

John D. Soltis

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EDUCATION:

Johns Hopkins University Krieger School of Arts & Sciences Ph.D in Astronomy and Astrophysics	2019 - Present	Baltimore, MD
Johns Hopkins University Krieger School of Arts & Sciences M.A. in Physics	2019 - 2023	Baltimore, MD
University of Michigan Honors Program, College of Literature, Science, and the Arts B.S. in Physics and Mathematical Physics	2014 - 2018	Ann Arbor, MI
Brother Rice High School Salutatorian of Class of 2014	2010 - 2014	Bloomfield Hills, MI

SKILLS:

General

Science Communication, Machine Learning, Hierarchical Bayesian Modeling, Data Analysis

Software Packages & Languages

Python, Pytorch, Tensorflow, Unix, LaTeX, MATLAB, Microsoft Excel, C++

RESEARCH PROJECTS & EMPLOYMENT:

Deep Learning Applications in Galaxy Cluster Cosmology <i>Johns Hopkins University & Space Telescope Science Institute</i> Using convolutional neural networks to characterize galaxy cluster properties and improve observations.	2021 - Present <i>Advisor: Michelle Ntampaka</i>
Robustness of Cosmological Simulations <i>Flatiron Institute</i> Investigated the robustness of dark matter halo mass accretion rates in cosmological simulations.	2023 - 2024 <i>Advisor: Lehman Garrison</i>
Maryland Space Grant Observatory Fellow <i>Johns Hopkins University</i> Hosted open house events, trained perspective observers on the telescope, and helped run the MDSGC symposium.	2021 - 2022 <i>Advisor: Matt Collinge</i>
Tip of Red Giant Branch Calibration <i>Johns Hopkins University & Space Telescope Science Institute</i> Measured the Hubble constant using updated position data of Milky Way stars.	2019 - 2020 <i>Advisor: Adam Riess</i>

Machine Learning Applications in Wildfire Detection

2018 - 2019

*Lawrence Berkeley National Laboratory**Advisor: Carl Pennypacker*

Used images from wildfire detection cameras in California and Nevada to train a convolutional neural network to detect wildfires early.

Testing Statistical Isotropy with Type Ia Supernovae

2017 - 2018

*University of Michigan**Advisor: Dragan Huterer*

Implemented a novel and robust test of statistical isotropy in the Universe using type Ia supernovae residuals.

Simulation of Laser-Driven Plasma Instabilities

2015 - 2016

*University of Michigan**Advisor: Matthew Trantham*

Simulated laser-driven plasma instabilities with a variety of experimental conditions. Results were used to improve experimental design.

Summer Scholar Internship Program

2015

*Lawrence Livermore National Laboratory**Advisors: John Heebner & Jason Chou*

Improved the accuracy of laser waveform generation in order to aid experiments at the National Ignition Facility.

EXTRACURRICULARS:**American Astronomical Society Congressional Visit Day**

2024

Met with Members of Congress and their staffs to advocate for increased NASA and NSF funding

Institute of Electrical and Electronics Engineers Congressional Visit Day

2024

Advocated for NSF funding and improved STEM workforce policies

Johns Hopkins Science Policy and Diplomacy Group Congressional Visit Day

2024

Advocated for the Keep STEM Talent Act of 2023

Graduate Representative Organization

2021 - 2023

General Council Representative for the Physics & Astronomy Department

Public Forum Debate Judge

2020 - 2022

Judged for Michigan Interscholastic Forensics Association Public Forum League

Michigan Journal of International Affairs

2014 - 2016

Writer for the Asia Region

Brother Rice Debate Team

2010 - 2014

Varsity in Public Forum Debate

PUBLICATIONS & POSTERS:

J. Soltis, M. Ntampaka, B. Diemer, J. ZuHone. "Estimating Galaxy Cluster Mass Accretion History From Observations Using Machine Learning", *in prep*

B. E. M. Davis, M. Razavi-Mohseni, **J. Soltis**, H. N. Zhang, E. Kavanagh. "International STEM Graduate Students: A Key to Strengthening the American Economy and Building Competitiveness", Submitted to the *Journal of Science Policy and Governance*, (2024)

J. Soltis, L. Garrison. "Self-Similar Mass Accretion Histories in Scale-Free Simulations", Accepted by *Monthly Notices of the Royal Astronomical Society*, eprint arXiv:2405.05360, (2024)

M. Ho, **J. Soltis**, A. Farahi, D. Nagai, A. Evrard, M. Ntampaka. “Benchmarks and Explanations for Deep Learning Estimates of X-ray Galaxy Cluster Masses”, *Monthly Notices of the Royal Astronomical Society*, 524, 3, 3289-3302, (2023)

J. Soltis, M. Ntampaka, J. Wu, J. ZuHone, A. Evrard, A. Farahi, M. Ho, D. Nagai. “A Machine Learning Approach to Enhancing eROSITA Observations”, *The Astrophysical Journal*, 940, 1, 60 (2022)

J. Soltis, M. Ntampaka. “Predicting Follow-Up Observations of Galaxy Clusters Using Machine Learning”, American Astronomical Society Meeting #240, id. 139.19. *Bulletin of the American Astronomical Society*, Vol. 54, No. 6 e-id 2022n6i139p19 (2022)

J. Soltis, S. Casertano, A. G. Riess. “The Parallax of Omega Centauri Measured from Gaia EDR3 and a Direct, Geometric Calibration of the Tip of the Red Giant Branch and the Hubble Constant”, *The Astrophysical Journal Letters*, 908, L5 (2021)

J. Soltis, A. Farahi, D. Huterer, C. M. Liberato. “Percent-Level Test of Isotropic Expansion Using Type Ia Supernovae”, *Phys. Rev. Lett.*, 122, 091301 (2019)