Josh Machado

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Education

Astronomy (PhD)
The Ohio State University ~ 2020 – Present

Physics (BS) – Cum Laude
University of Connecticut ~ 2017 – 2020
- GPA: 3.74/4.00

Research Experience

GMC Spacing & Clustering: Aug. 2020 - Present
The Ohio State University – Columbus OH
Under the supervision of my advisor Dr. Adam Leroy I am studying the spatial distribution of GMCs in a sample of nearby star forming galaxies. This work is being done within the context of the PHANGS collaboration. I am developing a suite of statistical metrics to describe the clustering of clouds and examing how their spacing correlates with large scale properties of the host galaxies.

LSST Data Science Fellowship Program: Aug. 2020 - Present
As part of a two-year long program, I am a LSST Data Science Fellow. In a series of week-long workshops spread over the two years I will learn data analysis techniques focused on time-series data, machine learning, and big data practices all within the context of astronomical data.

REU Student: Jun. – Aug. 2019
National Radio Astronomy Observatory – Socorro NM
I worked with Dr. Adam Ginsburg on a project studying massive star formation. I used ammonia emission data from the VLA to create temperature and density maps of a star forming region in the Milky Way. I used these maps to calculate the masses of previously identified protostellar cores in the region.

Undergraduate Researcher: Jan. 2018 – May 2020
UConn Physics Department – Storrs CT
Under the supervision of my advisor Dr. Cara Battersby, I studied a massive star forming region in the Milky Way. I learned interferometric data reduction and imaged ammonia emission data taken with the VLA. This work was expanded upon during my time as an REU student at the NRAO.

Related Experience

Teaching Assistant
August 2021 – Present
I am currently working as a teaching assistant for two intro astronomy courses at The Ohio State University. I teach a lab section for AST 1101 where I lead discussions with students and provide lessons related to lab activities. I also assist in AST 1140 which is taught in our university planetarium. I help design planetarium shows for class and organize observing sessions related to class.

GBT Observing
February 2020
I assisted on a large (~180 hours) observing run with the Green Bank Observatory. We were observing the HI in the circumgalactic medium around 4 nearby galaxies. I completed my observatory training and am qualified to observe for future runs.

UConn Astronomy Association
President ~ September 2018 to May 2020
I was president of the undergraduate astronomy club for two years. As president I ran weekly educational meetings, hosted observing sessions for students on campus, and organized trips to local museums and observatories. I also organized large astronomy outreach events for several hundred elementary and high school students during my time as president.

Presentations & Conferences

PHANGS Team Meeting 2020
Presenter & Attendee, December 2020
I presented my work on GMC spacing and clustering in PHANGS-ALMA galaxies.

American Astronomical Society
Annual Winter Meeting, January 2020
I presented my project on ammonia emission in a massive star forming region. This encompassed both my work as a NRAO REU student and my research project at UConn.

New England Star Formation Meeting
Attendee, January 2020

UConn Physics Department
Nominated Student Presentation, November 2019
I was one of four students selected to represent undergraduate research in the UConn physics department when Dr. Jocelyn Bell Burnell was visiting.

Accomplishments

- University Fellow – The Ohio State University 2020
- LSST Data Science Fellow
- National Radio Astronomy Observatory – Summer Research Student 2019
- SPS National Physics Honor Society - Member
- 2019 UConn Astrophysics Faculty Search Committee – Student Liaison
- UConn CLAS Dean's List – Spring 2018, Fall 2018, Fall 2019
- 2018 New England Scholar
- NASA CT Space Grant Consortium Undergraduate Scholarship – Recipient
- James Hoffa Memorial National Teamsters Scholarship – Recipient
- Make-A-Wish Fundraising – Organized charity concert to raise $7,000+

Skills

- Python, CASA, UNIX
- Spectral fitting
- Data visualization & analysis
- Interferometric data reduction
- Public outreach and education
- Outreach team leadership
- Formal research presentations