification Methods for Scientific Inverse Problems
BES	Zhang, Xiao-Xiao	University of Florida	Gainesville, FL	Optical manipulation of magnetic order in van der Waals heterostructures
BES	Zhou, You	University of Maryland	College Park, MD	Probing and controlling novel electronic and magnetic ordering in electron-hole Wigner crystals
FES	Zhu, Yuanyuan	University of Connecticut	Storrs, CT	Understanding Thermal Oxidation of Tungsten and the Impact of Radiation under Fusion Extremes
BES	Zhukhovitskiy, Aleksandr	University of North Carolina at Chapel Hill	Chapel Hill, NC	Upcycling of all-carbon polymer backbones into value-added amines via skeletal rearrangement