Eckhart Spalding

Contact Information

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Citizenship

U.S.A. & Germany

Academic Appointments

Postdoctoral Associate, University of Notre Dame –Supervisor: Jeff Chilcote (PI, Gemini Planet Imager 2.0)	Oct. 2020 to present

Education

Ph.D., Astronomy & Astrophysics, University of Arizona Thesis: "Commissioning Fizeau Interferometry with the Large Binocular Telescope Interferometer" Advisors: Katie Morzinski, Phil Hinz	2020
M.S., Astronomy, University of Arizona	2017
M.S., Physics, University of Kentucky Advisor: Ron Wilhelm	2014
Non-degree physics student, University of Illinois at Urbana-Champaign	Spring 2008
B.S., Physics and History, Illinois College Year abroad at Université Marc Bloch and Université Robert Schumann (later merged into Université de Strasbourg) in Strasbourg, France, 2004 to 2005	2007

Teaching Experience

T.A., ASTR 202: Life in the Universe, University of Arizona	Spring 2020
T.A., ASTR 250: Fundamentals of Astronomy, University of Arizona	Fall 2019
T.A., MacAdam Student Observatory, University of Kentucky	Fall 2013 to Spring 2014
Grader, AST 191: The Solar System, University of Kentucky	Fall 2013
T.A., PHY 213: General Physics, University of Kentucky	Spring 2013
T.A., PHY 211: General Physics, University of Kentucky	Fall 2012
T.A., PHY 211: General Physics, University of Kentucky	Spring 2012
T.A., PHY 231: General Physics, University of Kentucky	Fall 2011
T.A., PHY 232: General Physics, University of Kentucky	Spring 2011

Other Professional Experience

U.S. Peace Corps Volunteer, Kenya, East Africa Taught physics and math at a secondary school in a desert region west of the town of Magadi, served as Health Club patron, taught computer skills, and assisted students participating in regional Science Congress	2008 to 2010
Intern, Southern Illinois School of Medicine Supervisor: Jeremy Turner	Summer 2008
Intern, Southern Illinois School of Medicine Supervisor: Kathleen Campbell	Summer 2007
Physics Tutor, Illinois College	2006 to 2007
Math Tutor, Illinois College	2004 to 2007

Observing Experience

Krizmanich Telescope (0.8 m), Notre Dame, Indiana	3 nights
Large Binocular Telescope (2×8.4 m), Mt. Graham, Arizona	≈160 nights
Vatican Advanced Technology Telescope (1.8 m), Mt. Graham, Arizona	3 nights
McDonald Observatory Otto Struve telescope (2.1 m), Mt. Locke, Texas	15 nights
MacAdam Student Observatory (0.5 m), Lexington, Kentucky	15-20 nights

PI of TAC-Approved Observing Proposals

- LBT, 2020A (1 night): *Direct imaging of planets around Sirius and Procyon*
- LBT, 2019B (1 night): *Commissioning efficient imaging interferometry at the LBT*
- LBT, 2019B (1/2 night): *High-resolution mapping of water ice in a protoplanetary disk*
- LBT, 2019A (1/2 night): *High-resolution mapping of water ice in a protoplanetary disk*
- LBT, 2019A (1 night): *Direct imaging of planets around Sirius and Procyon*
- LBT, 2018B (1 night): *Commissioning efficient imaging interferometry at the LBT*
- LBT, 2018B (1/2 night): *High-resolution mapping of water ice in a protoplanetary disk*
- LBT, 2018A (1 night): *Towards direct imaging of planetary companions of mature, nearby stars*
- LBT, 2016B (1/2 night) (with K. Wagner): Director's time request for circumstellar disk imaging
- LBT, 2015B (1 night) (with A. Skemer): *Wall-Eyed Pointing with the LBT: A Powerful Tool for Photometry in the Thermal Infrared*

Other research experience

Research Assistant, experimental particle research — Summer 2011
Supervisor: Michael Kovash
Manned pulsed proton beams runs with 7-MV Van de Graaff Accelerator

Successful Grants

Presentation of funding proposals for K7UAZ ham radio club, 2019-2020	$1,588 (total)
Travel support to attend Sagan Exoplanet Summer Workshop 2019	$795

Talks & Presentations (Excluding conferences)

- "Instrumentation for the Direct Imaging of Exoplanets", 2021 Colleges of Science and Engineering Joint Annual Meeting, University of Notre Dame, Notre Dame, IN (9 Dec. 2021)
- "Seeing the Light: Hunting for solar systems like our own", public 'Our Universe Revealed Lecture Series' (University of Notre Dame), Notre Dame, IN (30 Nov. 2021)
- "High-contrast Interferometry with LBTI", Jet Propulsion Laboratory lunch talk, Pasadena, CA (22 July 2019)
- "Status of Imaging Interferometry with LBTI", NOAO 'FLASH' talk, Tucson, AZ (14 Dec. 2018)
- "Constraints on the Structure of Exozodiacal Dust Belts (Kirchschlager+ 2017)", Steward Observatory Journal Club, Tucson, AZ (29 Mar. 2017)
- "The bimodal initial mass function in the Orion Nebula Cloud (Drass+ 2016)", Steward Observatory Journal Club, Tucson, AZ (16 Nov. 2016)
- "Around the Catch-22: Differential Photometry Redward of K-band with 'Wall-eyed' Pointing at the LBT", NOAO 'FLASH' talk, Tucson, AZ (9 Sept. 2016)
- "The Exo-Starshade Exoplanet Imaging Concept", Steward Observatory Journal Club, Tucson, AZ (18 Nov. 2015)
- "RR Lyrae Spectroscopy: Improved Metallicity Tracing", University of Kentucky Physics and Astronomy Department colloquium, Lexington, KY (24 Oct. 2013)
- Shorter, 'pop' talks: "High-contrast Interferometry with LBTI", internal astrophysics symposium, Physics Department, University of Notre Dame (31 Aug. 2021); "Fizeau with LBTI", Center for Astronomical Adaptive Optics Retreat, Tucson, AZ (29 Aug. 2019); "Imaging Interferometry with the LBT", Steward Observatory internal symposium, Tucson, AZ (21 Sept. 2018); "Wall-eyed' Pointing with the LBT", Steward Observatory internal symposium, Tucson, AZ (16 Sept. 2016)

Conferences and workshops

- Great Lakes Exoplanet Area Meeting, University of Michigan, Ann Arbor, MI, Nov. 11-12, 2021 (1 12-min talk, "Baselining the GPI 2.0 Upgrade at Notre Dame")
- ESO Ground-based thermal infrared astronomy — past, present and future (remote, Oct. 2020; 1 talk + 1 poster, DOI `10.5281/zenodo.4249961`)
- Exoplanets III (July 2020; remote participant only)

- SPIE Optical Engineering + Applications, San Diego, CA, Aug. 11-15, 2019 (1 poster + conf. proc.)
- Sagan Exoplanet Summer Workshop, Pasadena, CA, July 15-19, 2019 ('pop' talk and poster)
- Adaptive Optics Summer School, Center for Adaptive Optics, University of California, Santa Cruz, July-Aug. 2018 (lab facilitator)
- SPIE Astronomical Telescopes + Instrumentation, Austin, TX, USA, June 2018 (1 poster + conf. proc.)
- CyVerse Container Camp, Tucson, AZ, Mar. 2018 (participant)
- 2^{nd} LBTO User's Meeting, Florence, Italy, June 2017 (2 posters + 1 talk)
- Xinglong Optical Observational Astrophysics Workshop (National Astronomical Observatories, Chinese Academy of Sciences), Beijing and Xinglong, China, July-Aug. 2017 (participant + mini-talk at Dept. of Physics, Tsinghua University)
- SPIE Astronomical Telescopes + Instrumentation, Edinburgh, UK, June-July 2016 (1 poster + conf. proc.)
- Dunlap Institute Instrumentation Summer School (University of Toronto), Toronto, Canada, July 2015 (participant)
- SPF 1: Star and Planet Formation in the Southwest, Tucson, AZ, Mar. 2015 (1 mini-talk)
- American Astronomical Society, Washington, D.C., Jan. 2014 (1 poster)
- 40 Years of Variable Stars, East Lansing, MI, May 2013 (1 poster + 1 poster pop)

Service & Recognitions

Member of 2022 Exoplanet Explorers cohort (NASA ExoPAG)	2022
Ed and Jill Bessey Scholarship in Astrobiology	2020
NASA Honor Group Achievement Award (to LBTI group)	2020
NASA Honor Award (to LBTI group in 'Group Achievement' category)	2019
Astrobites.org author	2017 to 2019
Co-host of 3× per week `astro-ph`, Dept. of Astronomy, U Arizona	2016 to 2019
Graduate Student Council, Dept. of Astronomy, U Arizona	2016 to 2018
Annual College of Science 'Service' award, Dept. of Astronomy, U Arizona	2018
Annual College of Science 'Service' award, Dept. of Astronomy, U Arizona	2017
U Arizona Graduate and Professional Student Council travel grant judge	2016
Graduate Student Council, Dept. of Physics and Astronomy, U Kentucky	2013

Peer-Reviewed Publications

20. **Spalding, E.** et al. 2022. High contrast imaging with Fizeau interferometry: The case of Altair. *AJ* 163:62.
19. de Kleer et al. (with **E. Spalding**). 2021. Resolving Io's Volcanoes from a Mutual Event Observation at the Large Binocular Telescope. *Planetary Science J*, 2:227.
18. Defrère, D. et al. (with **E. Spalding**). 2021. The HOSTS survey: Evidence for an extended dust disk and constraints on the presence of giant planets in the habitable zone of beta Leo. *AJ* 161:186.
17. Musso, A. et. al. (with **E. Spalding**). 2021. LIStEN - the L' band imaging survey for exoplanets in the North. *A&A* 645:A88.
16. Sallum, S. et al. (with **E. Spalding**). ELT imaging of MWC 297 from the 23-m LBTI: Complex disk structure and a companion candidate. 2021. *AJ* 161:28.
15. Stone, J. et al. (with **E. Spalding**). 2020. High contrast thermal infrared spectroscopy with ALES: The 3-4μm spectrum of κ Andromedae b. *AJ* 160:262.
14. Lazzoni, C. et al. (with **E. Spalding**). 2020. Looking for disks or planetary objects around directly imaged companions: a candidate around DH Tau B. *A&A* 641:A131.
13. Ertel, S. et al. (with **E. Spalding**). 2020. The HOSTS survey for exozodiacal dust: Observational results from the complete survey. *AJ* 159:177.
12. Wagner, K. et al. (with **E. Spalding**). 2019. Thermal infrared imaging of MWC 758 with the Large Binocular Telescope: Planetary-driven spiral arms? *ApJ* 882:20.

11. Borgniet, S. et al. (with **E. Spalding**). 2019. Constraints on HD 113337 fundamental parameters and planetary system. *A&A* 627:A44.
10. Briesemeister, Z.W. et al. (with **E. Spalding**). 2019. High spatial resolution thermal-infrared spectroscopy with ALES: resolved spectra of the benchmark brown dwarf binary HD 130948BC. *AJ* 157:244.
9. Gordon, M.S. et al. (with **E. Spalding**). 2019. Thermal Emission in the Southwest Clump of VY CMa. *AJ* 157:57.
8. Stone, J. et al. (with **E. Spalding**). 2018. The LEECH exoplanet imaging survey: Limits on planet occurrence rates under conservative assumptions. *AJ* 156:286.
7. Crepp, J.R. et al. (with **E. Spalding**). 2018. The TRENDS high-contrast imaging survey. VII. Discovery of a nearby Sirius-like white dwarf system. *ApJ* 864:42.
6. Schindler, J.T. et al. (with **E. Spalding**). 2018. The extremely luminous quasar survey in the SDSS footprint. II. The north galactic cap sample. *ApJ* 863:144.
5. Ertel, S. et al. (with **E. Spalding**). 2018. The HOSTS survey − exozodiacal dust measurements for 30 stars. *AJ* 155.5:194.
4. **Spalding, E.**, P. Hinz, A. Skemer, J. Hill, V. Bailey, A. Vaz. 2017. Precision time-series photometry in the thermal infrared with a "wall-eyed" pointing mode at the Large Binocular Telescope. *PASP* 130:014504.
3. de Kleer, K. et al. (with **E. Spalding**). 2017. Multi-phase volcanic resurfacing at Loki Patera on Io. *Nature* 545:199.
2. Defrère, D. et al. (with **E. Spalding**). 2016. Nulling data reduction and on-sky performance of the Large Binocular Telescope Interferometer. *ApJ* 824.2:66.
1. Sallum, S. et al. (with **E. Spalding**). 2015. Accreting protoplanets in the LkCa 15 transition disk. *Nature* 527:342.

Conference proceedings

11. Ertel, S. et al. (with **E. Spalding**). 2020. Overview and prospects of the LBTI beyond the completed HOSTS survey. In *Proc. SPIE* 1144607.
10. **Spalding, E.**, P.M. Hinz, K. Morzinski, S. Ertel, P. Grenz, E. Maier, J. Stone, A. Vaz. 2019. Status of commissioning stabilized infrared Fizeau interferometry with LBTI. In *Proc. SPIE* 1111171S.
9. **Spalding, E.**, P.M. Hinz, S. Ertel, E. Maier, J. Stone. 2018. Towards controlled Fizeau observations with the Large Binocular Telescope. In *Proc. SPIE* 107010J.
8. Ertel, S. et al. (with **E. Spalding**). 2018. The HOSTS survey for exo-zodiacal dust: preliminary results and future prospects. In *Proc. SPIE* 106981J.
7. **Spalding, E.**, A. Skemer, P.M. Hinz, & J.M. Hill. 2016. Infrared photometry with 'wall-eyed' pointing at the Large Binocular Telescope. In *Proc. SPIE* 99083C.
6. Defrère, D. (with **E. Spalding**). 2016. Simultaneous water vapor and dry air optical path length measurements and compensation with the Large Binocular Telescope Interferometer. In *Proc. SPIE* 99071G.
5. Hinz, P.M. (with **E. Spalding**). 2016. Overview of LBTI: a multipurpose facility for high spatial resolution observations. In *Proc. SPIE* 990704.
4. Sallum, S. (with **E. Spalding**). 2016. Imaging protoplanets: observing transition disks using non-redundant masking. In In *Proc. SPIE* 99070D.
3. Defrère, D. (with **E. Spalding**). 2015. Exoplanet science with the LBTI: instrument status and plans. *Proc. SPIE* 96051G

2. **Spalding, E.**, R. Wilhelm, and N. De Lee. 2013. A New RR Lyrae Metallicity Calibration Including High-Temperature Phase Regions, pp. 198-201 in *40 Years of Variable Stars: A Celebration of Contributions by Horace A. Smith*, East Lansing, MI. (Available at `http://arxiv.org/pdf/1310.0590.pdf` and on the *JINA Segue Virtual Journal* 8 (40), 4 Oct. 2013)
1. Wilhelm, R., **E. Spalding**, N. De Lee. 2013. Panning for RRL Nuggets in the SDSS-DR9, Single Epoch Spectra, pp. 113-121 in *Ibid.* (Available at `http://arxiv.org/pdf/1310.0550.pdf`)

Expository & Other Writing

6. Reprints from *Astrobites.org*:
   - "It's a Bird, it's a Planet, it's a ... Speckle?" *AAS Nova*, Oct. 2018.
   - "Optics to Outrace them All" *AAS Nova*, May 2018.
   - "The African Connection," South African amateur astronomy journal *Nightfall*, Oct. 2017.
5. **Spalding, E.** 2015. "In Pursuit of RR Lyraes," *Griffith Observer*, Nov. 2015. (Honorable mention in Joan and Arnold Seidel *Griffith Observer* Science Writing Contest.)
4. **Spalding, E.** and J. Turner. 2011. *Grandeur in this View of Life: A Brief Introduction to Evolution.* Ronkonkoma, NY: Linus Publications.
3. **Spalding, E.** 2011. "Wanderlust," *Illinois College Quarterly* (Apr.), p. 40.
2. **Spalding, E.** 2008. "Eudos Gene oder: Die trügerische väterliche Linie" [Eudo's genes and the deceptive paternal branch.] In German. *Computergenealogie*, 23 (1), pp. 23-24.
1. **Spalding, E.** 2005. "IC Students Go on a Whirlwind Tour," *Illinois College Quarterly* (Jan.).

Software

Spalding, E. and J. Stone. 2019. *Dewarp: Distortion removal and on-sky orientation solution for LBTI detectors.* Astrophysics Source Code Library, `ascl:1907.008`.

Computer Skills

- Languages (in decreasing order of versatility): Python, IDL, Matlab, C++, SQL
- LaTeX, reStructuredText, Git, PBS, Slurm, Hugo, Travis CI, Jupyter, Binder, Docker, Singularity, Matlab, Mathematica, Adobe Photoshop, Adobe Acrobat, Aquamacs, Atom, Inkscape, ArcMap, Anaconda, IRAF, Windows, Linux, MS (Word, Excel, PowerPoint), Keynote, Google (Drive, Docs, Sheets), VNC, Linux Vi editor, bulk file transfer (with rsync, scp, Globus), cloud computing, high performance computing

Spoken Languages

- English (fluent)
- German (maternal language)
- French (conversational)
- Kiswahili/Swahili (conversational)