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HO-HIN LEUNG

EDUCATION

- 2024 | **PhD in Astrophysics – University of St Andrews**
Supervised by Prof. Vivienne Wild and Dr. Michail Papathomas
- 2020 | **Physics and Astrophysics Msci – University of Birmingham**
First Class Honours

PUBLICATIONS

19 published papers in peer-reviewed journals, h-index: 12, 1909 total citations, 26 citations on first author papers. See (ADS) for full list.

- [1] **H-H Leung**, Vivienne Wild, Michail Papathomas, et al. “Spatially resolved star-formation histories of local post-starburst galaxies: Starburst and quenching spatial patterns consistent with recent mergers”, Submitted to MNRAS
- [2] **H-H Leung**, Adam Carnall, Elizabeth Taylor, et al. “The JWST EXCELS survey: The ages and abundances of $3 < z < 5$ massive quiescent galaxies show that downsizing was already in place by $z \simeq 4$ ”, Submitted to MNRAS
- [3] **H-H Leung**, Vivienne Wild, Michail Papathomas, et al. “The diverse quenching pathways of post-starburst galaxies in SDSS-IV MaNGA”, MNRAS, 543.1 (2025):738
- [4] **H-H Leung**, Vivienne Wild, Michail Papathomas, et al. “Chemical evolution of local post-starburst galaxies: Implications for the mass-metallicity relation”, MNRAS, 528.3 (2024):4029

EXPERIENCES

2024–present | **Postdoctoral research assistant at University of Edinburgh**

- Searching for patterns in resolved star-formation histories of $z=3-4$ massive quiescent galaxies through JWST NIRSpec
- Developing improved custom JWST NIRSpec data reduction

2020–2024 **Postgraduate researcher at University of St Andrews**

Understanding galaxy evolution and quenching through fossil records in their spectra

- Spatially resolved star-formation histories of local post-starbursts: outside-in starburst and quenching sequence observed consistent with caused by pericentre flybys during major mergers
- Low redshift MaNGA IFU data: rapidly quenching post-starbursts can explain the gap between the mass-metallicity relations of star-forming and quiescent galaxies → rapid quenching as a plausible quenching pathway for building the local red-sequence
- Developed Hierarchical Bayesian models for spectral fitting of IFU data, pooling of data allows for direct study of population properties and obtaining key information from low SNR data
- Built a small interactive visualization tool for gaining better intuition of how changing galaxy properties affect their observed spectra (GitHub, paper)

2022–2023 **Research Assistant at IT Innovation Centre, University of Southampton**

- Developing Explainable AI to assist in blood glucose level monitoring for T1 Diabetes patients
- Reliability testing of machine learning models under the effects of data and concept drift
- Quantify the impact of data and concept drift on model predictions through Shapley values

2019–2020 **Masters year project**

Open Clusters' Stellar Ages through Bayesian Hierarchical Modelling and Machine Learning

- Replaced interpolation of stellar evolution grids with neural networks to predict stellar observables (e.g. T_{eff} , luminosity) from fundamentals (e.g. mass, radius, age) for better generalization
- Bayesian hierarchical modelling of stars in open clusters to accurately measure both individual and population properties (age and metallicity)
- Incorporated Gaussian mixture models to account for binaries in open clusters

2019 **Large team student-led research project**

Asteroseismology of Red Giants and Galactic Archeology with TESS Data

2018 summer **Internship at the Hong Kong Observatory**

Feasibility study of determining earthquake intensity based on public's reports

INVITED SEMINARS

Mar 2026	Seminar to the Observational Astrophysics Group, Lancaster University
Dec 2025	Jeremiah Horrocks Institute seminar, University of Lancashire
Sep 2025	Astronomy lunch seminar, University of St Andrews

AWARDS

2023 | **Best long talk of the day**
DEX-XIX conference, Edinburgh, UK

ACADEMIC CONFERENCES AND CONTRIBUTIONS

Mar 2026 | **20-minute INVITED talk in Champaign-Urbana, IL**
At "End of Star Formation" conference

May 2025 | **Flash talk and poster in Austin, TX**
At "CFC Inaugral Conference"

Dec 2023 | **15-minute talk in Hong Kong**
At "Resolving Galaxy Ecosystems Across All Scales" conference

Oct 2023 | **15-minute talk in Puerto de la Cruz, Tenerife**
At "A Life Devoted to Stellar Populations" conference

Jan 2023 | **12-minute talk in Edinburgh, UK**
At "DEX-XIX" conference

Sep 2022 | **Short contributed talk in Cambridge, UK**
At "Epoch of Galaxy Quenching" Conference, recording

TEACHING EXPERIENCE

2024 | **Astronomy Tutorials**
Second-year students, demonstrating problem solving and improving understanding

2024 | **Guest lecture on the origins of local post-starburst galaxies**

2021 – 2023 | **Astronomy Lab Demonstrator**
First to third-year students, astronomy problem solving, computational exercises, python and Fortran coding

PUBLIC ENGAGEMENT

Nov 2025 | **Astronomy for All Talks**
40-minute public talk at the Royal Observatory of Edinburgh about how galaxies quench

2025-present | **Astronomy show presenter to primary school students**
Royal Observatory of Edinburgh mobile planetarium

2023-2024 | **Astronomy show presenter to 2-17 year olds**
St Andrews mobile planetarium

TECHNICAL SKILLS

- Full spectral fitting of SEDs with both parametric and non-parametric model frameworks
- MCMC, Bayesian statistics, Nested sampling, Hierarchical Bayesian models
- Neural networks, Random forests, Gradient boosted models, Explainable AI
- Python, Fortran, Git, GitHub, Jupyter, LaTeX, HTML/CSS, Unix, Bash