

Gabriel Ortiz-Pena | CV

305-D W. Hamilton Ave. – 16801 State College – USA

☎ +1 (787) 525 4046 • ✉ gabo@psu.edu • 🌐 ghortiz-pena

Education

University of Colorado Boulder

Ph.D., Astrophysical and Planetary Sciences

Boulder, CO

Aug 2016–Present

Pennsylvania State University

B.S., Astronomy & Astrophysics; Minors: Physics, Mathematics

State College, PA

Aug 2012–May 2016

Research Experience

Radio Flaring Brown Dwarfs (PSU)

State College, PA

2013–2015

Advisor: A. Wolszczan

- Ongoing monitoring of multiple ultracool ($\leq M9$) dwarfs with the Arecibo Radio Telescope
- Measured multi-frequency light curves of ultracool dwarf flares at C-band (4 - 5 GHz)
- Made precise measurements of stellar rotation periods from flare arrival times
- Computationally modeled the stellar magnetosphere
 - Distinguished between two different emission modes
 - Characterized magnetic field topologies that lead to observed emission
 - Tracked the field topology as a function of time, using radio observations and model predictions

Research Experience for Undergraduates (NRAO)

Green Bank, WV

May - August 2014

Advisor: R. Prestage

- Detection, characterization, and excision of radio-frequency interference (RFI) for pulsar observations
- Design and implementation of a data reduction pipeline to help automate pulsar detection

Class Research Projects.....

Math 597D: Numerical Methods for Non-Linear, Hyperbolic Conservation Laws

Analysis of the Equations of Ideal Magnetohydrodynamics

Fall 2015

Review of past and current literature on the system of differential equations that describes Magnetohydrodynamics (MHD); implementation of a numerical scheme to approximate solutions of the equations

Astro 585/497A: Astrostatistics

Signal Detection and De-Noising in Arecibo Radio Observations

Spring 2015

Modern statistical techniques were used to extract signals of scientific interest from noisy images in the time-frequency plane

Astro 420W: Planets and Planetary System Formation

Estimating Exoplanet Mass and Period Distributions

Fall 2014

A Monte Carlo simulation was used, in conjunction with current detected exoplanet data, to estimate the mass and period distributions for exoplanets

Successful Telescope Proposals

Arecibo Observatory: September 2014

Title: *Continuation of the timing of the periodically flaring ultracool dwarf, TVLM 513-46546*

Wolszczan, A.; Ortiz-Pena, G.

Arecibo Observatory: September 2013

Title: *Timing the periodically flaring ultracool dwarfs, TVLM 513-46546, 2M J0746+2000, and LSR 1835+3259*

Wolszczan, A.; Ortiz-Pena, G.

Observing and Software Experience

Observing Experience.....

- o Arecibo Observatory: radio spectroscopy (50+ nights)
- o PSU 12-inch Optical Telescope: optical imaging (10 nights)
- o Green Bank Telescope: pulsar detection (1 night)

Software Experience.....

Python, C/C++, MATLAB, IDL, Mathematica, L^AT_EX, PyRAF, SAO DS9

Fellowships, Scholarships, and Leadership

Bunton-Waller Fellow 2012-2016

PSU Juggling Club

President *Fall 2015 - Spring 2016*

Vice-President *Fall 2014 - Spring 2015*

Secretary *Spring 2014*

PSU Applied Physics Club

Vice-President *Fall 201 - Spring 2016*