Chi H. Nguyen

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Education

2015 - 2021 **Ph.D. in Astrophysical Sciences and Technology**
The Rochester Institute of Technology, Rochester, NY.
Advisor: Michael Zemcov
Dissertation: *The Cosmic Infrared Background ExpeRiments (CIBER): Probing Large-Scale Structure Formation Using Near-Infrared Sounding Rocket Payloads*

2011 - 2015 **B.Sc. with Honors in Astronomy** *Magna Cum Laude*
The University of Arizona, Tucson, AZ.
Advisor: Daniel Marrone
Thesis: *Receiver Selection and Calibration Unit for Event Horizon Telescope (EHT) – South Pole Telescope (SPT) (RESCUES).*

Experiences

2021 - Present Postdoctoral Scholar Research Associate in Physics, Caltech, CA
- Calibrate and characterize the SPHEREx telescope and focal plane assembly.
- Analyze the noise properties of H2RG detectors for CIBER-2 and SPHEREx.
- Improve the performance of CIBER-2 flight electronics and mentor graduate students working on the project.

2016 - 2021 Graduate Research Assistant (2016-2021), Postdoc (Summer 2021), The Rochester Institute of Technology, NY
- Designed, integrated, and characterized the CIBER-2 payload and detectors.
- Built software to control ground equipment and livestream telemetered data.
- Developed reduction pipeline for CIBER-2 and noise models of CIBER-1.

2015 - 2016 Graduate Teaching Assistant, The Rochester Institute of Technology, NY

2013 - 2015 Telescope Operator, The University of Arizona, AZ

2012 - 2015 Undergraduate Research Assistant, The University of Arizona, AZ
- Designed a mirror mount and a calibration system for the Event Horizon Telescope station at the South Pole, as a part of the project to produce the first image of a black hole.
- Reduced exoplanet transit light curves from space/ground-based observations.
- Studied ultrasonic wave diagnostic in non-destructive structural monitoring.

Relevant Skills

- Analytical: Fourier analysis, time-stream and image-space reduction & calibration.
- Programming: Python, Matlab, C/C++, Qt/PyQt, GNU Bash, HTML/CSS, Unix/Linux.
- Software: SolidWorks/Autodesk Inventor; familiar with rocket telemetry data protocol.
- Experienced in designing & operating cryogenic instruments, automating hardware operation, developing lab apparatus & safety procedure, handling detectors.
- Experienced in mentoring a team of interdisciplinary undergraduate and graduate students.

Grants, Fellowships, and Awards

2021	The Rochester Institute of Technology Legacy Leaders Award
2020	Breakthrough Prize in Fundamental Physics, *shared with the EHT Collaboration*
2017 - 2020	NASA Earth and Space Sciences Fellowship
2018	Chambliss Astronomy Achievement Award, The American Astronomical Society
2015	Excellence in Undergraduate Astronomy Research, The University of Arizona
2013	Galileo Circle Scholarship, The University of Arizona
2012 - 2015	Department of Astronomy and Steward Observatory Scholarships
2012 - 2013	Honors College Research Grant
2011 - 2015	International Tuition Award
2011 - 2014	Dean's List, The University of Arizona

Synergetic Activities

2019 - Present	Astronomy Ambassador, The American Astronomical Society
2020 - 2021	AST Diversity, Equity, and Inclusivity Working Group
2018 - 2021	RIT College of Science Student Advisory Board
2017 - 2021	RIT Graduate Student Advisory Council, co-chair in 2018 - 2019
2016 - 2021	RIT Women in Science Volunteer
2020	RIT COVID-19 Fall Re-opening Community Readiness Review Committee
2019	12th Great Lakes Cosmology Workshop Local Organizing Committee
2017	Conference for Undergraduate Women in Physics Local Organizing Committee
2014 - 2015	University of Arizona Physics Outreach Discovery Team
2012 - 2015	University of Arizona Astronomy Club
2012 - 2015	Tucson Women in Astronomy
2012 - 2014	Summer Engineering Workshop Volunteer, The University of Arizona
2012 - 2013	Global Ambassador/Peer Integrator, The University of Arizona

Research Featured in the Media

- RIT University Magazine featuring CIBER-2 launch with retweet from former astronaut Buzz Aldrin (page 12 - 15), 2021: https://www.rit.edu/sites/rit.edu/files/documents/research-magazines/UmagFinalfall2021.pdf
- NASA press release for CIBER-2 launch, 2021: https://www.nasa.gov/feature/goddard/2021/rocket-team-to-discern-if-our-star-count-should-go-way-up
- RIT University News featuring CIBER-2 payload, 2019: https://www.rit.edu/news/researchers-prepare-rocket-launch
- Afternoon Astronomy Hangout on *New Horizons* study (live chat and discussion on YouTube), 2018: https://deepastronomy.com/video/the-cosmic-optical-background-new-horizons-probes-the-universe
- Forbes article on *New Horizons* study, 2017: https://www.forbes.com/sites/brucedorminey/2017/04/13/nasas-new-horizons-surprises-with-whole-new-view-of-distant-cosmos/?sh=76f2e2246890
- Rochester Business Journal on NASA Earth and Space Science Fellowship win, 2017: https://rbj.net/2017/08/18/rit-graduate-student-awarded-nasa-fellowship
- RIT University News on NASA Earth and Space Science Fellowship win, 2017: https://www.rit.edu/news/astrophysics-phd-student-wins-nasa-fellowship?id=62898

Invited Seminar

Invited Zoom seminars on the CIBER-2 project:

- Space Engineering International Course Guest Lecture, Kyushu Institute of Technology, Japan, 2021.
- Observational Cosmology Seminar, The California Institute of Technology, 2021.
- Astro/Space Seminar, University of Iowa, 2020.

Selected Conference Presentation

Invited Oral Presentation, *Probing Structure Formation with the Cosmic Infrared Background ExpeRiment 2*. NASA Earth and Space Science Fellowship - Astrophysics Division Forum at the 233rd Meeting of the American Astronomical Society, 2019. National Conference.

Poster, *Integration and Instrument Characterization of the Cosmic Infrared Background ExpeRiment 2 (CIBER-2)*. SPIE Astronomical Telescopes + Instrumentation, 2018. International Conference.

Poster, *The Science and Prospect of Astrophysical Observations with New Horizon*. The 231st Meeting of the American Astronomical Society, 2018. National Conference.

Oral Presentation, *Cosmic Background Infrared ExpeRiment 2: Probing Structure Formation with Near Infrared Fluctuations*. The Fall Meeting of the Astronomical Society of New York, 2017. Regional Conference.

Selected Publications

P. M. Korngut, et al. 2022, *Inferred Measurements of the Zodiacal Light Absolute Intensity through Fraunhofer Absorption Line Spectroscopy with CIBER*. The Astrophysical Journal, 926(2):133. https://iopscience.iop.org/article/10.3847/1538-4357/ac44ff

K. Takimoto, et al. 2022, *Polarization Spectrum of Near-Infrared Zodiacal Light Observed with CIBER*. The Astrophysical Journal, 926(1):6. https://iopscience.iop.org/article/10.3847/1538-4357/ac416f

Y. T. Cheng, et al. 2021, *Probing Intra-Halo Light with Galaxy Stacking in CIBER Images*. The Astrophysical Journal, 919(2):69. https://iopscience.iop.org/article/10.3847/1538-4357/ac0f5b

K. Takimoto, et al. 2020, *Pre-flight optical test and calibration for the Cosmic Infrared Background ExpeRiment 2 (CIBER-2)*. Proceeding of SPIE Space Telescopes and Instrumentation 2020: Optical, Infrared, and Millimeter Wave, 114435A. https://doi.org/10.1117/12.2561917

Event Horizon Telescope Collaboration, et al. 2019. *First M87 Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole*. The Astrophysical Journal, 875(1):L1. https://iopscience.iop.org/article/10.3847/2041-8213/ab0ec7

Event Horizon Telescope Collaboration, et al. 2019, First M87 Event Horizon Telescope Results. II. Array and Instrumentation. The Astrophysical Journal, 875(1):L2. https://iopscience.iop.org/article/10.3847/2041-8213/ab0c96

M. Zemcov, et al. 2018, *Astrophysics with New Horizons: Making the Most of a Generational Opportunity.* Publications of the Astronomical Society of the Pacific, 130(993):115001. https://iopscience.iop.org/article/10.1088/1538-3873/aadb77

J. Kim, et al. 2018, *The 1.4 mm Core of Centaurus A: First VLBI Results with the South Pole Telescope*. The Astrophysical Journal, 861(2):129. https://iopscience.iop.org/article/10.3847/1538-4357/aac7c6

C. H. Nguyen, et al. 2018, *Integration and instrument characterization of the cosmic infrared background*

experiment 2 (CIBER-2). Proceedings of SPIE Space Telescopes and Instrumentation 2018: Optical, Infrared, and Millimeter Wave, 106984J. https://doi.org/10.1117/12.2311595

W.-K. Park, et al. 2018, *Development of data storage system and GSE for cosmic infrared background experiment 2 (CIBER-2)*. Proceedings of SPIE Space Telescopes and Instrumentation 2018: Optical, Infrared, and Millimeter Wave, 1069849. https://doi.org/10.1117/12.2313184

J. Kim, et al. 2018, *A VLBI receiving system for the South Pole Telescope*. Proceedings of SPIE Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy IX, 107082S. https://doi.org/10.1117/12.2301005

M. Zemcov, P. Immel, **C. Nguyen**, et al. 2017, *Measurement of the cosmic optical background using the long range reconnaissance imager on New Horizons*. Nature Communications, 8:15003. https://www.nature.com/articles/ncomms15003