

Contact

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Summary

Assistant Research Professor at Steward Observatory with 10 years of experience in optics and instrumentation for space- and ground-based observatories, with a focus on wavefront sensing & control for high contrast imaging. Design, build, and commissioning of optical systems, including vacuum testbeds. Expertise in metrology of small (MEMS deformable mirrors) to large (6.5m Webb primary mirror) optical components and end-to-end optical diffraction simulations

Education

2017–2021 **Ph.D. in Optical Sciences**, *University of Arizona, Tucson, AZ*
Advisor: Jared R. Males
Characterization and modeling of deformable mirrors for extreme adaptive optics

2010–2014 **B.S. in Physics & Philosophy**, *Brandeis University, Waltham, MA*
Highest honors, *summa cum laude*, mathematics minor
Thesis: *Investigating Optical Continuum Flux as a Measure of Quasar Central Engine Power*

Professional Experience

2024–
Present **Assistant Research Professor**, *Steward Observatory*

2022–2024 **Postdoctoral Research Associate**, *Steward Observatory*
Advisor: Ewan S. Douglas

- Wavefront sensing and control for space-based high contrast imaging and telescope wavefront maintenance
- Development of vacuum testbed for high contrast imaging

- 2019–2021 **Optical Engineer**, *NASA Goddard Space Flight Center*
- Development of metrology techniques for ultra-stable structures under consideration for future flagship NASA astrophysics missions
 - PI of IRAD/CIF project “Using Goddard’s High Speed Interferometry to Characterize Deformable Mirror Dynamics and Stability”
- 2014–2017 **Research & Instrument Analyst**, *Space Telescope Science Institute*
Instruments Division, Telescopes Group
- Phase retrieval for Hubble focus maintenance. PI of the *HST Cycle 24 Focus & Optical Monitor* calibration program.
 - Pipeline development, analysis, and data collection support of Center of Curvature interferometry of the James Webb primary
 - Point-spread function simulations and algorithm development for the Webb coronagraphy pipeline and exposure time calculator

Relevant Publications

- 2024 ○ **Kyle J. Van Gorkom**, Ewan S. Douglas, Kian Milani, et al. (2024). “The space coronagraph optical bench (SCoOB): 4. vacuum performance of a high contrast imaging testbed”. In: submitted to SPIE Astronomical Telescopes + Instrumentation 2024.
- 2023 ○ **Kyle J. Van Gorkom**, Ewan S. Douglas, Christian Haughwout, et al. (2023). “Optical characterization of a low-noise, high-resolution controller for MEMS deformable mirrors for space applications”. In: *Astronomical Optics: Design, Manufacture, and Test of Space and Ground Systems IV*. Ed. by Tony B. Hull, Daewook Kim, and Pascal Hallibert. Vol. PC12677. International Society for Optics and Photonics. SPIE, PC126770I. DOI: 10.1117/12.2677878. URL: <https://doi.org/10.1117/12.2677878>.
- Sebastiaan Y. Haffert et al., including **Kyle J. Van Gorkom** (May 2023). “Implicit electric field conjugation: Data-driven focal plane control”. In: *A&A* 673, A28, A28. DOI: 10.1051/0004-6361/202244960. arXiv: 2303.13719 [astro-ph.IM].
- 2022 ○ **Kyle J. Van Gorkom**, Ewan S. Douglas, Jaren N. Ashcraft, et al. (2022). “The space coronagraph optical bench (SCoOB): 2. Wavefront sensing and control in a vacuum-compatible coronagraph testbed for spaceborne high-contrast imaging technology”. In: *Space Telescopes and Instrumentation 2022: Optical, Infrared, and Millimeter Wave*. Ed. by Laura E. Coyle, Shuji Matsuura, and Marshall D. Perrin. Vol. 12180. International Society for Optics and Photonics. SPIE, p. 121805M. DOI: 10.1117/12.2630704. URL: <https://doi.org/10.1117/12.2630704>.

- 2021 ○ **Kyle J. Van Gorkom**, J. R. Males, et al. (2021). “Characterizing deformable mirrors for MagAO-X”. In: *Journal of Astronomical Telescopes, Instruments, and Systems*.
- Sebastiaan Y. Haffert et al., including **Kyle J. Van Gorkom** (2021). “Data-driven subspace predictive control of adaptive optics for high-contrast imaging”. In: *Journal of Astronomical Telescopes, Instruments, and Systems* 7.2, pp. 1–22. DOI: 10.1117/1.JATIS.7.2.029001. URL: <https://doi.org/10.1117/1.JATIS.7.2.029001>.
- 2017 ○ Babak Saif et al., including **Kyle J. Van Gorkom** (Aug. 2017). “Measurement of picometer-scale mirror dynamics”. In: *Applied Optics* 56.23, p. 6457. DOI: 10.1364/ao.56.006457.