Prof. Nicholas Galitzki *August 10, 2022*

CONTACT INFORMATION
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RESEARCH INTERESTS
Experimental cosmology, astrophysical instrumentation, data analysis, polarimetry, cosmic microwave background, interstellar medium, dust, cryogenics, balloon-borne telescopes

EDUCATION

The University of Pennsylvania, Philadelphia, PA
Ph.D., Physics and Astronomy **May 2016**

- *Magnetic Fields in Molecular Clouds: The BLASTPol[1] and BLAST-TNG[2] Experiments*
- Adviser: Prof. Mark Devlin

California Institute of Technology, Pasadena, CA
B.S., Astrophysics **June 2008**

RESEARCH POSITIONS

University of Texas at Austin, Austin, TX
Assistant Professor, Department of Physics **Aug. 2022 - Present**

Fulbright Scholar Program, Santiago, Chile
Postdoctoral Fulbright Scholar **Jan. 2022 - May 2022**

- Developing a drone-based polarized calibration technique for millimeter telescopes with Prof. Rolando Dünner Paella at Pontificia Universidad Católica de Chile.

University of California San Diego, La Jolla, CA
Simons Observatory Postdoctoral Scholar **Sept. 2016 - July 2022**

- Simons Observatory leader for camera design, integration, and testing.
- Simons Observatory systematic studies, data acquisition, and analysis.
- BLAST-TNG flight preparations and Antarctic deployment.

University of Pennsylvania, Philadelphia, PA
Graduate Student **Sept. 2010 - May 2016**

- BLAST-TNG leader for liquid helium camera design, integration, and testing.
- BLASTPol data reduction and analysis.
- BLASTPol commissioning, testing, and Antarctic launch.

California Institute of Technology, Pasadena, CA
Undergraduate Researcher **Jun. 2006 - Jun. 2008**

- Developed a radio interferometer for atmospheric characterization.

FELLOWSHIPS AND AWARDS

PI Launchpad
2021 Virtual PI Launchpad Participant **June 2021**

- Selected for the workshop which trains potential PIs to navigate the flight mission proposal process.
- Organized by the NASA SMD, the Heising-Simons Foundation, and the University of Arizona.

Fulbright Scholar Program
Fulbright Postdoctoral Scholar Award **Selected Feb. 2020**

- Awarded for 2020/2021 grant cycle, completed Jan. to May, 2022.

University of Pennsylvania, Philadelphia, PA
School of Arts and Sciences Dissertation Completion Fellowship **Sept. 2015 - May 2016**

- Fellowship fully funds student for the final year of their dissertation.
- One student is nominated from the department each year.

American Astronomical Society (AAS)
Astronomy Ambassador **Jan. 2015 - Present**

- AAS Ambassador status maintained through continued Astronomy outreach work.

[1] BLASTPol: The Balloon-borne Large Aperture Submillimeter Telescope for Polarimetry
[2] BLAST-TNG: The Balloon-borne Large Aperture Submillimeter Telescope - The Next Generation

Recent Professional Talks

SPIE Astronomical Telescopes + Instrumentation, Montreal, Canada **July 2022**
The Simons Observatory: Development and validation of the first Small Aperture Telescope, SAT-MF1

From Planck to the Future of CMB, Ferrara, Italy **May 2022**
The Characterization and Calibration of the Simons Observatory Small Aperture Telescope: Status and future plans

Invited, University of Texas at Austin, Dept. of Physics Colloquium, Virtual **Jan. 2022**
The Simons Observatory, CMB-S4, and BLAST: Probing the beginning of the Universe with precision polarimetry experiments

2021 Scientific Ballooning Technologies Workshop, Virtual **May 2021**
The Enabling Technology Instrument

Invited, Cornell University LEPP Seminar, Virtual **Jan. 2021**
The Simons, BLAST, and CCAT Observatories: Probing the beginning of the Universe with precision polarimetry experiments

237th Meeting of the American Astronomical Society, Virtual **Jan. 2021**
The Simons Observatory: the Small Aperture Telescopes (SATs)

Invited, San Diego Astronomy Association Monthly Meeting, Virtual **Aug. 2020**
The Microwave Telescopes of the Simons Observatory

Invited, University of California Riverside Dept. of Physics and Astronomy Seminar, Virtual **May. 2020**
The Simons Observatory and BLAST-TNG: Probing the beginning of the Universe with precision polarimetry experiments

Invited, University of Iowa Dept. of Physics and Astronomy Colloquium, Iowa City, IA **Feb. 2020**
The Simons Observatory and BLAST-TNG: Probing the beginning of the Universe with precision polarimetry experiments

Invited, Cardiff University Seminar, Cardiff, UK **Sept. 2019**
Forethought for foregrounds: Next steps in precision cosmology with the Simons Observatory and BLAST-TNG

Invited, Midwest Magnetic Fields Meeting 2019, Madison, WI **May 2019**
Dust polarimetry of the interstellar medium with the Simons Observatory and BLAST-TNG

233rd Meeting of the American Astronomical Society, Seattle, WA **Jan. 2019**
BLAST-TNG: Antarctic pre-flight integration

Invited, University of Southern California Colloquium, Los Angeles, CA **Sept. 2018**
Forethought for foregrounds: Next steps in precision cosmology

SPIE Astronomical Telescopes + Instrumentation, Austin, TX **Jun. 2018**
The Simons Observatory: Instrument Overview

Professional Service

Simons Observatory Collaboration

Chilean Engagement program leader. **Oct. 2020 - Present**
Equity, Diversity, and Inclusion program member. **May 2020 - Present**
Organizer for the inaugural Simons-NSBP Scholars Program. **Jun. 2020 - Aug. 2020**
Small aperture telescope, work breakdown structure Level 3 leader. **Sept. 2017 - Present**
Education and public engagement committee co-leader. **Sept. 2016 - Oct. 2020**
Local organizing committee member. **Jun. 2017**
Cryogenics working group co-leader. **Sept. 2016 - Sept. 2017**

CMB-S4 Collaboration

Education and Public Outreach Committee member. **Aug. 2020 - Present**
Local organizing committee member. **Oct. 2019**

UCSD Physics Department

Education and Public Outreach Committee member. **Aug. 2018 - Present**

NASA

Review panel member. **Jun. 2017**

Polarbear Collaboration
Remote observer for Polarbear-1 Chilean observations. **Sept. 2016 - Jun. 2017**
Internal reviewer for a publication. **Oct. 2016**

Professional Membership

National Society of Black Physicists **2020 - Present**
CMB-S4 Collaboration **2018 - Present**
Simons Observatory Collaboration **2016 - Present**
Simons Array Collaboration **2016 - Present**
American Astronomical Society **2015 - Present**
SPIE: The international society for optics and photonics **2014 - Present**
BLAST Collaboration **2012 - Present**

Mentoring Experience

University of California San Diego, La Jolla, CA

Graduate Students

Bryce Bixler, *UCSD* **Jan. 2020 - July 2022**
Kaiwen Zheng, *Princeton University* **Jan. 2020 - Dec. 2020**
- Mentee within the Simons Observatory Mentorship Program.

Michael Randall, *UCSD* **June 2019 - July 2022**
Ningfeng Zhu, *University of Pennsylvania* **Jan. 2018 - Dec. 2021**
- Mentee within the Simons Observatory Mentorship Program.

Jacob Spisak, *UCSD* **June 2018 - Aug. 2021**
Tran Tsan, *UCSD* **Sept. 2017 - July 2022**
Joseph Seibert, *UCSD* **Sept. 2017 - July 2022**
Maximiliano Silva-feaver, *UCSD* **Sept. 2016 - July 2022**

Research Assistants

Joseph Rodriguez, *UCSD* **Nov. 2019 - Mar. 2020**
Christopher Ellis, *UCSD* **June 2019 - June 2020**
- Currently a physics graduate student at University of Nevada, Reno.

Kevin Crowley, *UCSD* **Sept. 2016 - June 2018**
- Currently a physics graduate student at Princeton University.

Undergraduate Researchers

Tanah Bua, *Pomona College* **Aug. 2021 - Jan. 2022**
- Assumed mentorship to continue research past the NSBP summer program.

Ethan Wadhwa, *UCSD* **Aug. 2021 - Jan. 2022**
Hakob Abajian, *UCSD* **June 2019 - Dec. 2019**
Tamar Ervin, *University of Southern California* **July 2019 - Sept. 2019**
Logan Foote, *University of California Berkeley* **June 2019 - Aug. 2019**
- Currently a physics graduate student at Caltech.

University of Pennsylvania, Philadelphia, PA

Mark Giovinazzi, *Undergraduate, Drexel University* **Jan. 2015 - May 2016**
- Currently a physics and astronomy graduate student at the University of Pennsylvania.

Timothy McSorley, *Undergraduate, Drexel University* **Jan. 2015 - May 2016**
- Currently a physics and astronomy graduate student at the University of California Irvine.

Teaching Experience

University of California San Diego, La Jolla, CA

PHYS 162 - Cosmology Lecture **May 12, 2021**
- Guest lecture for Prof. Brian Keating on the topic of experimental cosmology.

The Center for Engaged Teaching, La Jolla, CA

Introduction to College Teaching **Oct. 2017 - Dec. 2017**
- Developed expertise in evidence-based teaching practices that support student learning.
- Developed and presented a lesson plan that included active learning components.

The Netter Center, Philadelphia, PA

The Netter Center Astronomy Curriculum Chair **Aug. 2015 - May 2016**

- Developed a 12 Lesson Astronomy Curriculum for an under-served inner-city high school.
- Course included organizing lessons and facilitating demonstrations.
- Mentored undergraduate student volunteers who assisted in teaching the course.

iPraxis, Philadelphia, PA

iPraxis Afterschool Class Mentor **Jan. 2015 - May 2015**

- A reverse engineering class for inner-city middle school students.
- Created activities to help students understand how basic mechanical/electrical devices worked.

University of Pennsylvania, Philadelphia, PA

Teaching Assistant **Jan. 2013 - May 2013**

- Phys 101: General Physics: Mechanics, Heat, and Sound
  - Responsibilities included leading a weekly recitation section, grading, and office hours.
  - Instructor: Prof. Mark Devlin

Teaching Assistant **Aug. 2011 - Dec. 2011, Jan. 2012 - May 2012, Aug. 2012 - Dec. 2012, Aug. 2013 - Dec. 2013**

- Astr 001: Survey of the Universe
  - Undergraduate course in basic astronomy for non-science majors.
  - Responsibilities included grading and office hours.
  - Instructor: Prof. Mark Devlin

Center for Teaching and Learning **Aug. 2012**

- Teaching Assistant Training Workshop Leader
  - Developed lessons on teaching methodology in months prior to workshop.
  - Taught lessons and interactive sessions over one week period prior to start of semester.
  - Responsible for training new teaching assistants for the School of Arts and Sciences.

Teaching Assistant **Aug. 2010 - Dec. 2010**

- Phys 101 and Phys 102 - Laboratory
  - Lab courses in physics, concentrating on mechanics, electricity, and magnetism.
  - Responsibilities included preparing laboratory lectures and demonstrations, supervising student lab groups, and grading lab reports.
  - Lab supervisor: Dr. Robert Johnson

LABORATORY EXPERIENCE

Software:

- *SolidWorks*: Extensive experience with design and simulation.
- *COMSOL Multiphysics*: Experience with mechanical and thermal simulation software.
- *GrabCAD*: Organizational and administrative experience with versioning control software within several collaborations.
- *Microsoft Project*: Significant work constructing and managing project Gantt charts.
- *Jira/Confluence*: Utilized to coordinate the research activities of the graduate students I mentor.
- *Zemax*: Experience with optical design and simulation.
- Experience with Excel, MATLAB, and Mathematica.

Instrumentation, Control, Data Acquisition, Test, and Measurement:

- Extensive cryogenic experience with sub-kelvin systems including dilution refrigerators as well as liquid cryogen handling.
- Experience with FARO Laser Trackers for surface accuracy and alignment measurements.
- Significant experience with Fourier transform spectrometers for bandpass measurements.

Data analysis:

- *Python/Jupyter*: Extensive use for data analysis and observatory control software.
- *TOAST*: Experience with map-making software designed for time-ordered data processing used in both SO and BLASTPol.
- *C++ and Perl*: Implemented for instrument control programs and data reduction.
- *UNIX shell scripting*: General experience for a variety of applications.
- *Jython*: Experience for use with the Herschel ESA instrument data reduction tools.

PUBLIC ENGAGEMENT

University of California San Diego

The Cosmos Show Co-Host **June 2021 - Present**

- Co-Host of new public engagement Youtube channel with biweekly live shows supported by Wyoming Stargazing.
- Provide material for show as well as general discussion and other input.

Astronomy on Tap San Diego Co-Lead **Aug. 2017 - April 2020**

- Co-founder of the San Diego branch of Astronomy on Tap.
- Organize public talks with co-lead, Prof. Lisa Will, at local venues for the general public.

Comicon panel member, "Putting more science in your fiction" **July 2017, 2018, 2019, 2020(Remote)**

- Invited by the STEM advocacy group "The League of Extraordinary Scientists and Engineers."
- Fielded questions from members of the public attending the convention.

San Diego Festival of Science and Engineering - Sponsored Booth **March 2017, 2018, 2019, 2020**

- Primary organizer for our department's booth.
- Physics demonstrations performed by volunteer faculty, graduate students, and undergraduates.

Skype a Scientist **Jan. 2017 - Jan. 2018**

- Classrooms are connected with scientists to ask questions and learn about their research.
- Interacted with over 100 students during active period.

UCSD Cosmology - Lab Tours **Sept. 2016 - Mar. 2020**

- Tours occur on average every other month.
- Groups of 5 to 80 students with an age range from middle school to community college.

Fleet Science Center - #2Scientists **Sept. 2016 - Feb. 2020**

- An event hosted at local bars that occurs once per quarter.
- Members of the public ask participating scientists a wide range of science questions.

San Diego area public talks **Sept. 2016 - Jan. 2022**

- Occur once per quarter on average.
- Venues have included bars, science festivals, and local astronomy association functions.

San Diego Astronomy Association **Sept. 2016 - Jan. 2022**

- Participate in observing nights open to the public.

Simons Observatory

Education and Public Engagement Committee - Social Media **Oct. 2017 - Present**

- Co-manage the social media accounts and website for the observatory.

Fleet Science Center - Cosmology and Cocktails **June 2017**

- Organized a panel event followed by mingling with the public at the Fleet Science Center.
- Event included over 50 members of the collaboration with over 500 attendees.

Popscope

Public Astronomy Nights **March 2015 - Present**

- Sidewalk astronomy program to bring telescope observing to diverse communities.
- Involves transporting telescopes to public spaces and organizing observations of night sky targets.

University of Pennsylvania

Department of Physics and Astronomy - Public Astronomy Nights **Sept. 2011 - May 2016**

- Open night for the public held each semester with demonstrations, a lecture, and observing.

Philadelphia Science Festival - Science Carnival Sponsored Booth **May 2015, May 2016**

- Organized the Department of Physics and Astronomy's demonstration booth.
- Selected for sponsorship by the University of Pennsylvania.
- Booth had multiple activity stations at the carnival which is attended by thousands of people.

Philadelphia Science Festival - Clark Park Discovery Days **April 2015, April 2016**

- Organizer for the Department of Physics and Astronomy's demonstration booth.
- An event held at a Philadelphia park to provide science outreach to the local community.