

John R. Weaver

Curriculum Vitae

Cosmic Dawn Center
University of Copenhagen
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📄 <https://astroweaver.github.io>

Scientific Interests

- Detection and characterisation of galaxies in the early universe
- Cosmological-scale galaxy evolution and fundamental scaling relations
- The physics of star-formation quenching; Quiescent and Post-starburst galaxies
- Classical and Bayesian statistics; Dimensionality Reduction and Machine Learning

Education

- 2018–present **PhD Astrophysics**, *Cosmic Dawn Center, Univ. of Copenhagen*, Copenhagen, DK.
Thesis: "The COSMOS2020 Catalog: new insights into galaxy assembly and evolution in the first billion years"
Supervisors: Sune Toft (DAWN); Peter Capak (fmr. IPAC) & Dave Sanders (IfA)
- 2013–2018 **MPhys (Honours) Astrophysics**, *University of St Andrews*, St Andrews, UK.
Thesis: "Exploring the origins of bimodality: post-starburst galaxies at $z < 0.1$ "
Supervisor: Vivienne Wild | School prize for best astrophysics thesis | [Thesis](#)
GPA 3.8/4.0 – First Class Honours
- 2012–2013 **Astronomy Scholar**, *Connecticut College*, New London, US.
GPA 4.0/4.0 – Non-graduating scholarship program
- 2009–2013 **High School Diploma**, *The Williams School*, New London, US.

Research Positions

- Spring 2020 **Visiting Graduate Student**, *Institute for Astronomy*, Honolulu, HI.
Profile-fitting photometry for The Hawaii-2-0 Survey and the Cosmic Dawn Survey
Supervisor: Dave Sanders
- Spring 2019 **Visiting Graduate Student**, *California Institute of Technology*, Pasadena, CA.
The Farmer: Profile-fitting photometry for the next generation of galaxy surveys
Supervisor: Peter Capak
- 2016–2019 **Web-app Director**, *American Assoc. of Variable Star Observers*, Cambridge, US.
SpecDB: A public repository for spectra of variable stars
Supervisor: Stella Kafka | [Webpage](#)
- 2016–2018 **Research Student**, *University of St Andrews*, St Andrews, UK.
Extracting quasar accretion light from SDSS lightcurves
Supervisor: Keith Horne | [Poster](#)
- Summer 2017 **Research Student**, *Max Planck Institute for Astronomy*, Heidelberg, DE.
Integral field spectroscopy of the recent merger remnant NGC 7252
Supervisor: Bernd Husemann | [Talk](#) | [Paper](#)
- Summer 2016 **LEAPS Research Student**, *Leiden Observatory*, Leiden, NL.
Searching for extreme high-redshift galaxies with 3D-HST
Supervisor: Michael Maseda | [Poster](#)
- Summer 2015 **REU Research Student**, *Maria Mitchell Observatory*, Nantucket, US.
A survey of localized super star clusters in NGC 1427A
Supervisors: Michael West and Michael Gregg | [Poster](#)

Skills

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|---------------|---|
| Data Handling | <i>multi-object/fibre spectroscopy</i> – kinematics and line fluxes (e.g. pPFX, PyParadise), velocity modelling, ionisation diagnostics, multi-band SED fitting <i>photometry</i> – image reduction (e.g. DS9, IRAF), profile-fitting photometry with own software (The Farmer), aperture photometry (e.g. SExtractor, DAOPhot), stellar cluster color analysis with own software <i>miscellaneous</i> – photometric redshifts (e.g. EAZY), optimal lightcurve decomposition with own software, Principal Component Analysis of spectra (pyGappy) |
| Programming | Python (numpy/matplotlib/scipy/astropy/numba), FORTRAN |
| Web | Python-django, MySQL, HTML |
| Other | Git, \LaTeX , native MacOS & Linux-Ubuntu user |

Awards & Scholarships

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| 2018 | Astrophysics Thesis Prize <i>University of St Andrews</i> |
| 2016-2018 | Margaret Mayall Fellowship (\$6000) <i>American Association of Variable Star Observers</i> |
| 2015 | Travel Award (\$200) <i>Society of Physics Students</i> |
| 2013 | International Undergraduate Scholarship (\$6000) <i>University of St Andrews</i> |
| 2013 | Gunvor Lund Scholarship (\$500) <i>Community Foundation of Southeastern Connecticut</i> |
| 2013 | New London Scholars Studentship <i>Connecticut College & The Williams School</i> |
| 2010 | 200+ Hours Service Award <i>Mystic Seaport Museum & Treworgy Planetarium</i> |

Teaching & Supervision

[Teaching Assistant, University of Copenhagen](#)

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| 2021 | Nordic Optical Telescope Summer School. Postgraduate Level Course Website |
| 2019, 2020 | Applied Statistics: From Data to Results. Postgraduate Level Course Website Student Supervision (bold=primary supervisor) |
| Undergraduate | Julia Tiller (DAWN-REU 2019), Albert Sneppen (DAWN 2019), Christian Kragh Jespersen & Jonas Vinther (DAWN 2020) |
| Masters | Athansios Anastasiou (DAWN 2019-2020), Lukas Zalesky (IfA 2020, project prize) |

Observations

[Experience](#)

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| Imaging | Subaru /HSC |
| Spectroscopy | Keck /DEIMOS, NOT /ALFOSC Accepted Programs (1 PI, 7 CO-I) |
| 2021 | PI , <i>Beasts in the Bubbles: Characterizing ultra-luminous Galaxies at Cosmic Dawn.</i> JWST/NIRSPEC IFU Cycle 1 13.7hrs |
| 2022 | CO-I , <i>Beasts in the Bubbles: Remarkably UV-bright Galaxies at $z = 9 - 10$.</i> Keck/MOSFIRE 2N PI: C. Casey |

- 2022 **CO-I**, *Beasts in the Bubbles: Remarkably UV-bright Galaxies at $z = 9 - 10$* .
Subaru/SWIMS | 1.5N | PI: S. Fujimoto
- 2022 **CO-I**, *Deep Subaru HSC z-band imaging of the Euclid/JWST/Roman Deep Field*.
Subaru/HSC | 2N | PI: N. Suzuki
- 2021 **CO-I**, *A pilot study of AGN disk reverberation mapping at redshift $z = 1$* .
LCO-2m/MuSCAT3 | 1.85N | PI: J. Hernandez Santisteban
- 2021 **CO-I**, *A pilot study of AGN disk reverberation mapping at redshift $z = 1$* .
Liverpool Telescope | 26.0hrs | PI: J. Hernandez Santisteban
- 2021 **CO-I**, *Chasing big bubbles: the confirmation of a bright $z = 9.8$ galaxy*.
NOEMA | 30.0hrs | PI: F. Valentino
- 2019 **CO-I**, *Resolving the rapid quenching of star formation in the local Universe*.
ALMA | Cycle 7 | 10.7hrs | PI: K. Rowlands

Selected Talks (26 Talks, 8 Posters)

- Jul., 2021 **UK National Astronomy Meeting**, UK, virtual, contributed talk.
Beasts in the Bubbles: Measurement of the Massive End of $z > 8$ UV Luminosity Function
- Jul., 2021 **BUFFALO Collab. Meeting**, virtual, contributed talk.
COSMOS2020: New insights into galaxy assembly and evolution at high- z
- Jul., 2021 **SAZERAC2.0**, virtual, contributed talk.
Beasts in the Bubbles: Measurement of the Massive End of $z > 8$ UV Luminosity Function
- Apr., 2021 **Caltech Tea Talk**, virtual, invited talk.
COSMOS2020: A panchromatic view of the Universe to $z \sim 10$
- May, 2021 **U. Hawaii Institute for Astronomy Coffee Talks**, virtual, invited talk.
COSMOS2020: A panchromatic view of the Universe to $z \sim 10$
- Mar, 2021 **Institut d'Astrophysique de Paris Galaxy Colloquium**, virtual, invited talk.
COSMOS2020: A panchromatic view of the Universe to $z \sim 10$
- Jan., 2021 **American Astronomical Society Winter Meeting 237**, virtual, contributed talk.
COSMOS2020: A panchromatic view of the Universe to $z \sim 10$
- Oct., 2020 **Galaxy Evolution in the Era of *Roman*, *abbr.***, STSCI, virtual, contributed talk.
COSMOS2020 as a stepping stone for the next generation of galaxy surveys
- Mar., 2020 **Where Star Formation Ends, CANCELLED**, Leiden, NL, invited talk.
Exploring the Origins of Bimodality: Post-starburst Galaxies at $z < 0.1$
See [website](#) for full listing.

Outreach

- 2019-present **Co-founder**, *Astronomy on Tap*, Copenhagen, DK | [Website](#).
- 2019-2021 **Rotation Writer**, *Astrobites*, Graduate Astrophysics Column | [Articles](#).
- 2014-2018 **Associate Observer**, *Frosty Drew Observatory*, Ninigrit Park, US.
- 2014-2018 **Student Assistant**, *University Observatory*, St Andrews, UK.
- 2014-2016 **Columnist**, *Sci@StAnd*, Undergraduate science magazine | [Articles](#).
- 2013-2018 **Observing Director**, *University Astronomical Society*, St Andrews, UK.
- 2013-2014 **Writer Supervisor**, *SciNote*, Undergraduate science magazine | [Articles](#).

Service & Membership

[Referee for Academic Journals](#)

- 2020-present **Monthly Notices of the Royal Astronomical Society**.
- 2018-present **Astronomy & Astrophysics**.

University of St Andrews Student Union

2017–2018 **Faculty President**, *Science and Medicine*.

2016–2017 **School President**, *School of Physics and Astronomy*.

2014–2018 **Astronomy Class Representative**.

University of St Andrews Astronomical Society

2015–2016 **President**.

2014–2017 **Observing Director**.

University of St Andrews Physics Society

2015–2016 **Publicity Officer**.

2014–2015 **Academic Lecture Convenor**.

Professional Memberships

- American Astronomical Society
- American Physical Society
- Society of Physics Students
- Astronomers Without Borders
- UK Royal Astronomical Society
- European Astronomical Society
- UK Institute of Physics
- The Planetary Society

Press

- Apr., 2018 **BBC Sky at Night Magazine**, *Cutting-Edge*.
"NGC 7252: capturing a cosmic car crash" | Available in print
- Mar., 2018 **Sci-News**, *Astronomy Section*.
"ESO's Very Large Telescope Observes Galaxy-Galaxy Merger Remnant" | [Article](#)
- Feb., 2018 **European Southern Observatory**, *Picture of the Week*.
"Mapping a Merger" | [Article](#)
- Jan., 2015 **The Independent**, *Mention in regional newspaper*.
"Geeking out at Frosty Drew" | [Article](#)

Publications

1. **Weaver, J.**, Kauffmann, O., et al., ApJS, submitted, *COSMOS2020: A panchromatic view of the Universe to $z \sim 10$ from two complementary catalogs*
2. **Weaver, J.**, Zalesky, L., et al. in prep, *The Farmer: A reproducible, profile-fitting photometry pipeline for the next-generation of ultra-deep galaxy surveys using the Tractor*
3. **Weaver, J.**, Horne, K., et al. in prep, *Measuring the AGN accretion disc light: Hints of finite stress at the innermost stable circular orbit*
4. Yirui, Z.,...**Weaver, J.**, et al. 2020, MNRAS, in press, *Comparison of stellar populations in simulated and real post-starburst galaxies in MaNGA*
5. Steinhardt, C.,...**Weaver, J.**, et al. 2020, ApJ Supplement Series, 247, 2, 64, *The BUFFALO HST Survey*
6. Steinhardt, C.,**Weaver, J.**, et al. 2019, ApJ, 891, 136S, *A Method to Distinguish Quiescent and Dusty Star-forming Galaxies with Machine Learning*
7. **Weaver, J.**, Husemann, B., et al. 2018, A&A, 614, A32, *Revealing the history and destiny of an emerging early-type galaxy*