# 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