

PAUL CORLIES
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EDUCATION

Cornell University, September 2013-Present
PhD Student, Department of Astronomy

University of Pennsylvania, Philadelphia, PA
Bachelor of Arts in Physics 2013
Cumulative GPA of 3.80/4.0
Major GPA of 3.80/4.0
Area of Concentration: Astrophysics
Minors: Mathematics, Classical Studies

Awards and Honors:

Latin honors of *Summa Cum Laude* (2013)
Distinguished Honors in Physics (2013)
Dean's List Honors (2010,2011,2013)
Phi Beta Kappa Honor Society (2013)
NASA Earth and Space Sciences Fellowship (2014,2015)

RESEARCH EXPERIENCE

Graduate Research Assistant *Cornell University*, Ithaca, NY September 2013-Present

Project: Titan Ground Based Observing Campaign

- Continuing an ongoing ground based observing campaign of Titan's hydrology by monitoring for cloud activity in the Near-IR. Began in April 2013 and still ongoing instruments used include: SINFONI (VLT), NIRI (Gemini N), NIFS (Gemini N), SpeX (IRTF), and GPI (Gemini S)

Project: Amateur Observing

- Currently developing an observing scheme approachable for a (worldwide) network of amateur astronomers to make observations of Titan's hydrology to compliment our campaign at professional observatories.

Project: Cloud Characterization in Cassini VIMS Data

- Currently adapting a radiative transfer code to be able to quickly and accurately model known clouds in the Cassini VIMS dataset over the past ten years including cloud altitude, optical depth, and mean particle size.

Project: Design and Development of a Fourier Transform Spectrometer (FTS)

- Working with Michael Niemack in the Cornell Physics Department to design and develop a FTS for use of testing near anti-reflective coating technology being developed here at Cornell.

Project: Near-Infrared Spectrometer (NIRSpec) September 2013-January 2013

- Characterization of NIR spectrometer proposed for the Mars 2020 payload. Includes analyzing dark current, responsivity, read noise, bias, and NIR reflectance measurements of Martian analogs

Honors Thesis *UPenn*, Philadelphia, PA September 2012-May 2013

Title: "Improvement of a Fourier Transform Spectrometer at Millimeter and Submillimeter Wavelengths"

- Modified design for greater signal, ease of use, and overall performance including: designing a standalone housing unit and cooling system, modifying alignment system, designing polarizing grids, and data collection and analysis

Research Assistant *UPenn*, Philadelphia, PA September 2011-July 2013

Project: Atacama Cosmology Telescope (ACT)

- Assisted in the deconstruction of Millimeter Bolometer Array Camera (MBAC) as well as constructing ACTPol, including: assisting in installation of insulation, thermometry, cryogenics, optics, filters, and detectors, as well as initial testing of components.

Project: Balloon Borne Large Aperture Submillimeter Telescope (BLAST)

- Assisted in general testing and characterization of the telescope including generating beam maps, measuring the primary mirror, and testing bandpasses and filters

WORK EXPERIENCE

Teaching Assistant *Cornell University*, Ithaca, NY September 2013-Present

- Prepare lesson plans, conduct recitations, and hold office hours for introductory astronomy classes covering a breadth of fields.

Tutor *UPenn*, Philadelphia, PA September 2011-May 2013

- Held open office guidance in various introductory and intermediate courses in physics including: mechanics, electrodynamics, astronomy, and calculus

Teaching Assistant *UPenn*, Philadelphia, PA September 2011-May 2013

- Instructed students in the design and use of observatory telescopes, observing planets and other objects, and use of the CCD and accompanying software

COMPUTER SKILLS

- Intermediate skills in Python, MATLAB, L^AT_EX, and SolidWorks
- Basic skills and familiarity with JAVA, LabView, and Kst

OUTREACH

Ask an Astronomer*Cornell University, Ithaca, NY*

September 2013-May 2014

- Answer questions in astronomy from the general public as submitted through the Ask an Astronomer website hosted by Cornell University.

Community Outreach*Cornell University, Ithaca, NY*

September 2013-Present

- Assisted in Night at the Museum, hosted at the Museum of the Earth in Ithaca, NY, providing interactive physics and astronomy demos for local children
- Assist in local after school program with community children with interactive activities in physics and astronomy

PUBLICATIONS

- M. Ádámkóvics, J.L. Mitchell, A.G. Hayes, P.M. Rojo, **P. Corlies**, J.W. Barnes, V. D. Ivanov, R.H. Brown, K.H. Baines, B.J. Buratti, R.N. Clark, P.D. Nicholson, C. Sotin. Meridional variation in tropospheric methane on Titan observed with AO spectroscopy at Keck and VLT. *Icarus*, 2015. (Submitted)

ABSTRACTS, CONFERENCE PROCEEDINGS, & INVITED TALKS

- [5] **P. Corlies**, A.G. Hayes, P. Rojo, M. Ádámkóvics, E. Turtle, B. Buratti. Ground Based Monitoring of Cloud Activity on Titan. *DPS 2014*, Tucson, AZ. October 2014
- [4] G.D. McDonald, **P. Corlies**, J.J. Wray, S.M. Hörst, J.D. Hofgartner, L.R. Liuzzo, J. Buffo, A.G. Hayes. Altitude-Dependence of Titan's Methane Transmission Windows: Informing Future Missions. *LPSC 2015*, The Woodland, TX. March 2015
- [3] B.G. Bills, B.W. Stiles, R.L. Kirk, A.G. Hayes, S. Birch, **P. Corlies**. Constraints on Titan Rotation from Cassini Radar Data. *LPSC 2015*, The Woodlands, TX. March 2015
- [2] *Invited Speaker*, UFR of Science of the Earth, Environment and Planets; Paris, France, May 2015
- [1] *Invited Speaker*, Titan Surface Workshop; Ithaca, NY, October 2014.

ACCEPTED OBSERVING PROPOSALS

- [7] IRTF 2015 Period 2015B, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with SpeX", 22 hrs from August 1 2015 - January 31, 2016
- [6] Gemini South 2015 Period 2015B, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with the Gemini Planet Imager", 8 hrs Rapid ToO from August 1 2015 - January 31, 2016
- [5] Gemini North 2015 Fast Turnaround Program, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with NIFS", 1.1 hrs from June 1 - July 31, 2015
- [4] Gemini North 2015 Fast Turnaround Program, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with NIRI", .5 hrs for June 2015
- [3] Gemini South 2014 Period 2015A, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with the Gemini Planet Imager", 8 hrs Rapid ToO from February 1 - July 31, 2015
- [2] ESO 2014 Period 94, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with VLT/SINFONI", 11.4 hrs + 2hrs ToO from October 1 2014 - March 31, 2015
- [1] ESO 2013 Period 93, "Investigating seasonal changes in Titan's meteorology through cloud monitoring with VLT/SINFONI", 21 hrs + 8.6 hrs ToO from April 1 - September 30, 2014.