Congratulations to the NSF Ascend-MPS 2021 Awardees
Ascending Postdoctoral Research Fellowships in the Mathematical and Physical Sciences

The future of the Nation’s scientific enterprise depends on including the best and most highly trained minds in the pursuit of cutting-edge scientific problems. This program is intended to recognize beginning investigators of significant potential and provide them with experience in research that will broaden perspectives, facilitate interdisciplinary interactions, and help broadening participation within MPS fields. The program funds postdoctoral Fellows in postdoctoral research environments that will have maximal impact on their future scientific development and facilitates their transition into a faculty appointment. Awards support research in any scientific area within the purview of the five MPS Divisions of: Astronomical Sciences (AST), Chemistry (CHE), Materials Research (DMR), Mathematical Sciences (DMS), and Physics (PHY). Fellows supported through this program affiliate with a host institution during the postdoctoral appointment component of the fellowship and select a sponsoring scientist who will provide mentoring and guidance for the research undertaken by the Fellow.

The Mathematical and Physical Sciences Directorate is pleased to recognize the inaugural class of Ascend-MPS Awardees.

Omokolade Adebowale
Host Institution: Harvard University
Award Number: 2138064 (Division of Materials Research)

Michael R. Alves
Host Institution: University of California Berkeley
Award Number: 2138006 (Division of Chemistry)
Ascend-MPS: Environmental Organic Chemistry of Indoor Gases and Surface Films
Fatemeh Bagheri  
Host Institution: University of Texas at Arlington  
Award Number: 2138122 (Division of Astronomical Sciences)  

Jacob J. Bernal  
Host Institution: University of Arizona  
Award Number: 2137911 (Division of Astronomical Sciences)  
Ascend-MPS: The Synthesis and Distribution of Carbon Nanostructures in the Interstellar Medium

Andrew P. Carpenter  
Host Institution: Oregon State University  
Award Number: 2137997 (Division of Chemistry)  
Ascend-MPS: Nonlinear Surface Spectroscopic Investigations into the Molecular Mechanism Governing Cell Membrane Repair

Juan R. Chamorro  
Host Institution: University of California, Santa Barbara  
Award Number: 2137580 (Division of Materials Research)  
Ascend-MPS: Discovery-Driven Search for Polar Electronic Phases

William Cuello  
Host Institution: Rutgers University  
Award Number: 2138085 (Division of Mathematical Sciences)  
Ascend-MPS: Widespread Ecological Networks and their Dynamical Signatures

Ranthony A. Edmonds  
Host Institution: The Ohio State University  
Award Number: 2138110 (Division of Mathematical Sciences)  
Ascend-MPS: Persistent Homology, Metrics, and Applications on the Collection of Enriched Metric Measure Spaces
Emmanuel T. Fleurantin  
Host Institution: Renaissance Computing Institute at UNC  
Award Number: 2137947 (Division of Mathematical Sciences)  
Ascend-MPS: Computing Invariant Manifolds and Assimilating Data in Tipping Problems

Fernando A. Flor  
Host Institution: Yale University, Physics Dept. -Wright Lab  
Award Number: 2138010 (Division of Physics)  
Ascend-MPS: The First Second: Decoding the Nature of the Universe with a Culturally Diverse Workforce

Andrei G. Gasic  
Host Institution: William Rice Marsh University  
Award Number: 2137680 (Division of Materials Research)  
Ascend-MPS: Active Glass Theory for Dendritic Spine Plasticity

Arianne C. Hunter  
Host Institution: California Institute of Technology  
Award Number: 2138035 (Division of Chemistry)  
Ascend-MPS: Development of an Asymmetric Electrochemical-NHK Reaction using Multivariate Linear Regression Analyses

Talon Johnson  
Host Institution: University of Texas Southwestern Medical Center  
Award Number: 2138142 (Division of Mathematical Sciences)  
Ascend-MPS: An Artificial Intelligence Method for Auto-Compressed Sensing and Blind Deconvolution in Magnetic Resonance Imaging Data of Shoulder Muscle Metabolism

Jamie M. Karthein  
Host Institution: Massachusetts Institute of Technology  
Award Number: 2138032 (Division of Physics)  
Ascend-MPS: The Nature of Strongly-interacting Matter Across the QCD Phase Diagram
Abigail M. Kopec  
Host Institution: University of California, San Diego  
Award Number: 2137911 (Division of Physics)  
Ascend-MPS: Rare Event Searches in Liquid Xenon Time Projection Chambers

Wai Ting Lam  
Host Institution: Florida Atlantic University  
Award Number: 2138090 (Division of Mathematical Sciences)  
Ascend-MPS: Dynamical and Computer-Assisted Methods Applied to Hamiltonian Systems

Heath J. LeFevre  
Host Institution: University of Michigan  
Award Number: 2138109 (Division of Physics)  
Ascend-MPS: Radiation Transport in Strongly Coupled High-Energy-Density Plasmas

Marco S. Muzio  
Host Institution: Pennsylvania State University  
Award Number: 2138121 (Division of Physics)  
Ascend-MPS: Expanding the Multi-Messenger Impact of In-Ice Radio Experiments

Anthony P. Nicholson  
Host Institution: Colorado State University  
Award Number: 2138081 (Division of Materials Research)  
Ascend-MPS: Advanced Computations with Experimental Validation to Accurately Describe Interface-Related Phenomena in Semiconductor Technologies

Alejandro Nunez  
Host Institution: Columbia University  
Award Number: 2138089 (Division of Astronomical Sciences)  
Ascend-MPS: From Cool to Ultracool: Investigating Magnetism and Rotation in the Smallest Stars and Ultra Cool Dwarfs
Dayna C. Patterson  
Host Institution: Northwestern University  
Award Number: 2138032 (Division of Chemistry)  
Ascend-MPS: Characterization and Biosynthesis of Non-Methanotrophic Methanobactins

Rebecca A. Phillipson  
Host Institution: University of Washington  
Award Number: 2138155 (Division of Astronomical Sciences)  
Ascend-MPS: Discovery and Dynamical Classification of Accreting Compact Objects with the Zwicky Transient Facility

Melissa Ramirez  
Host Institution: California Institute of Technology  
Award Number: 2137996 (Division of Chemistry)  
Ascend-MPS: Iridium-Catalyzed, Intramolecular Cyclization of Allylic Alcohols for Quaternary Center Synthesis

Justin Reyes  
Host Institution: University of Central Florida  
Award Number: 2138113 (Division of Physics)  
Ascend-MPS: Neural Network Quantum Error Mitigation for Algorithms on Near-Term Intermediate Scale Quantum Devices

Joshua J (Shua) Sanchez  
Host Institution: Massachusetts Institute of Technology  
Award Number: 2138167 (Division of Materials Research)  
Ascend-MPS: Probing Electronic Symmetry Breaking in Strain-Tuned Quantum Matter

Vanessa Sanchez  
Host Institution: Stanford University  
Award Number: 2138020 (Division of Materials Research)  
Ascend-MPS: Active Textiles based on Supramolecular Shape Memory Polymer Fibers
Reum Scott
Host Institution: Cornell University
Award Number: 2139237 (Division of Materials Research)
Ascend-MPS: Coarse-Grained Modelling and Synthesis of Structurally Stable Defect-Engineered Metal-Organic Frameworks

Sofia Z. Sheikh
Host Institution: SETI Institute
Award Number: 2138147 (Division of Astronomical Sciences)
Ascend-MPS: Observational Studies of Fast Radio Bursts and Technosignatures with the Allen Telescope Array

Juan A. Valdez-Moreira
Host Institution: University of California, Berkeley
Award Number: 2138017 (Division of Chemistry)
Ascend-MPS: Synthesis and Studies of Single-Molecule Magnets Incorporating Strongly Coupled Two-Coordinate Metal Building Units

Daniel D. Vallejo
Host Institution: Georgia Institute of Technology
Award Number: 2138107 (Division of Chemistry)
Ascend-MPS: Triboelectric Nanogenerator Ion Mobility-Mass Spectrometry for Studying Cultural Heritage Materials

Joel D. Villatoro
Host Institution: Washington University in St Louis
Award Number: 2137999 (Division of Mathematical Sciences)
Ascend-MPS: Global Questions in Lie Groupoid Theory

Maria K. Wimberly
Host Institution: University of California, Riverside
Award Number: 2138144 (Division of Astronomical Sciences)
Ascend-MPS: Early Universe Environments & Peer Mentorship
Carlos Yero  
Host Institution: Old Dominion University  
Award Number: 2137604 (Division of Physics)  
Ascend-MPS: Study of the Strong Nuclear Interaction at Short Distances