

SAM WALKER

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EDUCATION

Graduate Student of Astronomy 2021 – present
University of Hawaii at Manoa, USA

MPhys in Astrophysics 2016 – 2021
University of Edinburgh, United Kingdom

PUBLICATIONS AND PRESENTATIONS

- Talk at AAS meeting #241 on the 2 Fast 2 Furious algorithm
- A massive quiescent galaxy at redshift 4.657 ([JWST Cycle 1 observing proposal #2285](#))
- An HST/STIS View of Protoplanetary Disks in Upper Scorpius: Observations of Three Young M-Stars ([Walker et al. 2021](#))
- Poster presentation at AAS meeting #237 of work detailed in Walker et al. 2021
- Timing the earliest quenching events with a robust sample of massive quiescent galaxies at $2 < z < 5$ ([Carnall, Walker, McLure et al. 2020](#))

TECHNICAL SKILLS

- Programming languages: Python
- Observing: 6 nights on Keck/NIRC2, half-night on IRTF/SpeX, half-night on UoE 0.5m teaching telescope

PROJECT EXPERIENCE

699-1 Project: Controlling coronagraphic PSF quality with 2 Fast 2 Furious Academic year 2021/22
Supervisor: Michael Bottom

- Developed an algorithm for focal-plane wavefront control through a coronagraph using sequential phase diversity
- Successful operation demonstrated in Python simulations and on the Keck/NIRC2 test bench
- Results to be presented at AAS #241, journal paper in prep.

MPhys Project: A statistical analysis of brown dwarf variability in K2 Academic year 2020/21
Supervisor: Beth Biller

- Used Lomb-Scargle periodograms to search for variability in field brown dwarfs in K2 data
- Conducted largest ever spaced-based optical variability survey and performed statistical analysis of our results
- Journal paper in prep.

Caltech SURF: Direct imaging of protoplanetary disks around M-type stars June – August 2020
Supervisors: Maxwell Millar-Blanchaer and Bin Ren

- Extracted resolved images of protoplanetary disks from scattered light HST/STIS observations of three M-type stars in Upper Sco using innovative PSF subtraction techniques
- Detected disk structure around 2/3 of our target stars (in both cases to larger radii than any previous detected structure), illustrating the utility of short-wavelength observations in probing dust distributions at large radii
- Results published in [Walker et al. 2021](#) & presented at AAS meeting #237 in January 2021

Group Project: Determining the properties of a transiting exoplanet Academic year 2019/20
Supervisors: Philip Best and Colin Snodgrass

- Observed a transit of TrES-2b using the telescope at the Royal Observatory Edinburgh
- Used MCMC methods to fit models to both literature radial velocity data and our observed transit flux data
- Determined the planet's mass, orbital period, orbital radius and effective temperature to within $\sim 1\sigma$

Supervisors: Adam Carnall and Ross McLure

- Funded by the University of Edinburgh Career Development Summer Scholarship
- Identified ten robust high-redshift quiescent galaxies within a catalogue of $\sim 25,000$ galaxies
- Increased familiarity with handling large datasets and computational clusters
- A galaxy identified by this work is the subject of the successful [JWST Cycle 1 observing proposal #2285](#)

RELEVANT WORK EXPERIENCE

Personal Tutor

May 2017 – January 2020

I have had experience as a personal tutor teaching both Maths and Physics to students of primary and secondary school age, with my work in all cases improving the grades, subject enthusiasm and confidence levels of my tutees.

REFERENCES

References are available on request.