JOSEPH PALMO

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA Expected: May 2027
- Ph.D. in Atmospheric Science; MIT Presidential Fellow

AMHERST COLLEGE, Amherst, MA May 2021
- Bachelor of Arts, Physics and Astronomy, *cum laude*
- *Thesis*: Simulated Scatter: Computational Modeling of (Sub)Stellar Accretion

RESEARCH EXPERIENCE

QUANTAQ, INC, Somerville, MA Jun. 2021-Aug. 2021
Data Scientist
- Built interactive, live-updating Plotly-Dash applications for internal data analysis, product development, and quality assurance and control
- Wrote python package **py-tofspec** for labeling time-of-flight mass spectrometry (PTR-TOF-MS) datasets in an effort to develop a low-cost soil VOC sensor
- Configured RaspberryPi to parse data from GRIMM-11d particle size distribution sensor and wrote app to run continuously as a connected data dashboard

HARVARD-SMITHSONIAN CENTER FOR ASTROPHYSICS, Cambridge, MA Aug. 2021-Feb. 2022
Visiting Research Fellow
Advisor: Dr. Paul Green, Harvard SAO-CfA
- Co-led project dubbed Sensing the Dynamic Universe, an astronomy outreach **website** built for the blind and visually impaired community
- Wrote python to preprocess and sonify light curve and spectral data for various variable objects in the universe

NASA STUDENT AIRBORNE RESEARCH PROGRAM, Los Angeles, CA June-Aug. 2020
Research Intern
Advisor: Dr. Donald Blake, UC Irvine
- Designed and developed an individual atmospheric science research project, assisted in the operation of instruments onboard a NASA DC-8 aircraft

SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP, Amherst, MA June-Aug. 2019
Astronomy Research Assistant
Advisor: Dr. Kate Follette, Amherst College
- Assisted Dr. Follette with her research project GAPlanetS: the Giant Accreting Protoplanets Survey.
- Iterated, evaluated, and improved upon the intricate process of data reduction which involved injecting fake planets in the images to determine what parameters should be plugged into various pieces of software, de-rotating and combining multi-wavelength images, and subtracting starlight from images

LEADERSHIP EXPERIENCE

AMHERST COLLEGE BASEBALL TEAM, Amherst, MA Sept. 2017-May 2021
Captain
- Named to the NESCAC All-Conference, All-Academic, and All-Sportsmanship teams (One of two baseball players in the conference to garner all three honors)
- Scheduled, organized, and ran offseason practices 2021 season

VOLUNTEER EXPERIENCE

CITIZEN ENABLED AEROSOL MEASUREMENTS FOR SATELLITES, Austin, TX June-Aug. 2020
Field Data Collector

- Collaborated with NASA-funded science team at Colorado State University
- Operated Aerosol and Optical Depth (AMOD) instrument in my backyard to improve local air quality measurements and therefore better understand the relationship with satellite observations

PRESENTATIONS

AMERICAN ASTRONOMICAL SOCIETY 237TH MEETING, iPOSTER Jan. 2021
Simulated Scatter: A Monte Carlo Approach to Understanding the Observed (sub)Stellar Mass-Accretion Rate Relation
iPoster Link

NASA SARP PROJECT PRESENTATION Aug. 2020
Dissecting Two Plumes of Elevated Toluene Concentrations at High Altitudes
Video Link

AMHERST SURF POSTER SESSION Sept. 2019
*Optimizing the GAPlanetS (**G**iant **A**ccreting **P**roto**planet**s **S**urvey) Data Reduction Pipeline*

MEMBERSHIPS

American Geophysical Union Aug. 2020-Present

American Astronomical Society Oct. 2020-Present

PUBLICATIONS

Palmo, J.O., Heald, C.L. et al. (submitted to ACP) Investigating wildfire-induced ozone production from local to global scales.

Adams Redai, J. I., Follette, K. B., Wang, J., Leonard, C., Balmer, W., Close, L. M., et al. **[including J. Palmo]** (2023). The Giant Accreting Protoplanet Survey (GAPlanetS): Optimization Techniques for Robust Detections of Protoplanets. *The Astronomical Journal*, *165*(2), 57. https://doi.org/10.3847/1538-3881/aca60d

Betti, S. K., Follette, K. B., Ward-Duong, K., Peck, A. E., Aoyama, Y., Bary, J., et al. **[including J.Palmo]** (2023). The Comprehensive Archive of Substellar and Planetary Accretion Rates.*The Astronomical Journal*, *166*(6), 262. https://doi.org/10.3847/1538-3881/ad06b8

Follette, K. B., Close, L. M., Males, J. R., Ward-Duong, K., Balmer, W. O., Redai, J. A., et al. **[including J. Palmo]** (2023). The Giant Accreting Protoplanet Survey (GAPlanetS)—Results from a 6 yr Campaign to Image Accreting Protoplanets. *The Astronomical Journal*, *165*(6), 225. https://doi.org/10.3847/1538-3881/acc183

Yang, M., Blake, D., Jarnot, A., Meinardi, S., Weitz, G., Love, B., et al. **[including J. Palmo]** (2021, March 25). NASA Student Airborne Research Program (SARP) Whole Air Sampling across the United States during the COVID-19 Pandemic. https://doi.org/10.1002/essoar.10506520.1

SKILLS

- Python: 6+ years of experience. xarray, NumPy, SciPy, Pandas, scikit-learn, matplotlib, seaborn, data science, Plotly-Dash interactive data dashboards
- Atmospheric chemistry modeling (GEOS-Chem); High Performance Computing, Linux
- Certificates: Machine Learning with Python (IBM), Neural Networks and Deep Learning (Deeplearning.AI), Improving Deep Neural Networks (Deeplearning.AI), Structuring Machine Learning Projects (Deeplearning.AI), Convolutional Neural Networks (Deeplearning.AI)
- Git, Github and Version Control, Familiar with Docker containerization and Poetry dependency management
- C++, microcontroller programming (Arduino, RaspberryPi, Particle)