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)
Ascend-MPS: Cellular Backpacks: A fundamental investigation of cell-material interactions.
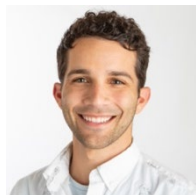
Michael R. Alves
Host Institution: University of California Berkeley
Award Number: 2138006 (Division of Chemistry)
Ascend-MPS: Environmental Organic Chemistry of Indoor Gases and Surface Films

Fatemeh Bagheri
Host Institution: University of Texas at Arlington
Award Number: 2138122 (Division of Astronomical Sciences
Ascend-MPS: Infrared-Radio-follow-up Observations for Detection of the
Magnetic Radio Emission of Extra Solar Planets: A New Window to Detect
Exoplanets and Exomoons

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
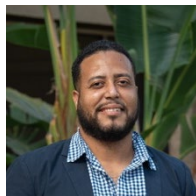Signatures

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
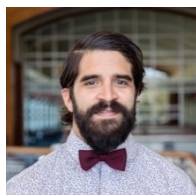
Fernando A. Flor
Host Institution: Yale University, Physics Dept. -Wright Lab
Award Number: 2138010 (Division of Physics)
Ascend-MPS: The First Second: Decoding the Nature of the Universe with a Culturally Diverse Workforce
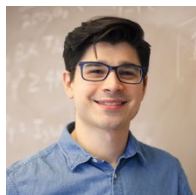
Andrei G. Gasic
Host Institution: William Rice Marsh University
Award Number: 2137680 (Division of Materials Research)
Ascend-MPS: Active Glass Theory for Dendritic Spine Plasticity
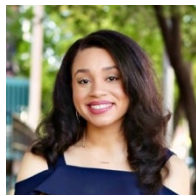
Arianne C. Hunter
Host Institution: California Institute of Technology
Award Number: 2138035 (Division of Chemistry)
Ascend-MPS: Development of an Asymmetric Electrochemical-NHK Reaction using Multivariate Linear Regression Analyses

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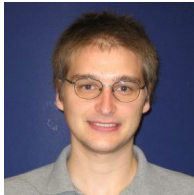
Heath J. LeFevre
Host Institution: University of Michigan
Award Number: 2138109 (Division of Physics)
Ascend-MPS: Radiation Transport in Strongly Coupled High-Energy-Density
Plasmas

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
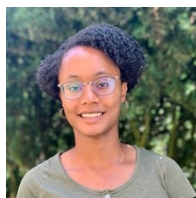
Dayna C. Patterson
Host Institution: Northwestern University
Award Number: 2138032 (Division of Chemistry)
Ascend-MPS: Characterization and Biosynthesis of Non-Methanotrophic Methanobactins

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
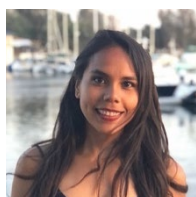

Melissa Ramirez
Host Institution: California Institute of Technology
Award Number: 2137996 (Division of Chemistry)
Ascend-MPS: Iridium-Catalyzed, Intramolecular Cyclization of Allylic Alcohols for Quaternary Center Synthesis
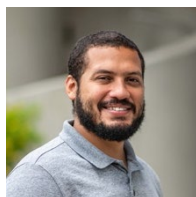
Justin Reyes
Host Institution: University of Central Florida
Award Number: 2138113 (Division of Physics)
Ascend-MPS: Neural Network Quantum Error Mitigation for Algorithms on Near-Term Intermediate Scale Quantum Devices
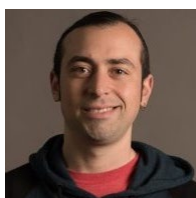
Joshua J (Shua) Sanchez
Host Institution: Massachusetts Institute of Technology
Award Number: 2138167 (Division of Materials Research)
Ascend-MPS: Probing Electronic Symmetry Breaking in Strain-Tuned Quantum Matter
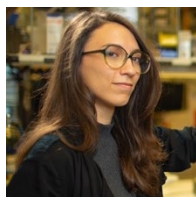
Vanessa Sanchez
Host Institution: Stanford University
Award Number: 2138020 (Division of Materials Research)
Ascend-MPS: Active Textiles based on Supramolecular Shape Memory Polymer Fibers

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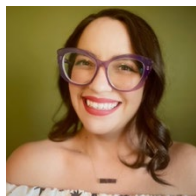
Maria K. Wimberly
Host Institution: University of California, Riverside
Award Number: 2138144 (Division of Astronomical Sciences)
Ascend-MPS: Early Universe Environments & Peer Mentorship
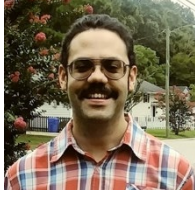
Carlos Yero
Host Institution: Old Dominion University
Award Number: 2137604 (Division of Physics)
Ascend-MPS: Study of the Strong Nuclear Interaction at Short Distances