

Ben Andrew Sappey

Physics Ph.D. Candidate, UC San Diego

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Education

Physics, Ph.D. University of California, San Diego	Sept. 2020 - Expected Jun. 2026
Physics, M.S. University of California, San Diego	Sept. 2020 - Apr. 2023
Physics, <i>emph.</i> Chemistry, B.A. Occidental College	Aug. 2015 - May 2019 Cum Laude

Research and Work Experience

Graduate Research Fellow University of California, San Diego Advisor: Prof. Quinn Konopacky	Jun. 2021 - Present
Instructional Assistant, Physics Department University of California, San Diego	Oct. 2020 - Jun. 2021
Stable Laser Systems, Physicist Boulder, Colorado	Aug. 2019 - Jul. 2020
Jet Propulsion Laboratory, Summer Research Program Pasadena, California	Jun. 2018 - Aug. 2018

Group Memberships

KPIC Science/Instrumentation Team	Feb. 2021 - Present
HISPEC Science/Instrumentation Team	Jun. 2022 - Present
KPIC Climate Committee - Grad Rep	Nov. 2022 - Present
UCSD Physics/Astronomy Graduate Councils	Jul. 2022 - Aug. 2025
UCSD Astronomy Outreach Committee	Sept. 2024 - Aug. 2025
Cosmic Tours Planetarium	2022 - Present
NYRIA Local Organization Committee	Jan. 2024 - Oct. 2024

Publications

1. **Ben Sappey**, et al. "HD 206893 B at High Spectral Resolution with the Keck Planet Imager and Characterizer". *AJ* 169, 175 (2025). doi: 10.3847/1538-3881/adad70
2. **Ben Sappey**, Quinn Konopacky, Jerome Maire, et al. "Calibration unit design for Keck/High-Resolution Infrared Spectrograph for Exoplanet Characterization (HISPEC)," *Proc. SPIE 13096*, 130966K (18 July 2024); <https://doi.org/10.1117/12.3020409>
3. **Ben Sappey** et al. "Calibration Unit Design for High Resolution Infrared Spectrograph for Exoplanet Characterization (HISPEC)" in *AO4ELT7* (June 2023), 88.

Selected Co-Authored Publications

1. Do Ó, C., **Sappey, B.**, *et al.* “Orbital and Atmospheric Characterization of the 1RXS J034231.8+121622 System using High-resolution Spectroscopy Confirms that the Companion is a Low-mass Star”. *AJ* **167**, 278 (2024).
2. Finnerty, L., Schofield, T., **Sappey, B.**, *et al.* “Keck Planet Imager and Characterizer Emission Spectroscopy of WASP-33b”. *AJ* **166**, 31 (2023).
3. Horstman, K. *et al.* (including **Sappey, B.**) “RV Measurements of Directly Imaged Brown Dwarf GQ Lup B to Search for Exosatellites”. *AJ*, **168**, 175 (2024).
4. Hsu, C.-C. *et al.* (including **Sappey, B.**) “PDS 70b Shows Stellar-like Carbon-to-oxygen Ratio”. *ApJL* **977**, L47 (2024).
5. Jovanovic, N. *et al.* (including **Sappey, B.**) “Technical description and performance of the phase II version of the Keck Planet Imager and Characterizer”. *JATIS* **11**, 015005 (2025).
6. Ruffio, J.-B. *et al.* (including **Sappey, B.**) “Detecting Exomoons from Radial Velocity Measurements of Self-luminous Planets: Application to Observations of HR 7672 B and Future Prospects”. *AJ* **165**, 113 (2023).
7. Wang, J. J. *et al.* (including **Sappey, B.**) “Detection and Bulk Properties of the HR 8799 Planets with High-resolution Spectroscopy”. *AJ* **162**, 148 (2021).
8. Xuan, J. W. *et al.* (including **Sappey, B.**) “Are These Planets or Brown Dwarfs? Broadly Solar Compositions from High-resolution Atmospheric Retrievals of $\sim 10\text{--}30\text{ M}_{\text{Jup}}$ Companions”. *ApJ* **970**, 71 (2024).

Selected Presentations

1. “The Multifactorial HISPEC Calibration System” – Wavelength Calibration Workshop, Geneva, CH, 23 May 2025
2. “Calibrating a High-Resolution Spectrograph” – NYRIA Workshop 2024, San Diego, CA, 22 October 2024
3. “Could that Even Happen? Astronomy in Pop Culture: What Hollywood Gets Right ... and not so Right” - Astronomy on Tap, San Diego, CA, 1 October 2024
4. “High-resolution Infrared Spectroscopy at Keck: Probing exoplanet atmospheres in Exquisite Detail with KPIC and HISPEC” – Keck Science Meeting, Pasadena, CA, 13 September 2024
5. “Calibration Unit Design for High Resolution Infrared Spectrograph for Exoplanet Characterization (HISPEC)” – AO4ELT 7, Avignon, FR, 26-30 June 2023
6. “HD 206893 B with Keck Planet Imager and Characterizer” – In the Spirit of Lyot 2022, Leiden, Netherlands, 27 June -1 July 2022

Mentorship

Physics Peer-2-Peer Mentor	2023 - 2025
Three undergraduate students (Phys./Astro.) advised;	
One student continued to graduate program in Data Science	
Summer Undergraduate Research	Summer 2025
Advised two students in novel research projects describing Rossiter-McLaughlin Effect for exomoon detection and telluric spectra fitting	