

Jon M. Rees

Curriculum Vitae - 02/2022

UCO/Lick Observatory
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Professional Experience

- 2020–Present **Support Astronomer**, *Lick Observatory*.
- 2019–2020 **Astronomy Lab & Observatory Manager**, *New Mexico State University*.
- 2018–2019 **Postdoctoral Researcher**, *University of California, San Diego*.
- 2016–2018 **Postdoctoral Researcher**, *University of Arizona*.

Education

- 2012–2016 **Ph.D.**, Astrophysics,, University of Exeter.
Thesis "Long-lived discs in T associations: Pre-main-sequence ages for low-mass stars".
Advisor Prof. Tim Naylor.
- 2008–2012 **MPhys**, Astrophysics,, Cardiff University,, 1st Class Hons..
Dissertation "Dusty Galaxies in the Herschel ATLAS".
Advisor Prof. Haley Gomez.
- 2010 **CUROP summer research student**, Cardiff University.
Advisor Prof. D. Ward-Thompson/Dr E. Gomez.

Technical Skills

Astronomical Observing.

Used a number of instruments at different observatories, including wide-field imagers, spectrographs, and adaptive optics instruments, both as telescope operator and observer including lone working. Written and edited observing scripts. Experience in troubleshooting issues that appear during observing nights. Provided on-call support for observers on 1-3m class telescopes.

Telescope Characterisation.

Lead the deployment of a new guide camera on the Nickel 1-m telescope. Constructed models to describe the observing system throughputs (telescope + instrument + filters) for several telescopes, essential for use in constructing accurate isochrones in the observational plane. Used DECals data to validate CTIO 4m throughputs.

Computing.

Provided computing support to NMSU Astronomy department. Maintained ~ 30 desktop machines and several servers (CentOS). Responsible for updates and troubleshooting, including diagnosing and repairing hardware issues.

Data Reduction.

Reduced a large amount of wide-field optical photometric data. Skilled in the use of optimal photometry. Written complete data reduction pipeline for photometric datasets for CTIO 4m telescope. Experience with spectroscopic reduction for both single slit and multi-object spectrographs. Multi-order echelle reduction for near-IR spectra. Spectral typing of near-IR spectra.

Statistical analysis.

Developed a Bayesian method of extinction fitting. Experience using τ^2 fitting of stellar parameters.

Operating Systems.

Mac OSX, UNIX/Linux, Microsoft Windows

Languages.

Fortran, C-shell scripting, Python, HTML

Programs.

CLUSTER (photometric reduction), IRAF, Spextool (multi-order spectroscopic reduction), Starlink, TOPCAT/STILTS, ATLAS/SYNTH (stellar atmospheric models), MESA (stellar evolutionary models), LaTeX, XGRID (distributed computing)

Observing Experience

- Multiple nights , *3-m Shane, 2.5-m APF, 1-m Nickel, 0.6-m CAT*: Kast, Hamilton, ShaneAO, Levy, CCD2.
- 2 nights , *10-m Keck*: NIRSPEC.
- 2 nights , *5-m Palomar Hale*: Triplespec.
- 5 nights , *4.2-m William Herschel Telescope*: AF2/WYFFOS.
- 3 nights , *4-m Blanco Telescope*: DECam.
- 4 nights , *3.5-m APO* : Triplespec, DIS, ARCTIC, ARCES .
- 1 nights , *3-m IRTF*: iSHELL.
- 16 nights , *2.5-m Isaac Newton Telescope*: Wide Field Camera.
- 8 nights , *1.8-m VATT*: VATTSpec.

Teaching Experience

- 2020 – Support Astronomer - Lick Observatory.
- Present Responsible for training new observers to use the Lick Observatory telescopes. Participated in annual graduate student workshops, teaching UC graduate students the principles of CCD operation, observing planning, and data reduction.
- 2019 – 2020 APO Workshop - NMSU.
Trained graduate students on the use of Apache Point Observatory telescopes, and introduced the basic principles of astronomical observing and data reduction.
- 2019 – 2020 Astronomy Classes - Dona Ana Community College .
Operated remote telescope for community college astronomy classes. Demonstrated operation of telescope/instrument and data acquisition. Introduced basics of observation planning.
- 2019 – 2020 Lab/Observatory Manager - NMSU.
Responsible for training graduate students to run undergraduate astronomy labs and observing nights. Ensured students had necessary knowledge/equipment to carry out the labs. Trained students to use the on-campus observatory for both lab-related observing and for public evening events. Provided students/staff training on the use of remote/robotic observatory.

- 2012 – 2016 Observing Supervisor - Exeter University.
Taught students observing techniques. Supervised groups of undergraduate students during observing nights. Assisted in obtaining photometric/spectroscopic data. Assisted in observatory maintenance/troubleshooting. Took part in commissioning of robotic observatory.
- 2012 – 2016 Demonstrator for second-year undergraduate astronomy lab.
Duties included: Supervising undergraduate students in the astronomy labs. Teaching students to use IRAF for photometric/spectroscopic data reduction. Marking student work and providing feedback.

Outreach

- 2020 – Public Evening Tours - Lick Observatory.
Present Provided observatory tours for members of the public. Ran public observing nights with historic Lick Observatory telescopes.
- 2020 – Virtual Talks - Lick Observatory.
Present Public talks at a variety of organisations, including remote observing night for 'Friends of Lick Observatory' members.
- 2020 Tortugas Mountain Observatory Remote Observing.
Organised remote 'tours' and nighttime observing for members of the public with NMSU's Tortugas Observatory.
- 2019 – 2020 Observatory Open House - NMSU.
Organised monthly open house events at NMSU campus observatory.
- 2019 – 2020 DACC Remote Observing - NMSU/DACC.
Ran observing nights with Dona Ana Community College classes using NMSU's Tortugas Observatory. Demonstrated principles of operating telescopes and acquiring data, training ~60 students in the use of the telescope.
- 2017 University of Arizona.
Point of contact for undergraduate journalism students to interact with the research group.
- 2015 Campus Observatory Reception - University of Exeter.
Assisted in set-up, engaged with donors and members of the public at the opening reception for the new university observatory.
- 2015 Pre-University Physics - University of Exeter.
Observing support for ~30 high school students attending pre-university physics course.
- 2015 Solar Eclipse Event - University of Exeter.
Part of organising and set-up of Exeter University solar eclipse event, reaching ~2000 members of the public.
- 2014-2016 Big Bang South West.
Assisted in organisation, set-up, and running of Exeter Astro stall at Big Bang Fair South West, an annual science festival welcoming ~ 1300 primary/secondary school students per year.
- 2013 National Science Week - University of Exeter.
Supervised groups of A-Level students in experiments as part of National Science Week.
- 2010-2012 Campus Observatory Tours - Cardiff University.
Provided tours of the Cardiff University campus observatory for members of the public, including university alumni and donors.

Publications

1. **The HST large programme on ω Centauri – V. Exploring the Ultracool Dwarf Population with Stellar Atmosphere and Evolutionary Modelling**, Roman Gerasimov et al. 2022, ApJ, Submitted
2. **The Field Substellar Mass Function Based on the Full-sky 20 pc Census of 525 L, T, and Y Dwarfs**, J. Davy Kirkpatrick et al. 2021, ApJS, 253, 7
3. **The Gaia Ultra-Cool Dwarf Sample - III: seven new multiple systems containing at least one Gaia DR2 ultracool dwarf**, F. Marocco et al. 2020, MNRAS, 494, 4, 4891-4906
4. **The Extremely Luminous Quasar Survey in the Pan-STARRS 1 Footprint (PS-ELQS)**, Jan-Torge Schindler et al. 2019, ApJS, 243, 5
5. **The HST Large Programme on NGC 6752 - II. Multiple populations at the bottom of the main sequence probed in NIR**, A.P. Milone et al. 2019, MNRAS, 484, 3, 4046-4053
6. **A 3 Gyr White Dwarf with Warm Dust Discovered via the Backyard Worlds: Planet 9 Citizen Science Project**, John H. Debes et al. 2019, ApJL, 872, L25
7. **Hunting for ancient brown dwarfs: the developing field of brown dwarfs in globular clusters**, Ilaria Caiazzo et al. 2019, Astro2020:Decadal Survey on Astronomy and Astrophysics, science white papers, no. 521
8. **WISE J064336.71-022315.4: A Thick-disk L8 Brown Dwarf Discovered by Gaia DR2 at 13.9 pc**, E.E. Mamajek et al. 2018, RNAAS, 2, 4, 205
9. **The Extremely Luminous Quasar Survey in the Sloan Digital Sky Survey Footprint. II. The North Galactic Cap Sample**, Jan-Torge Schindler et al. 2018, ApJ, 863, 144
10. **The HST Large Programme on ω Centauri. III. Absolute Proper Motion**, Mattia Libralato et al. 2018, ApJ, 854, 45
11. **The HST Large Programme on ω Centauri. II. Internal Kinematics**, Andrea Bellini et al. 2018 ApJ, 853, 86
12. **The HST large programme on ω Centauri - I. Multiple stellar populations at the bottom of the main sequence probed in NIR-Optical**, A.P. Milone et al. 2017, MNRAS, 469, 1, 800-812
13. **Pre-main-sequence isochrones - III. The Cluster Collaboration isochrone server**, Cameron P.M. Bell et al. 2014, MNRAS, 445, 4, 3496-3511