Congratulations to the NSF MPS-Ascend 2022 Fellows

Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowships

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 2022 MPS-Ascend Fellows.

Sean L. Jones
Assistant Director
National Science Foundation
Directorate for Mathematical & Physical Sciences

Michelle Bushey
Staff Associate, Ascend Coordinator

Allen Alvarez Loya
Host Institution: Los Alamos National Laboratory
Award Number: 2213261 (Division of Mathematical Sciences)
Award Title**:** MPS Ascend: Structure-preserving algorithms and their applications in plasma physics

Daniel D. Brauer
Host Institution: University of California, Berkeley
Award Number: 2213241 (Division of Chemistry)
Award Title: MPS Ascend: A Proteomic Approach to Understand and Improve Endosomal Escape

Gabriel G. Cecchini
Host Institution: University of California, Riverside
Award Number: 2213812 (Division of Physics)
Award Title: MPS Ascend**:** Observation of the Positronium Plus Ion and Development of a Spin-Polarized Positron Beam for Angle-Resolved Positronium Emission Spectroscopy

Erin Cox
Host Institution: Northwestern University
Award Number: 2213275 (Division of Astronomy)
Award Title: MPS Ascend: Can the Protostellar Magnetic Field be Used as a Signpost for Binary Formation Pathway?

Emily B. Franklin
Host Institution: Colorado State University
Award Number: 2213001 (Division of Chemistry)
Award Title: MPS Ascend: Characterizing Contributions of Volatile Chemical Products to Aerosol Chemistry and Composition in the Modern Megacity

Humberto B. Gilmer
Host Institution: Brown University
Award Number: 2213126 (Division of Physics)
Award Title: MPS Ascend: Superfluid Dark Matter: Unveiling the Dark Sector of the Cosmos

Felix Gotti
Host Institution: Massachusetts Institute of Technology
Award Number: 2213323 (Division of Mathematical Sciences)
Award Title: MPS Ascend: Triangulations of the Product of Two Simplices and Matroids from Fine Mixed Subdivisions

Jonathan C. Johnson
Host Institution: Oklahoma State University
Award Number: 2213213 (Division of Mathematical Sciences)
Award Title: MPS Ascend: Bi-Orderability, Fibered Knots, and Cyclic Branched Covers

Diamond T. Jones
Host Institution: University of Pennsylvania
Award Number: 2213159 (Division of Chemistry)
Award Title: MPS Ascend: First-Principles Modeling of Etching and Intercalation in 2D Nanomaterials and Heterostructures

Alan Marquez
Host Institution: Vanderbilt University
Award Number: 2213322 (Division of Mathematical Sciences)
Award Title: MPS Ascend: Improved Accuracy and Robustness for Numerical Partial Differential Equations and Non-Linear Optimization

Raquel A. Martinez
Host Institution: University of California, Irvine
Award Number: 2213312 (Division of Astronomy)
Award Title: MPS Ascend: Directly Imaged Planets to Directly Characterized Planets: A Multi-pronged Approach to Understand Planet Formation Processes

Theo R. McKenzie
Host Institution: Harvard University
Award Number: 2212881 (Division of Mathematical Sciences)
Award Title: MPS Ascend: Eigenvector Statistics of the Adjacency Operator of Graphs

Skyler D. Mendoza
Host Institution: Scripps Research Institution
Award Number: 2213302 (Division of Chemistry)
Award Title: MPS Ascend: Development of a Dual Catalytic Fragment Insertion Reaction

Nariel Monteiro
Host Institution: University of California, Santa Cruz
Award Number: 2213166 (Division of Mathematical Sciences)
Award Title: MPS Ascend: Theory of General Linear Groups Over Finite Local Principal Ideal Rings

Gabriel J. Montoya-Vega
Host Institution: CUNY Queens College
Award Number: 2212736 (Division of Mathematical Sciences))
Award Title: MPS Ascend: High Altitude Filament Formation and Propagation

Jessica Pena
Host Institution: University of Central Florida
Award Number: 2213242 (Division of Physics)
Award Title: MPS Ascend: High Altitude Filament Formation and Propagation

Melecio Perea
Host Institution: University of California, Los Angeles
Award Number: 2213210 (Division of Chemistry)
Award Title: MPS Ascend: Nickel/Photoredox-Catalyzed C(sp3)–C(sp3) Cross-Coupling Between Alkyl Halides and Activated Alcohols

Michael R. Phillips
Host Institution: University of Denver
Award Number: 2213103 (Division of Material Research)
Award Title: MPS Ascend: Liquid-Liquid Phase Separation of Heteropolymers: Sequence Details and Coupling to Statistical Fluctuations

Mikaela Pyrch
Host Institution: University of California, Berkeley
Award Number: 2213284 (Division of Chemistry)
Award Title: MPS Ascend: Rigid Oxo Ligands to Control the Next Generation of f-Element Molecular Spin Centers.

Angel R. Roman
Host Institution: Washington University at St. Louis
Award Number: 2213097 (Division of Mathematical Sciences)
Award Title: MPS Ascend: The C*-Algebraic Mackey Bijection for Real Reductive Groups

Jorge L. Rosa Raices
Host Institution: University of California, Berkeley
Award Number: 2213064 (Division of Materials Research)
Award Title: MPS Ascend: Improved Polymer Upcycling Strategies via Stochastic Thermodynamics

Natalie N. Sanchez
Host Institution: Carnegie Observatories/ Caltech
Award Number: 2212959 (Division of Astronomy)
Award Title: MPS Ascend: Disentangling the Complexities of Galaxy Evolution Using Genetically Modified Galaxies

Chavis A. Stackhouse
Host Institution: Texas A&M University
Award Number: 2212962 (Division of Materials Research)
Award Title: MPS Ascend: Critical Metals from Complex Waste Streams: An Electrochemistry Roadmap to Selective Extraction

Aaron Stemo
Host Institution: Vanderbilt University
Award Number: 2213288 (Division of Astronomy)
Award Title: MPS Ascend: Spearheading Inclusive Mentoring and Multimessenger Training with a Census of Potential Counterpart Galaxies

Brandon C. Sumner
Host Institution: Arizona State University
Award Number: 2213292 (Division of Physics)
Award Title: MPS Ascend: Hadronic Physics at Arizona State University