



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 Simplicies 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

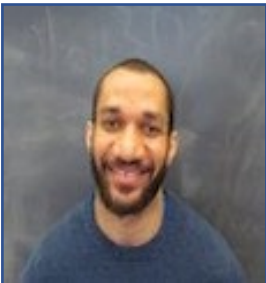


Skyler D. Mendoza

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 Pynch

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