

# JEFFREY C.C. CHAN

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## WORK EXPERIENCE

### Postdoctoral Researcher

#### University of California, Riverside

Jan 2017 – July 2020    Riverside, CA, USA

- Led research projects in multiple international collaborations to study the properties of galaxies in high-redshift galaxy clusters, leading to several peer-reviewed research publications, most recently in July 2021
- Performed extensive data wrangling and analysis on terabytes of ground-based and space-based telescope data with custom-built data pipelines using IDL and Python
- Designed software packages and developed scripts in Python and R to perform morphological modeling and simulations on tens of thousands of galaxies for comparison with real-world observations
- Prepared the setup required for observations and operated telescopes (on-site and remote) to collect imaging and spectroscopy data
- Managed and maintained the Linux data server of the group, allowing collaborators to access data remotely
- Presented and promoted my research findings at various international conferences and seminars

## EDUCATION

### PhD in Astronomy (*Magna Cum Laude*)

#### Max Planck Institute for Extraterrestrial Physics (MPE)

Nov 2012 – Oct 2016    Munich, Germany

- Dissertation: “Constraining the formation and evolution of cluster galaxies at  $z \sim 1.5$  using sizes and colour gradients”
- Developed a new imaging technique to derive spatially-resolved mass distribution of galaxies from multi-band Hubble Space Telescope data
- Integrated new modules with existing data pipeline designed for modelling galaxy photometry

### MPhil in Astrophysics

#### The University of Hong Kong

Sept 2010 – Oct 2012    Hong Kong

- Dissertation: “Kinematics Constraints on Structuring of the Optical Emission-Line Nebula in NGC 1275”
- Analyzed hundreds of integral-field optical spectra to measure the physical properties of the optical nebula of central galaxy of the Perseus Cluster

### BSc in Mathematics/Physics (First Class Honours)

#### The University of Hong Kong

Sept 2007 – June 2010    Hong Kong

- Bachelor research project: “Coronal Magnetic Activity at the divide between partially and full convective stars”

## COURSES

- Neural Networks and Deep Learning** (Ongoing - Neural network architecture basics)
- Python for Data Science and Machine Learning Bootcamp** (Scikit-Learn, TensorFlow, Spark)
- Python for Financial Analysis and Algorithmic Trading** (Time series analysis)
- Algorithms Part I & II** (Data structures and algorithms)

## SKILLS

Data Analysis    Data Visualisation  
Machine Learning    Statistics  
Problem Solving    Science Communication  
Public Speaking    Web Development

JupyterLab    Pandas    Numpy    Matplotlib  
Plotly/Dash    Scikit Learn    Keras  
TensorFlow    Kivy    Flask    Plotly/Dash  
Fusion 360    Spark    LaTeX    Git  
Unix / Linux

## PROGRAMMING LANGUAGES

IDL    ●●●●●●  
Python    ●●●●●●  
HTML/CSS    ●●●●●●  
SQL    ●●●●●●  
R    ●●●●●●  
JavaScript    ●●●●●●  
C++    ●●●●●●

## LANGUAGES

English    ●●●●●●  
Cantonese    ●●●●●●  
Mandarin    ●●●●●●

## CONFERENCE TALKS

- European Astronomy Society Annual Meeting (EAS 2020)  
Jul 2020    Online
- “Early stages of Galaxy Cluster Formation”  
Jul 2017    ESO Garching, Germany
- “Deconstructing Galaxies at Cosmic Noon”  
Aug 2016    Leiden, The Netherlands
- “In the footsteps of galaxies 2015”  
Sep 2015    Soverato, Italy
- “A 3D View on Galaxy Evolution” (poster)  
Jul 2015    MPIA, Heidelberg, Germany
- European Week of Astronomy and Space Science (EWASS 2015)  
Jun 2015    La Laguna, Tenerife, Spain
- “Future direction in Galaxy Cluster Surveys”  
Jun 2014    ENS, Paris, France
- IAU XXVIII General Assembly  
Aug 2012    Beijing, China

## PROJECTS

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- **Python Kivy App** - Designed and developed a password manager application “RD Pass” using Python Kivy framework and SQL with a back-end database and AES encryption
- **Dash Visualization App** - Developed a US stock screener “stock-vcpscreener” in python and a web-based visualization application in Dash that generates a daily stock market analysis report. More details in the Github repo
- **Firefox Extension** - Developed and published a Firefox browser extension “Crypto Price Checker” using HTML/CSS and JavaScript for tracking cryptocurrency prices using crypto exchange APIs

## TEACHING, OUTREACH EXPERIENCE AND COMMUNITY WORK

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Referee/Reviewer for the Astrophysical Journal and the Astronomical Journal

📅 2018 - 2021

Volunteer for the 2017 total solar eclipse event

📅 Aug 2017 📍 UCR, Riverside, CA, USA

Demonstrator at Open day event

📅 Oct 2017 📍 MPE, Garching, Germany

Tutor of PHYS2022 “Observational Astronomy” and PHYS1414 “General Physics I”

📅 2010 - 2012 📍 MPE, Garching, Germany

Organizer of the Physics Summer Workshop 2008 for High School students

📅 Aug 2008 📍 The University of Hong Kong, Hong Kong

Internal Vice Chairperson of Physics Society

📅 2007 - 2008 📍 The University of Hong Kong, Hong Kong

## OBSERVING EXPERIENCE

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Co-Investigator of > 20 accepted observing proposals. Telescopes: HST, ALMA, VLT (KMOS, X-Shooter), Keck (MOSFIRE, NIRES)

Hands-on observing

MOSFIRE, WM Keck Observatory

**Multi-object spectroscopy of high-z clusters / proto-clusters / ultra-massive galaxies at  $z > 3$**

📅 Mar 2017 - Feb 2020, 13 nights 📍 Waimea, HI, USA (Remote observation)

GMOS, Gemini Observatory North

**Slit spectroscopy of high-z cluster galaxies**

📅 Apr 2017, 5 nights 📍 Hilo, HI, USA

VLT/KMOS, Paranal Observatory

**IFU observation of ETGs in high-z clusters**

📅 Jul 2014 - Sep 2015, 14 nights 📍 Antofagasta, Chile

## DATA REDUCTION EXPERIENCE

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- **Imaging:** HST/ACS, HST/WFC3, VLT/HAWK-I and Spitzer/IRAC
- **Spectroscopy:** VLT/KMOS, PMAS/PPAK at 3.5m of CAHA, Keck/MOSFIRE
- **Radio Interferometry:** ATCA and VLA

## PUBLICATIONS

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**40 refereed publications (4 first author)** in journals including The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy & Astrophysics, and Nature. **h-index: 21**

Publication list on ADS:

<https://ui.adsabs.harvard.edu/public-libraries/T2FgtCPxTUyf9xLwwq5c4g>

## AWARDS

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Ph.D. Studentship (Deutsches Zentrum für Luft- und Raumfahrt e.V., DLR grant)

📅 2015 - 2016

IMPRS Fellowship

📅 2012 - 2015

Postgraduate Studentship

📅 2010 - 2012

Best Presenter in Undergraduate Research Colloquium

📅 2010

Li Po Kwai Scholarship

📅 2009

Dean's Honours List

📅 2008

HKU Foundation Entrance Scholarship

📅 2007

## WORKSHOPS/SEMINARS

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GOGREEN Data Release Workshop

📅 Aug 2020 📍 Online

GOGREEN 2019 Workshop

📅 Aug 2019 📍 Toronto, Canada

UCR Astronomy seminar

📅 Nov 2018 📍 Riverside, CA, USA

GOGREEN 2018 Workshop

📅 Aug 2018 📍 Waterloo, Canada

KMOS Cluster Workshop II & IV

📅 Nov 2014/Dec 2015 📍 Garching, Germany

IMPRS student seminar

📅 Sep 2015 📍 Garching, Germany

KMOS Cluster Workshop I & III

📅 Feb 2013/Jun 2015 📍 Oxford, UK

OPINAS Ringberg group retreat

📅 Feb 2014/Apr 2015 📍 Tegernsee, Germany

OPINAS seminar

📅 Apr 2013/Mar 2015 📍 Garching, Germany

Star Formation through Spectroimaging at High Angular Resolution

📅 Jun 2011 📍 Taipei, Taiwan