DOE Awards $135 Million for Groundbreaking Research by 93 Early Career Scientists

Annoucement Number: *DE-FOA-0002821 Early Career Research Program* *List Posted:* *8/4/2023*

Selection for award negotiations is not a commitment by DOE to issue an award or provide funding.

Principal Investigator	Title	Institution	City	State	9-digit zip code
Abdul-Aziz, Kandis	Towards Facile Synthesis of High-Entropy-Alloy Complex Concentrated Alloy Nanoparticles	University of California, Riverside	Riverside	CA	92521-0217
Adsley, Philip	Probing Nuclear Dipole Responses	Texas A&M University	College Station	TX	77845-4321
Amanchukwu, Chibueze	Tuning bulk and interfacial electrolyte solvation to control electrochemical transformations	The University of Chicago	Chicago	IL	60637-5418
Asgari, Bahar	Developing Techniques to Enable Intelligent Dynamic Reconfigurable Computing for Sparse Scientific Problems	University of Maryland	College Park	MD	20742-5141
Barber, Samuel	Extending the reach of light source facilities with precision laser plasma injectors	Lawrence Berkeley National Laboratory (LBNL)	Berkeley	CA	94720-8099
Baryakhtar, Masha	Shining New Light on the Dark Sector	University of Washington	Seattle	WA	98195-9472
Becker, Matthew	Accurate and Precise Weak Lensing Analyses for Cosmological Surveys	Argonne National Laboratory (ANL)	Lemont	IL	60439-4803
Bessac, Julie	Enhanced fine-scale statistical modeling of environmental extreme events in complex systems from multiple sources	National Renewable Energy Laboratory (NREL)	Golden	CO	80401-3111
Boutan, Christian	Towards a quantum-enhanced multi-cavity haloscope for high-mass QCD axion detection	Pacific Northwest National Laboratory (PNNL)	Richland	WA	99352-1793
Brahlek, Matthew	Epitaxially Imposed Control of Chiral Transport Phenomena	Oak Ridge National Laboratory (ORNL)	Oak Ridge	TN	37831-6118
Brandenburg, Daniel	Nuclear Tomography through Entanglement-Enabled Spin Interference	The Ohio State University	Columbus	OH	43210-1016
Brophy, Jennifer	Engineering continuous trait variation in bioenergy feedstocks to optimize growth on marginal lands	Leland Stanford Junior University	Redwood City	CA	94062-8445
Brost, Elizabeth	Shining light on the Higgs self-interaction	Brookhaven National Laboratory (BNL)	Upton	NY	11973-5000
Brouwer, Lucas	Fixed-Field Superconducting Magnets for Rapid, High Power Acceleration of Muons and Protons	Lawrence Berkeley National Laboratory (LBNL)	Berkeley	CA	94720-8099
Brus, Steven	Assessing climate impacts on coastal-urban flooding through high-resolution barotropic and baroclinic ocean coupling	Argonne National Laboratory (ANL)	Lemont	IL	60439-4803
Burns, Jonathan	Expanding the Fundamental Understanding of At-211 Chemistry: Towards Improving Binding and Complexation	The University of Alabama at Birmingham	Birmingham	AL	35294
Cahill, John	Elucidation and Validation of Genes Associated with Biological Nitrification Inhibition in Populus	Oak Ridge National Laboratory (ORNL)	Oak Ridge	TN	37830-6118
Cao, Yue	Deciphering the Spatiotemporal Evolution of Driven Phenomena in Quantum Materials	Argonne National Laboratory (ANL)	Lemont	IL	60439-4803
Carasik, Lane	Viability of a Molten Salt Liquid Immersion Breeder Blanket System for Heat Removal and Power Extraction in Fusion Devices	Virginia Commonwealth University	Richmond	VA	23298-0568
Carter, Korey	Design of Molecular Spin Qubits Featuring Clock Transitions via Encapsulation of f-Elements in Polyoxometalates	University of Iowa	Iowa City	IA	52242-1320
CASEY, DANIEL	UNDERSTANDING IMPLOSION PHYSICS DEGRADATIONS TO ADVANCE IFE-RELEVANT TARGETS	Lawrence Livermore National Laboratory (LLNL)	Livermore	CA	94550-0808

Chakraborty, Tirthankar	A Planetary-Scale Data-Model Integration Framework to Resolve Urban Impacts Across Scales and Examine Weather Extremes over Coastal U.S. Cities	Pacific Northwest National Laboratory (PNNL)	Richland	WA	99354-1793
Che, Fanglin	Interpretable Deep Learning for Advancing Field-Enhanced Catalysis	University of Massachusetts Lowell	Lowell	MA	01854-3692
CLAASSEN, MARTIN	Harnessing Quantum Geometry of Correlated Electrons for Next-Generation Photovoltaics	University of Pennsylvania	Philadelphia	PA	19104-6205
Clark, Kensha	Functionalization of Methane and Carbon Dioxide Using Earth Abundant Metal Frustrated Lewis Pair Catalysts	University of Mississippi	University	MS	38677-1848
Cordova, Clay	Symmetry in Quantum Field Theory	The University of Chicago	Chicago	IL	60637-5418
de Sousa Oliveira, Laura	Forecasting Thermoelectric Performance in 2D Metal-Organic Frameworks Through Ab Initio Atomistic Modeling	University of Wyoming	Laramie	WY	82071-2000
DEBLONDE, GAUTHIER	Unraveling the Heavy Side of Radiochemistry: A Macromolecular Approach to Unlock Novel Actinide Chemistry	Lawrence Livermore National Laboratory (LLNL)	Livermore	CA	94550-0808
di Vacri, Maria Laura	Optimization of the nEXO detector for enhanced sensitivity to neutrinoless double beta decay of 136Xe	Pacific Northwest National Laboratory (PNNL)	Richland	WA	99352-1793
Dodson, Leah	A Captivating New Spin on Energy Storage	University of Maryland	College Park	MD	20742-5141
Dong, Chuanfei	Reconnection-Driven Turbulent Cascade in Magnetized Collisional and Collisionless Plasmas	Trustees of Boston University	Boston	MA	02215-1300
Dong, Yitong	Understanding the relationship between surface lattice rigidity and single photon emission dynamics in strongly confined cesium lead bromide perovskite quantum dots	University of Oklahoma	Norman	OK	73019-9705
Dresselhaus-Marais, Leora	Sustainable Ironmaking: Using Photons to Understand & Drive the Mechanism of H2-Based Direct Iron Reduction	Leland Stanford Junior University	Stanford	CA	94305-8445
Duarte, Vinicius	Phase-space engineering of supra-thermal particle distribution for optimizing burning plasma scenarios	Princeton Plasma Physics Laboratory (PPPL)	Princeton	NJ	08543-0451
Duclos, Guillaume	Hierarchical assembly of biomimetic active matter driven by non-equillibruim actin turnover	Brandeis University	Waltham	MA	02453-2728
Dumitrescu, Eugene	MLRep4QC3: Multi-Linear Representations for Quantum Characterization, Control, and Computation	Oak Ridge National Laboratory (ORNL)	Oak Ridge	TN	37831-6118
Emma, Claudio	Generating and diagnosing extreme beams for next-generation high energy physics and fundamental science experiment	SLAC National Accelerator Laboratory	Stanford	CA	94305-7015
Fernandez Moroni, Guillermo	Demonstrating enabling technologies for a spectroscopy instrument for the next cosmic survey	Fermi National Accelerator Laboratory (FNAL)	Batavia	IL	60510-5011
Fiorella, Richard	Probing water cycle processes and extremes in coastal and urban environments using water isotope ratio tracers and numerical tags	Los Alamos National Laboratory (LANL)	Los Alamos	NM	87545-0600
Flynn, Holly	The Development of a Real-Time Accountancy Open Framework for Fusion Energy	Savannah River National Laboratory (SRNL)	Aiken	SC	29808
Ghahari Kermani, Fereshte	Probing correlated phenomena in graphene constrictions	George Mason University	Fairfax	VA	22030-4422
Golubev, Nikolay	Unraveling ultrafast electron-nuclear dynamics in molecules	The University of Arizona	Tucson	AZ	85721-0158
Gunn, Laura	Using ancient enzymes for modern photosynthesis	Cornell University	Ithaca	NY	14850-2820
Hematian, Shabnam	Nature-Derived Materials for Redox Flow Batteries	University of North Carolina at Greensboro	Greensboro	NC	27412

Hovden, Robert	ROOM TEMPERATURE STABILIZATION OF ORDERED 2D CHARGE DENSITY WAVES IN ATOMICALLY THIN MATERIALS	University of Michigan	Ann Arbor	MI	48109-1274
Iacocca, Ezio	Fourier and fractional neural operators to unveil topological textures in 3D magnetism.	University of Colorado Colorado Springs	Colorado Springs	CO	80918-3733
Imbert-Gerard, Lise-Marie	Quasi-Trefftz methods for problems governed by vector-valued Partial Differential equation	The University of Arizona	Tucson	AZ	85721-0158
Jackson, Nicholas	Generalized Electronic Coarse-Graining for the Hierarchical Design of Organic Neuromorphics	University of Illinois	Champaign	IL	61820-7406
Kalow, Julia	Selective Photochemical Reactions for the Discovery of Triplet Photosensitizers	Northwestern University	Chicago	IL	60611-4579
Keith, Brendan	REASON-3D: Randomized, Entropic, Adaptive, and Scalable Optimization for Non-Intrusive Data-Driven Design	Brown University	Providence	RI	02912-2912
Koyanagi, Takaaki	Advanced Additive Manufacturing of Silicon Carbide for Fusion Applications	Oak Ridge National Laboratory (ORNL)	Oak Ridge	TN	37831-6118
Kunnawalkam Elayavalli, Raghav	Mapping the space-time evolution of the Quark-Gluon Plasma at RHIC	Vanderbilt University	Nashville	TN	37203-7749
Legg, Benjamin	Selective nucleation of rare earth element phases on mineral surfaces	Pacific Northwest National Laboratory (PNNL)	Richland	WA	99354-1793
Li, Jing	Towards Intelligent Scheduling for Adaptive Scientific Computing with Heterogeneity	New Jersey Institute of Technology	Newark	NJ	07102-1982
Liao, Wenjing	Model Reduction by Deep Learning: Interpretability and Mathematical Advances	Georgia Tech Research Corporation	Atlanta	GA	30332-0420
Linke, Norbert	Analog-Digital Hybrid Simulation of Quantum Field Theories with Advanced Ion Traps	Duke University	Durham	NC	27701-4010
Liu, Kun	Understanding the Origin of the Hadron Mass within the Standard Model	Los Alamos National Laboratory (LANL)	Los Alamos	NM	87545-0600
Lokhov, Andrey	Resurgence of Markov Random Fields for Scientific Machine Learning: New Mathematics for an Old Framework	Los Alamos National Laboratory (LANL)	Los Alamos	NM	87545-0600
Lu, Dan	Integrating Machine Learning Models into E3SM for Understanding Coastal Compound Flooding	Oak Ridge National Laboratory (ORNL)	Oak Ridge	TN	37831-6118
Mangan, Niall	Data-driven discovery of dynamic models to characterize energy systems	Northwestern University	Chicago	IL	60611-4579
Marshall, Chris	A multi-experiment approach to neutrino-argon cross section uncertainties	University of Rochester	Rochester	NY	14627-3847
McGuirk, C. Michael	Building a Scientific Foundation for a New Generation of Low Energy Adsorptive Separations: Probing the Role of Responsive Structural Flexibility Using Synthetic Porous Frameworks	Colorado School of Mines	Golden	CO	80401-1887
McIver, James	Ultrafast Control of Topological Transport in Quantum Materials	Columbia University in the City of New York (Morningside Campus)	New York	NY	10027-7922
Mistlberger, Bernhard	Pushing the Boundaries of Precision: N3LO Predictions for the LHC	SLAC National Accelerator Laboratory	Stanford	CA	94305-7015
Monroe, Jacob	Physically motivated linking of resolutions in multiscale models to predict thermal and charge transport in self-assembling soft materials.	University of Arkansas	Fayetteville	AR	72701-3124
Montoya-Castillo, Andres	Disentangling nonlinear spectroscopy to control nonequilibrium energy transport	University of Colorado	Boulder	CO	80309-1058
Moriarty, Julia	Improving Predictability of Aqueous Coastal Biogeochemistry During Floods, Storms and a Warming Climate	University of Colorado Boulder	Boulder	CO	80309-1058

Nelson Weker, Johanna	Enabling Multiscale Laminography for Operando 3D Microscopy without Geometric Restrictions	SLAC National Accelerator Laboratory	Stanford	CA	94305-7015
Oh, Hyunseok	Understanding Irradiation-Assisted Plasticity in Complex Concentrated Alloys	University of Wisconsin-Madison	Madison	WI	53715-1218
Paquet, Jean-Francois	Multimessenger tomography of ultrarelativistic nuclear collisions	Vanderbilt University	Nashville	TN	37203-7749
Paul, Elizabeth	Modeling fast ion-mode interactions toward a stellarator fusion power plant	Columbia University in the City of New York (Morningside Campus)	New York	NY	10027-7922
Printz, Adam	Understanding Nucleation and Film Growth Processes of Solution-Processable Renewable Energy Materials Printed from Confined Volumes	The University of Arizona	Tucson	AZ	85721-0158
Qian, Jin	From Molecules to Continuum Exploring a Universal Transferable and Physics Based Understanding of Chemical Dynamics from ab initio	Lawrence Berkeley National Laboratory (LBNL)	Berkeley	CA	94720-8099
Ringer, Felix	Toward a microscopic picture of hadronization and multi-parton processes	Old Dominion University	Norfolk	VA	23529-2561
Rowe, Annette	Investigating Extracellular Electron Uptake from Redox Active Solid Substrates: Mechanisms for Gaining Electrons from Minerals, Electrodes, or Other Microbes	University of Cincinnati	Cincinnati	OH	45221-0222
Schaeffer, Derek	Ion Acceleration by Quasi-Parallel Magnetized Collisionless Shocks	University of California Los Angeles	Los Angeles	CA	90095-1406
Singh, Arunima	Functionalization of 2D Materials Heterostructures for Solar Energy Conversion	Arizona State University	Tempe	AZ	85287-6011
Smith, Hillary	Vibrational Dynamics and Relaxations in Glass-forming Liquids	Swarthmore College	Swarthmore	PA	19081-1306
Solon, Mikhail	Quantum Field Theory Tools for Gravitational Wave Science	University of California Los Angeles	Los Angeles	CA	90095-1406
Stache, Erin	Selective Degradation of Polymer Waste to Commodity Chemicals	Princeton University	Princeton	NJ	08540-6000
Steiner, Matthew	Bulk Synthesis of Rare-Earth-Free Tetrataenite Permanent Magnets	University of Cincinnati	Cincinnati	OH	45221-0222
Tsai, Esther	Virtual Scientific Companion for Synchrotron Beamlines	Brookhaven National Laboratory (BNL)	Upton	NY	11973-5000
Valsson, Omar	The Molecular Building Block Sampling Approach for Polymorphic Free Energy Calculations	University of North Texas	Denton	TX	76203-5017
Wang, Ying	Exploring Nonlinear Electrodynamics in Layered Topological Semimetals at Radio Frequencies	University of Wisconsin-Madison	Madison	WI	53715-1218
Windorff, Cory	Probing Electronic Structure in Actinide-Transition Metal Nitride Clusters	New Mexico State University	Las Cruces	NM	88003-8002
Xu, Derong	Luminosity Maximization with Flat Hadron Beams	Brookhaven National Laboratory (BNL)	Upton	NY	11973-5000
Yan, Da	A Programming Framework for Large-Scale Graph Data Analytics on GPUs and New AI Accelerators	The University of Alabama at Birmingham	Birmingham	AL	35294
Zajac, Joanna	Storage of QDs' fast light in Rb vapors for hybrid Quantum Information Science and Technology	Brookhaven National Laboratory (BNL)	Upton	NY	11973-5000
Zhang, Yu	Multiscale Ecosystem for Molecular Quantum Electrodynamics	Los Alamos National Laboratory (LANL)	Los Alamos	NM	87545-0600
Zheng, Youtong	Using Kilometer-Scale E3SM to Investigate Air Pollution Impacts on Coastal Storms	University of Houston	Houston	TX	77204-2015

Zhou, Brian	Imaging Emergent Phenomena in Two-Dimensional Magnets Using Single-Spin Quantum Microscope	Trustees of Boston College	Chestnut Hill	MA	02467-3961
Zorzetti, Silvia	Advancing Quantum Sensors and Sensor Networks with High-Efficiency Transduction	Fermi National Accelerator Laboratory (FNAL)	Batavia	IL	60510-5011
Zuerch, Michael	Ultrafast mechanisms of chirality control in electronic materials	University of California, Berkeley	Berkeley	CA	94710-5940