DR. KYLE R. HELSON

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Research Scientist - University of Maryland, Baltimore County
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RESEARCH INTERESTS

Observational cosmology. Development and deployment of novel instrumentation for astrophysical and cosmological measurements. Precision measurements of the Cosmic Microwave Background (CMB) polarization, spectrum, and anisotropy. Design, fabrication, and characterization of far-IR sensors, optical elements, polarization modulators, and other components for ground, sub-orbital, and satellite applications. Cryogenic detector characterization.

EXPERIENCE

University of Maryland Baltimore County *November 2018 - Present*
Assistant Research Scientist
Goddard Space Flight Center Greenbelt, MD
Research scientist focused on the development of novel instrumentation for astrophysical and cosmological observations in the microwave through far-infrared regimes. Worked as a member of the CLASS, HIRMES, PIPER, and EXCITE collaborations.

- Successfully deployed the EXCITE instrument on engineering flight from CSBF in Ft. Sumner, NM in August 2024 as a critical member of the EXCITE field team. Prepared key components of the EXCITE gondola, receiver, and related electronics, mechanisms, and hardware for engineering flight. Organized regular collaboration meetings and teleconferences. Lead and managed mission-critical integration and test operations at Goddard and the NASA Columbia Scientific Balloon Facility. Currently refurbishing the EXCITE instrument for science flight from Antarctica in 2026.
- Developing readout electronics and cryogenic testbeds for UV/VIS/IR detector arrays with Drs. Karwan Rostem and Jake Connors. Designing, constructing, and testing a VIPA prototype that is a pathfinder for the POEMM Pioneers Mission.
- Collaborating with scientists and engineers from NASA Goddard Code 550 and 660 on developing THz detector arrays, readout electronics, and cryogenic testbed facilities as part of a multi-year IRAD program. Leading the design and commissioning of a cryogenic blackbody calibrator system for 3-6 THz detectors.
- Worked with collaborators at Goddard and NASA Glenn on designing, fabricating, and characterizing diamond-loaded polyimide aerogel filters for infrared blocking applications. Lead filter modeling and far-infrared characterization efforts. Submitted several proposals with the aerogel filter team as a Co-I for further development of the polymer aerogel medium as an absorber material in the infrared. Authored and co-authored several publications and presentations on the performance and characteristics of the aerogel filters.
- Designed and commissioned a cryogenic blackbody calibrator for use with 100 mm detector arrays for the CLASS 90 GHz detector testing and characterization. Lead the construction, operation, and maintenance of a time-domain multiplexing readout system.

- Lead the construction, testing, and refinement of the HIRMES cryogenic Fabry-Perot Interferometer and filter wheel mechanisms. Worked with the HIRMES instrument team on cryogenic design and commissioning of the instrument.
- Constructed and characterized the PIPER cryogenic window assemblies. Worked with the PIPER collaboration on cryogenic receiver refurbishment and testing in preparation for North American high-altitude balloon campaigns.

NASA Goddard Space Flight Center *August 2016 - October 2018*
NASA Postdoctoral Fellow Greenbelt, MD
Adviser: Dr. Edward J. Wollack
The Development and Characterization of Millimeter-wave Detectors for use in Sub-orbital and Satellite Platforms

Worked with the CLASS collaboration on detector testing and characterization efforts at Goddard. Designed and commissioned a cryogenic testbed and readout system for time-domain multiplexed detector arrays at 90 GHz.

EDUCATION

Brown University, Providence, Rhode Island *May 2016*
Ph.D. in Physics
Adviser: Professor Gregory S. Tucker
Ph.D. Thesis: *The Development and Deployment of Instrumentation to Measure the Polarized Microwave Sky*
Member of the EBEX and BLAST-pol collaborations and field deployment teams.
Sc.M. in Physics *May 2012*

Case Western Reserve University, Cleveland, Ohio *May 2010*
B.S. in Physics
Minor in Chemistry
Cum Laude

TALKS AND POSTERS

NASA APRA PI Annual Review	October 2024
SPIE Astronomical Telescopes and Instrumentation	July 2022
University of Maryland College Park Astronomy Colloquium	October 2021
LBNL Research Progress Meeting	October 2018
17th International Workshop on Low Temperature Detectors	July 2017
International Astronomical Union General Assembly Meeting	August 2015
Maryland, Virginia, and Washington, D.C. Astrophysics Summer Meeting	July 2014
The American Physical Society 2014 April Meeting	April 2014
The American Astronomical Society Spring 2013 Meeting	June 2013

FELLOWSHIPS AND AWARDS

NASA GSFC Sciences and Exploration Directorate Team Special Act Award 2024

NASA GSFC Sciences and Exploration Directorate DE&I Award 2021

NASA GSFC Astrophysics Science Division Special Team Award 2021

NASA Postdoctoral Program Fellow August 2016 - October 2018

Antarctic Service Medal 2013

NASA Space Technology Research Fellowship September 2011 - August 2015

NASA Rhode Island Space Grant June 2011 - August 2011

MENTORSHIP

Postdoctoral Researchers

Tim Rehm - NASA GSFC 2025 - present

Graduate Students

Khing Klangboonkrong - Brown University (EXCITE Collaboration) 2021 - Present
Annalies Kleyheeg - Brown University (EXCITE Collaboration) 2021 - 2025
Tim Rehm - Brown University (EXCITE Collaboration) 2020 - 2025
Carrie Volpert - NASA Goddard/University of Maryland - College Park 2019 - 2025

Post-Baccalaureate Researchers

Matias Calderon - NASA Goddard Postbaccalaureate Researcher 2024 - Present

Undergraduate Students

Jaewon Lee - Naval Academy Summer Intern at GSFC 2024
Katherine Elder - NASA Goddard Summer Intern 2019
Terance Schuh - NASA Goddard Summer Intern 2019
Andrew Klassen - Naval Academy Intern at GSFC 2018 - 2020
Sophia Singh - NASA Goddard Summer Intern 2018
John Bartlett - NASA Goddard Summer Intern 2018
Daniel Morales - NASA Goddard Summer Intern 2018
Marco Sagliocca - NASA Goddard Postbaccalaureate Researcher 2016 - 2018
Sam Pedek - NASA Goddard Summer Intern 2017
Dahlia Baker - NASA Goddard Summer Intern 2016

TEACHING

Brown University Academic Year 2015-2016
Astronomy Laboratory Teaching Assistant *Providence, RI*

· Lead observational laboratory for introductory astronomy courses for majors and non-majors.

Brown University Summer 2013 and Summer 2015
Summer@Brown Course Instructor *Providence, RI*

· Co-taught introductory astrophysics and cosmology courses for high school students

The Wheeler School Fall Semester 2014
Aerie Enrichment Course Instructor *Providence, RI*

· Taught weekly computer aided design (CAD) course to Wheeler Upper School Students, class included 9th, 10th, and 11th Grade Students

Brown University April 2014
Sheridan Center For Teaching and Learning *Providence, RI*

· Certificate I Seminar - Reflective Teaching

Providence Public Schools August 2013 - May 2013
Vartan Gregorian Elementary School *Providence, RI*

· Taught weekly elementary school science lessons at Vartan Gregorian Elementary as an extension of the former NSF GK-12 Fellowship Program.

SERVICE AND OUTREACH

NSF Proposal Review Panelist 2025
NASA Proposal Review Panelist 2018 - 2020, 2022 - 2025
NASA Science Mission Directorate Web Modernization Team 2021 - 2024
NASA Goddard Association of Postdoctoral and Early Career Scientists (NGAPS+) Officer 2020 - 2025
NASA Goddard Code 660 Summer Intern Events Planning Group 2019 - Present
NASA Goddard "Ask an Astrophysicist" Service Volunteer 2018 - Present
NASA Goddard Code 665 Inclusive Astronomy Group 2018 - 2024
NASA Goddard Code 660 Communications Advisory Team 2021 - 2023
Washington, DC Astronomy On Tap Talk 2019
Brown University Astrophysics Seminar Series Coordinator 2013 - 2016
K - 12 Science Classroom Guest Lessons
Calcutt Middle School, Central Falls, RI
Hamilton School, Providence, RI
Oyster-Adams Bilingual School, Washington, DC
Skype With a Scientist
Thomas Jefferson High School, VA
West Bloomfield High School, MI

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
American Astronomical Society
American Physical Society
Society of Photographic Instrumentation Engineers

PATENTS

Aerogel Electromagnetic Absorbers - Submitted 8 August, 2025

Linear polarization sensitive meta-material reflector and phase modification structure and method Edward J. Wollack, Kyle Helson US11340392B1

PUBLICATIONS

Kyle R. Helson, C. Y. Y. Chan, S. Arseneau, A. Barlis, C. L. Bennett, T. M. Essinger-Hileman, H. Guo, T. Marriage, M. A. Quijada, A. E. Tokarz, S. L. Vivod, and E. J. Wollack. Diamond-loaded polyimide aerogel scattering filters and their applications in astrophysical and planetary science observations, 2025, arxiv:2508.20406. *submitted to RSI.*

Y. Li, J. Eimer, J. Appel, C. Bennett, M. Brewer, S. M. Bruno, R. Bustos, C. Chan, D. Chuss, J. Cleary, S. Dahal, R. Datta, J. D. Couto, K. Denis, R. Dunner, T. Essinger-Hileman, K. Harrington, K. **Helson**, J. Hubmayr, J. Iuliano, J. Karakla, T. Marriage, N. Miller, C. M. Perez, L. Parker, M. Petroff, R. Reeves, K. Rostem, C. Ryan, R. Shi, K. Shukawa, D. Valle, D. Watts, J. Weiland, E. Wollack, Z. Xu, and L. Zeng. A measurement of the largest-scale cmb e-mode polarization with class, 2025, 2501.11904.

J. L. Romualdez, L. Bernard, A. Bocchieri, N. Butler, Q. Changeat, A. D'Alessandro, B. Edwards, J. Gamaunt, Q. Gong, J. Hartley, K. R. **Helson**, L. Jensen, D. P. Kelly, K. Klangboonkrong, A. Kleyheeg, E. Leong, N. Lewis, S. Li, M. Line, S. Maher, R. McClelland, L. R. Miko, L. V. Mugnai, P. C. Nagler, C. B. Netterfield, V. Parmentier, E. Pascale, J. Patience, T. Rehm, S. Sarkar, P. Scowen, G. Tucker, A. Waczynski, and I. Waldmann. The Exoplanet Climate Infrared Telescope (EXCITE): gondola pointing and stabilization qualification. In H. K. Marshall, J. Spyromilio, and T. Usuda, editors, *Ground-based and Airborne Telescopes X*, volume 13094, page 130944Y. International Society for Optics and Photonics, SPIE, 2024.

A. Kleyheeg, L. Bernard, A. Bocchieri, N. Butler, Q. Changeat, A. D'Alessandro, B. Edwards, J. Gamaunt, Q. Gong, J. Hartley, K. **Helson**, L. Jensen, D. P. Kelly, K. Klangboonkrong, E. Leong, N. Lewis, S. Li, M. Line, S. F. Maher, R. McClelland, L. R. Miko, L. Mugnai, P. Nagler, B. Netterfield, V. Parmentier, E. Pascale, J. Patience, T. Rehm, J. Romualdez, S. Sarkar, P. Scowen, G. S. Tucker, A. Waczynski, and I. Waldmann. Integration and testing of a cryogenic receiver for the Exoplanet Climate Infrared Telescope (EXCITE). In J. J. Bryant, K. Motohara, and J. R. D. Vernet, editors, *Ground-based and Airborne Instrumentation for Astronomy X*, volume 13096, page 130963P. International Society for Optics and Photonics, SPIE, 2024.

L. Bernard, J. Gamaunt, L. Jensen, A. Bocchieri, N. Butler, Q. Changeat, A. D'Alessandro, B. Edwards, C. Earley, Q. Gong, J. Hartley, K. **Helson**, D. P. Kelly, K. Klangboonkrong, A. Kleyheeg, N. Lewis, S. Li, M. Line, S. F. Maher, R. McClelland, L. R. Miko, L. V. Mugnai, P. Nagler, C. B. Netterfield, V. Parmentier, E. Pascale, J. Patience, T. Rehm, J. Romualdez, S. Sarkar, P. Scowen, G. Tucker, A. Waczynski, and I. Waldmann. Design and testing of a low-resolution NIR spectrograph for the Exoplanet Climate Infrared Telescope. In J. J. Bryant, K. Motohara, and J. R. D. Vernet, editors, *Ground-based and Airborne Instrumentation for Astronomy X*, volume 13096, page 13096A5. International Society for Optics and Photonics, SPIE, 2024.

A. Barlis, H. Guo, K. **Helson**, C. Bennett, C. Y. Y. Chan, T. Marriage, M. Quijada, A. Tokarz, S. Vivod, E. Wollack, and T. Essinger-Hileman. Fabrication and characterization of optical filters from polymeric aerogels loaded with diamond scattering particles. *Appl. Opt.*, 63(22):6036–6045, Aug 2024.

C. Nuñez, J. W. Appel, M. K. Brewer, S. M. Bruno, R. Datta, C. L. Bennett, R. Bustos, D. T. Chuss, S. Dahal, K. L. Denis, J. Eimer, T. Essinger-Hileman, K. **Helson**, T. Marriage, C. M. Prez, I. L. Padilla, M. A. Petroff, K. Rostem, D. J. Watts, E. J. Wollack, and Z. Xu. On-sky performance of new 90 ghz detectors for the cosmology large angular scale surveyor (class). *IEEE Transactions on Applied Superconductivity*, 33(5):1–4, 2023.

R. Datta, M. K. Brewer, J. D. Couto, J. Eimer, Y. Li, Z. Xu, A. Ali, J. W. Appel, C. L. Bennett, R. Bustos, D. T. Chuss, J. Cleary, S. Dahal, F. Espinoza, T. Essinger-Hileman, P. Flux, K. Harrington, K. **Helson**, J. Iuliano, J. Karakla, T. A. Marriage, S. Novack, C. Nuñez, I. L. Padilla, L. Parker, M. A. Petroff, R. Reeves, K. Rostem, R. Shi, D. A. N. Valle, D. J. Watts, J. L. Weiland, E. J. Wollack, and L. Zeng. Cosmology large angular scale surveyor (class): 90 ghz telescope pointing, beam profile, window function, and polarization performance, 2023, 2308.13309.

K. R. **Helson**, S. Arseneau, A. Barlis, C. L. Bennett, T. M. Essinger-Hileman, H. Guo, T. Marriage, M. A. Quijada, A. E. Tokarz, S. L. Vivod, and E. J. Wollack. Novel infrared-blocking aerogel scattering filters and their applications in astrophysical and planetary science observations. In J. Zmuidzinas and J.-R. Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121901P. International Society for Optics and Photonics, SPIE, 2022.

T. Rehm, L. Bernard, A. Bocchieri, N. Butler, Q. Changeat, A. D'Alessandro, B. Edwards, J. Gamaunt, Q. Gong, J. Hartley, K. **Helson**, L. Jensen, D. P. Kelly, K. Klangboonkrong, A. Kleyheeg, N. Lewis, S. Li, M. Line, S. F. Maher, R. McClelland, L. R. Miko, L. Mugnai, P. Nagler, C. B. Netterfield, V. Parmentier, E. Pascale, J. Patience, J. Romualdez, S. Sarkar, P. A. Scowen, G. S. Tucker, A. Waczynski, and I. Waldmann. The design and development status of the cryogenic receiver for the EXoplanet Climate Infrared TELescope (EXCITE). In C. J. Evans, J. J. Bryant, and K. Motohara, editors, *Ground-based and Airborne Instrumentation for Astronomy IX*, volume 12184, page 121842I. International Society for Optics and Photonics, SPIE, 2022.

C. Nuñez, J. W. Appel, S. M. Bruno, R. Datta, A. Ali, C. L. Bennett, S. Dahal, J. D. Couto, K. L. Denis, J. Eimer, F. Espinoza, T. Essinger-Hileman, K. **Helson**, J. Iuliano, T. A. Marriage, C. M. Peréz, D. A. N. Valle, M. A. Petroff, K. Rostem, R. Shi, D. J. Watts, E. J. Wollack, and Z. Xu. Design and characterization of new 90 GHz detectors for the Cosmology Large Angular Scale Surveyor (CLASS). In J. Zmuidzinas and J.-R. Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121901J. International Society for Optics and Photonics, SPIE, 2022.

P. C. Nagler, L. Bernard, A. Bocchieri, N. Butler, Q. Changeat, A. D'Alessandro, B. Edwards, J. Gamaunt, Q. Gong, J. Hartley, K. **Helson**, L. Jensen, D. P. Kelly, K. Klangboonkrong, A. Kleyheeg, N. K. Lewis, S. Li, M. Line, S. F. Maher, R. McClelland, L. R. Miko, L. V. Mugnai, C. B. Netterfield, V. Parmentier, E. Pascale, J. Patience, T. Rehm, J. Romualdez, S. Sarkar, P. A. Scowen, G. S. Tucker, A. Waczynski, and I. Waldmann. The EXoplanet Climate Infrared TElescope (EXCITE). In C. J. Evans, J. J. Bryant, and K. Motohara, editors, *Ground-based*

and Airborne Instrumentation for Astronomy IX, volume 12184, page 121840V. International Society for Optics and Photonics, SPIE, 2022.

S. Dahal, J. W. Appel, R. Datta, M. K. Brewer, A. Ali, C. L. Bennett, R. Bustos, M. Chan, D. T. Chuss, J. Cleary, J. D. Couto, K. L. Denis, R. Dnner, J. Eimer, F. Espinoza, T. Essinger-Hileman, J. E. Golec, K. Harrington, K. **Helson**, J. Iuliano, J. Karakla, Y. Li, T. A. Marriage, J. J. McMahon, N. J. Miller, S. Novack, C. Nuñez, K. Osumi, I. L. Padilla, G. A. Palma, L. Parker, M. A. Petroff, R. Reeves, G. Rhoades, K. Rostem, D. A. N. Valle, D. J. Watts, J. L. Weiland, E. J. Wollack, and Z. Xu. Four-year cosmology large angular scale surveyor (class) observations: On-sky receiver performance at 40, 90, 150, and 220 ghz frequency bands. *The Astrophysical Journal*, 926(1):33, feb 2022.

L. Bernard, L. Jensen, J. Gamaunt, N. Butler, A. Bocchieri, Q. Changeat, A. D'Alessandro, B. Edwards, Q. Gong, J. Hartley, K. **Helson**, D. Kelly, K. Klangboonkrong, A. Kleyheeg, N. Lewis, S. Li, M. Line, S. Maher, R. McClelland, L. Miko, L. Mugnai, P. Nagler, B. Netterfield, V. Parmentier, E. Pascale, J. Patience, T. Rehm, J. Romualdez, S. Sarkar, P. Scowen, G. S. Tucker, A. Waczynski, and I. Waldman. Design and testing of a low-resolution NIR spectrograph for the EXoplanet Climate Infrared TElescope. In C. J. Evans, J. J. Bryant, and K. Motohara, editors, *Ground-based and Airborne Instrumentation for Astronomy IX*, volume 12184, page 1218429. International Society for Optics and Photonics, SPIE, 2022.

A. Barlis, S. Arseneau, C. L. Bennett, T. Essinger-Hileman, H. Guo, K. R. **Helson**, T. Marriage, M. A. Quijada, A. E. Tokarz, S. L. Vivod, and E. J. Wollack. Characterization of aerogel scattering filters for astronomical telescopes. In J. Zmuidzinas and J.-R. Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121902I. International Society for Optics and Photonics, SPIE, 2022.

K. Rostem, E. Cimpoiasu, K. **Helson**, A. Klassen, and E. Wollack. Specific heat of epoxies and mixtures containing silica, carbon lamp black, and graphite. *Cryogenics*, 118:103329, 2021.

R. Datta, D. T. Chuss, J. Eimer, T. Essinger-Hileman, N. N. Gandilo, K. **Helson**, A. J. Kogut, L. Lowe, P. Mirel, K. Rostem, M. Sagliocca, D. Sponseller, E. R. Switzer, P. A. Taraschi, and E. J. Wollack. Anti-reflection coated vacuum window for the Primordial Inflation Polarization ExploreR (PIPER) balloon-borne instrument. *Review of Scientific Instruments*, 92(3):035111, 03 2021.

T. Essinger-Hileman, C. L. Bennett, L. Corbett, H. Guo, K. **Helson**, T. Marriage, M. A. B. Meador, K. Rostem, and E. J. Wollack. Aerogel scattering filters for cosmic microwave background observations. *Appl. Opt.*, 59(18):5439–5446, Jun 2020.

S. Dahal, M. Amiri, J. W. Appel, C. L. Bennett, L. Corbett, R. Datta, K. Denis, T. Essinger-Hileman, M. Halpern, K. **Helson**, G. Hilton, J. Hubmayr, B. Keller, T. Marriage, C. Nuñez, M. Petroff, C. Reintsema, K. Rostem, K. U-Yen, and E. Wollack. The class 150/220ghz polarimeter array: Design, assembly, and characterization. *Journal of Low Temperature Physics*, 199(1):289–297, Apr 2020.

J. Didier, A. D. Miller, D. Araujo, F. Aubin, C. Geach, B. Johnson, A. Korotkov, K. Raach, B. Westbrook, K. Young, A. M. Aboobaker, P. Ade, C. Baccigalupi, C. Bao, D. Chapman, M. Dobbs, W. Grainger, S. Hanany, K. **Helson**, S. Hillbrand, J. Hubmayr, A. Jaffe, T. J. Jones, J. Klein, A. Lee, M. Limon, K. MacDermid, M. Milligan, E. Pascale, B. Reichborn-Kjennerud, I. Sagiv, C. Tucker, G. S. Tucker, and K. Zilic. Intensity-coupled polarization in instruments with a continuously rotating half-wave plate. *The Astrophysical Journal*, 876(1):54, may 2019.

K. R. **Helson**, K. H. Miller, K. Rostem, M. Quijada, and E. J. Wollack. Dielectric properties of conductively loaded polyimides in the far infrared. *Opt. Lett.*, 43(21):5303–5306, Nov 2018.

S. Dahal, A. Ali, J. W. Appel, T. Essinger-Hileman, C. Bennett, M. Brewer, R. Bustos, M. Chan, D. T. Chuss, J. Cleary, F. Colazo, J. Couto, K. Denis, R. Dünner, J. Eimer, T. Engelhoven, P. Fluxa, M. Halpern, K. Harrington, K. **Helson**, G. Hilton, G. Hinshaw, J. Hubmayr, J. Iuliano, J. Karakla, T. Marriage, J. McMahon, N. Miller, C. Nuñez, I. Padilla, G. Palma, L. Parker, M. Petroff, B. Pradenas, R. Reeves, C. Reintsema, K. Rostem, M. Sagliocca, K. U-Yen, D. Valle, B. Wang, Q. Wang, D. Watts, J. Weiland, E. Wollack, Z. Xu, Z. Yan, and L. Zeng. Design and characterization of the Cosmology Large Angular Scale Surveyor (CLASS) 93 GHz focal plane. In J. Zmuidzinas and J.-R. Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy IX*, volume 10708, page 107081Y. International Society for Optics and Photonics, SPIE, 2018.

F. Aubin, A. M. Aboobaker, C. Bao, C. Geach, S. Hanany, T. Jones, J. Klein, M. Milligan, K. Raach, K. Young, K. Zilic, **Kyle Helson**, A. Korotkov, V. Marchenko, G. S. Tucker, P. Ade, E. Pascale, D. Araujo, D. Chapman, J. Didier, S. Hillbrand, B. Johnson, M. Limon, A. D. Miller, B. Reichborn-Kjennerud, S. Feeney, A. Jaffe, R. Stompor, M. Tristram, M. Dobbs, K. Macdermid, G. Smecher, J. Borrill, T. Kisner, G. Hilton, J. Hubmayr, C. Reintsema, C. Baccigalupi, G. Puglisi, A. Lee, B. Westbrook, L. Levinson, and I. Sagiv. Temperature calibration of the e and b experiment. In *The Fourteenth Marcel Grossmann Meeting*, pages 2084–2089. 2018.

A. M. Aboobaker, P. Ade, D. Araujo, F. Aubin, C. Baccigalupi, C. Bao, D. Chapman, J. Didier, M. Dobbs, C. Geach, W. Grainger, S. Hanany, K. **Helson**, S. Hillbrand, J. Hubmayr, A. Jaffe, B. Johnson, T. Jones, J. Klein, A. Korotkov, A. Lee, L. Levinson, M. Limon, K. MacDermid, T. Matsumura, A. D. Miller, M. Milligan, K. Raach, B. Reichborn-Kjennerud, I. Sagiv, G. Savini, L. Spencer, C. Tucker, G. S. Tucker, B. Westbrook, K. Young, and K. Zilic. The ebex balloon-borne experimentoptics, receiver, and polarimetry. *The Astrophysical Journal Supplement Series*, 239(1):7, nov 2018.

A. Aboobaker, P. Ade, D. Araujo, F. Aubin, C. Baccigalupi, C. Bao, D. Chapman, J. Didier, M. Dobbs, W. Grainger, S. Hanany, K. **Helson**, S. Hillbrand, J. Hubmayr, A. Jaffe, B. Johnson, T. Jones, J. Klein, A. Korotkov, A. Lee, L. Levinson, M. Limon, K. MacDermid, A. D. Miller, M. Milligan, L. Moncelsi, E. Pascale, K. Raach, B. Reichborn-Kjennerud, I. Sagiv, C. Tucker, G. S. Tucker, B. Westbrook, K. Young, and K. Zilic. The ebex balloon-borne experimentgondola, attitude control, and control software. *The Astrophysical Journal Supplement Series*, 239(1):9, nov 2018.

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D. T. Chuss, K. Rostem, E. J. Wollack, L. Berman, F. Colazo, M. DeGeorge, K. **Helson**, and M. Sagliocca. A cryogenic thermal source for detector array characterization. *Review of Scientific Instruments*, 88(10):104501, 10 2017.

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