

Curriculum Vitae: James E. Lyke

Personal Information

Work Address: W.M. Keck Observatory, 65-1120 Mamalahoa Hwy, Kamuela, HI USA 96743
Home Address: *please contact me for unredacted version*
Email: jlyke@keck.hawaii.edu
Telephone: *please contact me for unredacted version*
Date of Birth: *please contact me for unredacted version*
Nationality: US
Marital Status: *please contact me for unredacted version*

Employment

Aug 2021 – Present Adaptive Optics Science Operations Lead, W.M. Keck Observatory, Kamuela, HI, USA
Dec 2016 – Aug 2021 Adaptive Optics Operations Lead Scientist, W.M. Keck Observatory, Kamuela, HI, USA
Sept 2003 – Dec 2016 Support Astronomer, W.M. Keck Observatory, Kamuela, HI, USA
Aug 2002 – Aug 2003 Doctoral Dissertation Fellow, University of Minnesota, Minneapolis, MN, USA
Jan 1998 – Aug 2003 Graduate Research Assistant, University of Minnesota, Minneapolis, MN, USA

Education

2003 PhD in Astrophysics at the University of Minnesota, Minneapolis, MN, USA
Advisors: R. D. Gehrz and C. E. Woodward
1997 B.S. Astrophysics, Summa Cum Laude, University of Minnesota, Minneapolis, MN, USA
1997 B.S. Physics, Summa Cum Laude, University of Minnesota, Minneapolis, MN, USA

Professional Roles (W.M. Keck Observatory)

AO Science Operations Lead: Direct a multi-disciplinary team to ensure two, world-class, laser- and natural guide star AO systems are fully functional for science operations. Maintain a labor and procurement budget of about \$1M, interface with development teams to maintain the state of the art via AO upgrades, supervise the AO Operations Scientist, and develop the AO skills of the science operations staff.

AO Ops Lead Scientist: Direct a multi-disciplinary team to ensure two, world-class, laser- and natural guide star AO systems are fully functional for science operations. Maintain a labor and procurement budget of more than \$500K, interface with development teams to maintain the state of the art via AO upgrades.

Support/Staff Astronomer: Point of contact for visiting observers. Expert in planning, calibration, execution, and data reduction of observations for optical and IR instruments.

Instrument Master/Scientist: Responsible for all cryogenic, electronic, mechanical, optical, software, and vacuum aspects of facility instruments. Local lead for upgrades to instruments

2006-2022: OSIRIS, AO-fed IR Integral Field Spectrograph and Imager

2014-Present: ESI, Optical Medium/High Resolution Cross-Dispersed Echelle Spectrograph

2017-Present: PCS, Engineering cameras for phasing the primary mirror

2004-2012: NIRSPEC, IR High Resolution Cross-Dispersed Echelle Spectrograph

Secondary Instrument Master/Scientist

2022-Present: OSIRIS

2008-Present: Mainland Observing

- 2012-Present: NIRSPEC
- 2015-Present: MOSFIRE, IR Multi-Object Spectrograph
- 2009-2016: Laser- and Natural-Guide Star Adaptive Optics
- 2008-2014: ESI
- 2005-2012: DEIMOS, Optical Multi-Object Spectrograph
- 2016-2018: Local Project Manager, OSIRIS Imager Detector Upgrade**
Responsible for ~\$1.8M GBMF-funded budget
- 2016-2017: Local Project Manager, OSIRIS Spectrograph Detector Upgrade**
Responsible for ~\$1M NSF-funded budget
- 2015-2017: Project Scientist, Keck Telescope Control System Upgrade**
Maintain scientific requirements
Work closely with team to ensure implementation of scientific requirements
Develop and execute on-sky tests for 8 facility- and 4 engineering-instruments
Liaise with operations teams to verify operational requirements and identify and fix any issues
- 2016-Present: Chair, Adaptive Optics Change Control Board**
Review proposed changes to the AO systems to ensure continued science production
- 2013-2017: Chair, Engineering Time Allocation Committee**
Determine engineering needs for operations and projects and produce schedule
Resolve issues to ensure sky time is used wisely and efficiently
- 2009-2010: Operations Concepts Team, Next Generation Adaptive Optics (NGAO) project**
Develop Functional Requirements of Observing Tools and Sequences
Develop Observing Operations Concepts Document
Develop On-sky I&T and Science Verification plans
- 2004-2007: Internal Project Scientist, MAGIQ (guider) project**
Develop Project Requirements
Conduct Camera Trade Study

Professional Experiences (W.M. Keck Observatory)

- 2003-Present: >1400 nights direct observing support covering nearly all Keck facility instruments
Instrument Repair-, Upgrade-, and Service-Lead
- 2020: OSIRIS – Upgrade holographic aperture mask (HAM)
- 2017: OSIRIS – Upgrade Imager (H1+SDSU to H2RG+ASIC)
- 2016: OSIRIS – Upgrade Spectrograph Detector (H2+SDSU to H2RG+ASIC)
- 2013: OSIRIS – Upgrade grating and replace cold head
- 2012: OSIRIS – Move instrument from K2 to K1 and recommission
- 2012: NIRSPEC – Replace aging cold heads
- 2009: OSIRIS – Replace failed cold head
- 2009: NIRSPEC – Install new AO pupil
- 2008: OSIRIS – Install new SPEC filters
- 2008: NIRSPEC – Install new guider camera system
- 2006: OSIRIS – Repair internal support structure after M6.7 earthquake
- 2004: NIRSPEC – Repair broken cryogenic filter wheel
- 2004-2012: NIRSPEC – Replace/service dewar window annually
- Adaptive Optics Projects, Lead or Assist Transition to Operations
- 2021: K1 – KAPA + RTC upgrade
- 2019: K1 – TOPTICA laser
- 2016: K2 – TOPTICA laser
- 2015: K2 – LGS center launch system

2013-2019: K1 – IR TT sensor (TRICK)
2010-2012: K1 – Add LGS
2007: K2 – Next Generation Wavefront Controller
2006: K1 – Next Generation Wavefront Controller
2003-2005: K2 – LGS science operations

Professional Service

Scientific Publication Referee: MNRAS, ApJ
Liaison: SAE G10T Laser Safety Hazards Committee

Language

English: Native

Computer Skills

Development

Configuration management (git, SVN, CVS), Methodologies (Agile, DevOps, Waterfall)

Languages

Expert: IDL, shell scripting, HTML

Intermediate: Python, C, IRAF, PHP, perl, Java, Javascript, LaTeX

Operating Systems

Unix/Linux, MacOS, Windows

Applications

Office, Google Drive, Atlassian (Confluence, Jira), Slack, Zoom

Refereed Publications

1. "AIROPA II: modeling instrumental aberrations for off-axis point spread functions in adaptive optics", Ciulo, A., Turri, P., et al. (including **Lyke, J.E.**), 2022, JATIS, 8, 038007.
2. "Using Non-negative Matrix Factorization to Improve Calibration of the Keck OSIRIS Integral Field Spectrograph", Horstman, K., Fitzgerald, M.P., et al. (including **Lyke, J.E.**), 2022, PASP, 134, 064504.
3. "Optical and near-infrared data and modelling of nova V5668 Sgr", Takeda, L., Diaz, M., et al., (including **Lyke, J.E.**), MNRAS, 511, 1591.
4. "Analyzing long-term performance of the Keck-II adaptive optics system", Ramey, E., Lu, J.R., et al. (including **Lyke, J.E.**), JATIS, 8, 028004.
5. "First light of a holographic aperture mask: Observation at the Keck OSIRIS Imager", Doelman, D.S., Wardenier, J.P., Tuthill, P., et al. (including **Lyke, J.E.**), 2021, A&A, 649, 168.
6. "Two close binaries across the hydrogen-burning limit in the Praesepe open cluster", Lodieu, N., del Burgo, C., Manjavacas, E., et al. (including **Lyke, J.E.**), 2020, MNRAS, 498, 3964.
7. "Relativistic redshift of the star S0-2 orbiting the Galactic Center supermassive black hole", Do, T., Hees, A., Ghez, A., et al. (including **Lyke, J.E.**), 2019, Science, 365, 664.
8. "Characterizing and Improving the Data Reduction Pipeline for the Keck OSIRIS Integral Field Spectrograph", Lockhart, K.E., Do, T., Larkin, J.E., et al. (including **Lyke, J.E.**), 2019, AJ, 157, 75.
9. "A potential progenitor for the Type Ic supernova 2017ein", Kilpatrick, C.D., Takaro, T., Foley, R.J., et al. (including **Lyke, J.E.**), 2018, MNRAS, 480, 2072.
10. "3D photoionization models of nova V723 Cas", Takeda, L., Diaz, M., Campbell, R., and **Lyke, J.E.**, 2018, MNRAS, 473, 355.
11. "Measuring temperature and ammonia hydrate ice on Charon in 2015 from Keck/OSIRIS spectra", Holler, B.J., Young, L.A., Buie, M.W., et al. (including **Lyke, J.E.**), 2017, Icarus, 284, 394.

12. "The Team Keck Redshift Survey 2: MOSFIRE Spectroscopy of the GOODS-North Field", Wirth, G.D., Trump, J.R., Barro, G., et al. (including **Lyke, J.E.**), 2015, *AJ*, 150, 153.
13. "Keck-I MOSFIRE Spectroscopy of Compact Star-forming Galaxies at $z > 2$: High Velocity Dispersions in Progenitors of Compact Quiescent Galaxies", Barro, G., Trump, J.R., Koo, D.C., et al. (including **Lyke, J.E.**), 2014, *ApJ*, 795, 145.
14. "Efficiency Measurements and Installation of a New Grating for the OSIRIS Spectrograph at Keck Observatory", Mieda, E., Wright, S.A., Larkin, J.E., et al. (including **Lyke, J.E.**), 2014, *PASP*, 126, 250.
15. "Phase-resolved Infrared Spectroscopy and Photometry of V1500 Cygni, and a Search for Similar Old Classical Novae", Harrison, T.E., Campbell, R.D., and **Lyke, J.E.**, 2013, *AJ*, 146, 37.
16. "The Low-Mass Companion to the Lithium-Depleted, Spectroscopic Binary HBC 425 (St 34)", Dahm, S.E. and **Lyke, J.E.**, 2011, *PASP*, 123, 1383.
17. "Indecent Exposure in Seyfert 2 Galaxies: A Close Look", Tran, H.D., **Lyke, J.E.**, and Mader, J.A., 2011, *ApJ*, 726L, 21.
18. "The peculiar dust shell of Nova DZ Cru (2003)", Evans, A., Gehrz, R.D., Woodward, C.E., et al. (including **Lyke, J.E.**), 2010, *MNRAS*, 406L, 85.
19. "The Distance and Morphology of V723 Cassiopeiae (Nova Cassiopeia 1995)", **Lyke, J.E.**, and Campbell, R.D., 2009, *AJ*, 138, 1090.
20. "Nova V2362 Cygni (nova Cygni 2006): Spitzer, Swift, and Ground-Based Spectral Evolution", Lynch, D.K., Woodward, C.E., Gehrz, R.D., et al. (including **Lyke, J.E.**), 2008, *AJ*, 136, 1815.
21. "The Early Spectrophotometric Evolution of V1186 Scorpii (Nova Scorpii 2004 No. 1)", Schwarz, G.J., Woodward, C.E., Bode, M.F., et al. (including **Lyke, J.E.**), 2007, *AJ*, 134, 516.
22. "The Wide Brown Dwarf Binary Oph 1622-2405 and Discovery of a Wide, Low-Mass Binary in Ophiuchus (Oph 1623-2402): A New Class of Young Evaporating Wide Binaries?", Close, L.M., Zuckerman, B., Song, I., et al. (including **Lyke, J.E.**), 2007, *ApJ*, 660, 1492.
23. "Temporal evolution of parent volatiles and dust in Comet 9P/Tempel 1 resulting from the Deep Impact experiment", DiSanti, M.A., Villanueva, G.L., Bonev, B., et al. (including **Lyke, J.E.**), 2007, *Icar*, 187, 240.
24. "Early Infrared Spectral Development of V1187 Scorpii (Nova Scorpii 2004 No. 2)", Lynch, D.K., Woodward, C.E., Geballe, T.R., et al. (including **Lyke, J.E.**), 2006, *ApJ*, 638, 987.
25. "Parent Volatiles in Comet 9P/Tempel 1: Before and After Impact", Mumma, M.J., DiSanti, M.A., Magee-Sauer, K., et al. (including **Lyke, J.E.**), 2005, *Sci*, 310, 270.
26. "Deep Impact: Observations from a Worldwide Earth-Based Campaign", Meech, K.J., Ageorges, N., A'Hearn, M.F., et al. (including **Lyke, J.E.**), 2005, *Sci*, 310, 265.
27. "The Development of a Steady State, Asymptotic Giant Branch Type, Circumstellar Wind around the 'Born Again' Star FG Sagittae", Gehrz, R.D., Woodward, C.E., Temim, T., et al. (including **Lyke, J.E.**), 2005, *ApJ*, 623, 1105.
28. "The Team Keck Treasury Redshift Survey of the GOODS-North Field", Wirth, G.D., Willmer, C.N.A., Amico, P., et al. (including **Lyke, J.E.**), 2004, *AJ*, 127, 3121.
29. "Infrared Space Observatory and Ground-Based Infrared Observations of the Classical Nova V723 Cassiopeiae", Evans, A., Gehrz, R.D., Geballe, T.R., et al. (including **Lyke, J.E.**), 2003, *AJ*, 126, 1981.
30. "Abundance Anomalies in CP Crucis (Nova Crux 1996)", **Lyke, J.E.**, Koenig, X.P., Barlow, M.J., et al., 2003, *AJ*, 126, 993.
31. "Infrared Space Observatory Short Wavelength Spectrometer Observations of V1425 Aquilae (Nova Aquila 1995)", **Lyke, J.E.**, Gehrz, R.D., Woodward, C.E., et al., 2001, *AJ*, 122, 3305.