Brandon Park Coy

Last update: December 9, 2024

Contact Information

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Research Interests

- **Planetary Habitability**: Earth-like exoplanet atmospheres and biosignatures
- **Exoplanet Spectroscopy**: Space-based transmission/emission spectroscopy of small exoplanets
- **Solar System Science**: Atmosphere and hydrological cycle systems of Titan

Education

University of Chicago, Chicago, IL — 2021–

- PhD in Geophysical Sciences, Advisor: Prof. Edwin Kite, GPA: **4.0/4.0** — 2023–
- M.S. in the Physical Sciences Division (GeoSci/Astro), GPA: **4.0/4.0** — 2022
- Master's Thesis: *The Role of Tectonic Luck and Weathering in Long-Term Climate Stability*

UCLA, Los Angeles, CA — 2022–2023

- PhD in Planetary Science, Advisor: Prof. Jean-Luc Margot, GPA: **3.91/4.0**

UC Berkeley, Berkeley, CA — 2015–2019

- B.A., Astrophysics, GPA: **3.84/4.0**, *Cum Laude*, Dean's List

External Research Experience

- **NASA Jet Propulsion Laboratory**, Advisor: Dr. Keeyoon Sung — Jul–Sept 2022
- **NASA Goddard Space Flight Center**, Advisor: Dr. Conor Nixon — Jan–Jul 2021
- **NASA Marshall Space Flight Center**, Advisor: Danielle Moser — Aug–Dec 2019
- **NASA Ames Research Center**, Advisor: Dr. Thomas Greene — Jun–Aug 2019
- **UC Berkeley**, Advisor: Dr. Gaspard Duchêne — Aug 2018–May 2019

First/Second Author Publications

1. (Submitted) **Brandon Park Coy**, Jegug Ih, Edwin S. Kite, Daniel D.B. Koll, Moritz Tenthoff, Jacob L. Bean, Megan Weiner Mansfield, Michael Zhang, Qiao Xue, Eliza M.-R. Kempton, Kay Wolhfarth, Renyu Hu, Xintong Lyu, Christian Wohler. "Population-level Hypothesis Testing with Rocky Planet Emission Data: A Tentative Trend in the Brightness Temperatures of M-Earths".
2. (Submitted) Rafael Luque, **Brandon Park Coy**, Qiao Xue, Adina D. Feinstein, Eva-Maria Ahrer, Quentin Changeat, Michael Zhang, Sarah E. Moran, Jacob L. Bean, Edwin Kite, Megan Weiner Mansfield, Enric Pallé. "A dark, bare rock for TOI-1685 b from a JWST NIRSpec G395H phase curve".
3. (In Review) **Brandon Park Coy**, Edwin Kite, and R.J. Graham. "DISKWORLD: Modeling the Limited Sensitivity of Planetary Habitability to Tectonic Noise".
4. **Brandon Park Coy**, C Nixon, N Rowe-Gurney, R Achterberg, N Lombardo, L Fletcher, and P Irwin. "Spitzer IRS Observations of Titan as a Precursor to JWST MIRI Observations". *Planetary Science Journal*, Vol. 4 (6), p. 114, 2023.

- Served as the reviewer for an Astrophysical Journal article

Contributed Publications

1. (In Review) Conor Nixon, B Bezard, T Cornet, **Brandon Park Coy** and 37 co-authors, "Titan's Atmosphere in Late Northern Summer from JWST and Keck".
2. (In Prep) Keeyoon Sung, **Brandon Park Coy**, and 5 co-authors, "A new $^{13}CH_4$ linelist in the Octad region updated with quantum assignments and lower state energies through a two temperature method".

3. Megan Weiner Mansfield...**Brandon Park Coy** et al. "No Thick Atmosphere on the Terrestrial Exoplanet Gl 486b", *The Astrophysical Journal Letters*, 975, L22, 2024
4. Qiao Xue...**Brandon Park Coy** et al. "JWST Thermal Emission of the Terrestrial Exoplanet GJ 1132b", *The Astrophysical Journal Letters*, 973, L8, 2024
5. Jean-Luc Margot...**Brandon Park Coy** et al. "A Search for Technosignatures Around 11,680 Stars with the Green Bank Telescope at 1.15–1.73 GHz". *The Astronomical Journal*, Vol. 166 (5), p. 206, 2023.
6. **Brandon Park Coy**, C Nixon, N Rowe-Gurney, R Achterberg, N Lombardo, L Fletcher, and P Irwin. "Spitzer IRS Observations of Titan as a Precursor to JWST MIRI Observations". *Planetary Science Journal*, Vol. 4 (6), p. 114, 2023.
7. Gaspard Duchêne, J Oon, RJ De Rosa, P Kantorski, **Brandon Park Coy** and 6 co-authors, "A low-mass companion desert among intermediate-mass visual binaries: The scaled-up counterpart to the brown dwarf desert". *Monthly Notices of the Royal Astronomical Society*, Vol. 519 (1), p. 778, 2023.
8. Edward Molter...Gaspard Duchene, **Brandon Park Coy** et al. "Analysis of Neptune's 2017 Bright Equatorial Storm". *Icarus* Vol. 321 p. 324, 2019.

Awards/Grants

- **Las Cumbres Observatory**, 2025A Observing Proposal PI, *Starspot Characterization of HD 207496* 2024
- **Illinois Space Grant Fellowship**, NASA/Illinois Space Grant Consortium ($10,000) 2024
- **JWST Cycle 3 GO 6284 PI**, NASA/STScI ($150,000) 2024
- **McCormick Fellowship**, University of Chicago ($4,500/year) 2023, 2024
- **Conference Travel Grant**, STScI ($2,500) 2023
- **Incoming Student Fellowship**, UCLA ($17,000) 2022

Contributed Talks and Posters

- **What Sets the C/O ratio in sub-Neptune Atmospheres?**
  - **Invited Talk** Density Matters Workshop 2024
  - **Lightning Talk** Great Lakes Exoplanet Area Meeting 2023
- **DISKWORLD: Modeling the Limited Sensitivity of Planetary Habitability to Tectonic Noise**
  - **Talk** UChicago Planetary Climate Journal Club 2024
  - **Poster** AGU Fall 2023 Conference 2023
- **Spitzer IRS Observations of Titan as a Precursor to JWST MIRI Observations**
  - **Poster** Planetary Systems and the Origins of Life in the Era of JWST (STScI) 2023
  - **Talk** NASA Outer Planets Assessment Group Meeting 2021, 2023
  - **Talk** NASA Astrobiology Institute Titan Meeting 2021
  - **Poster** Division for Planetary Sciences of the American Astronomical Society 2021
  - **Poster** Titan Through Time Conference 2021
  - **Talk** International Symposium on Molecular Spectroscopy 2021

Teaching

- **English and Math Instructor** Elite Educational Institute, Seoul, Korea Jan 2020–Dec 2020
  - Taught conversational and written English to elementary school, junior high school, and high school students. Also taught various mathematics subjects including calculus and geometry.
- **Undergraduate Student Instructor** UC Berkeley
  - Astro C10: Introduction to Astronomy Aug–Dec 2018
  - Astro 9: Python Programming in Astronomy Jun–Aug 2018

Community Outreach

- **Undergraduate Laboratory at UC Berkeley Mentor** **2017–2018**
  - Mentored a freshmen-led project in exoplanet habitability and taught freshmen standard research techniques and skills
  - Hosted research workshops and coding challenges sponsored by UC Berkeley
- **Adler Planetarium Astro-Overnight Coordinator** **2013–2015**
  - Facilitated monthly day-long events at the Adler Planetarium focused on exposing elementary school students to astronomy and physics concepts as well as current NASA mission goals.

Service

- **Oakland Asian Student Educational Services Officer** **2016–2019**
  - Co-led a 200+ member UC Berkeley volunteer organization aimed at providing underprivileged youth with educational opportunities outside of the classroom.
  - Hosted early career workshops and panels for organization members.

- **Associated Students of the University of California Academic Opportunity Fund Director** **2015–2017**
  - Personally managed a $30,000 annual university grant that awards exceptional students in need research travel opportunities.
  - Worked closely with student senators to award UN conference speakers, national competition winners, and more travel funding.