



# Xueqing Chen

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## RESEARCH INTEREST

Planet formation, exoplanets, computational astrophysics, radiative transfer, synthetic observations

## EDUCATION

**ETH Zurich, MSc in Physics** 09.2019 – present | Zurich, Switzerland  
Relevant courses: Astrophysics, Extrasolar Planets, General Relativity, Quantum Field Theory

**Chinese University of Hong Kong, Shenzhen,** 09.2015 – 06.2019 | Shenzhen, China  
*BSc in New Energy Science and Engineering*  
Honours, First Class (GPA 3.76/4)

**University of New South Wales** 02.2018 – 06.2018 | Sydney, Australia  
Visiting Student

## RESEARCH EXPERIENCE

**Master Thesis,** 03.2021 – 09.2021 | Zurich, Switzerland  
*Computational Astrophysics Group, ETH Zürich*  
Project in Observability of forming planets (Supervision: Judit Szulágyi)

- Computed intensity images and SEDs from hydrodynamic simulations of planet forming disks using RADMC-3D radiative transfer code
- Developed pipelines for simulating JWST NIRCам, NIRISS & MIRI and ELT MICADO & METIS images with telescope simulator softwares and performed photometric analysis on the results
- Assisted in developing a python pipeline for hydro simulation data conversion

**Semester Project,** 09.2020 – 12.2020 | Zurich, Switzerland  
*Exoplanet and Habitability Group, ETH Zürich*  
Project in Earth as an Exoplanet - Clouds and their Influence on Earth's Thermal Emission (Supervision: Sascha Quanz, Jean-Nöel Mettler)

- Analyzed cloud and thermal radiance data over 18 years from MODIS instrument onboard the NASA Aqua satellite to investigate the effect of cloud height and optical thickness on Earth's thermal radiance spectrum for 4 different planet surface types

**Research Assistant,** 06.2018 – 12.2018 | Shenzhen, China  
*Nano Opto-Electronics Laboratory, CUHK(SZ)*  
Project in GaAsBi Quantum Well Laser

- Performed finite-domain time-difference (FDTD) simulation of laser disks with Lumerical FDTD to investigate the effect of tunable disk radius on the lasing spectra and electromagnetic field profiles of quantum well micro-disk lasers, and compared results with sample testing data

## TEACHING EXPERIENCE

**Teaching Assistant,** 01.2017 – 12.2017 | Shenzhen, China  
*School of Science and Engineering, CUHK(SZ)*  
PHY1002, Physics Laboratory

- Assisted weekly physics lab sessions of around 50 students to provide guidance with experiment methods, data analysis and report writing

  
CSC1002, Computational Laboratory

- Led python programming tutorial sessions of around 20 students and prepared teaching materials

## PUBLICATIONS

**Observability of Forming Planets and their Circumplanetary Disks IV. – with JWST & ELT.**

**X. Chen** & J. Szulágyi (in prep)

**Continuous wave operation of GaAsBi microdisk lasers at room temperature with large wavelengths ranging from 1.27 to 1.41  $\mu\text{m}$ .**

X. Liu, L. Wang, X. Fang, T. Zhou, G. Xiang, B. Xiang, **X. Chen**, S. K. Hark, et al. *Photonics Research*, Vol.7, Issue 5, pp.508-512. (2019)

## THESES AND REPORTS

*Observability of forming planets with near future telescopes*, Master's Thesis presented to ETH Zürich. (2021)

*Earth as an Exoplanet: Clouds and their Influence on Earth's Thermal Emission*, Semester project report presented to ETH Zürich. (2021)

*Detecting atmospheric O<sub>2</sub> in Proxima b with high resolution spectroscopy*, Mock research proposal written for the course Extrasolar Planet at ETH Zürich. (2020)

## AWARDS

**Undergraduate Research Award, CUHK(SZ)**

07.2018

RMB 1,000 per month for 3 months to encourage undergraduate research work

**Academic Performance Scholarship - Class A, CUHK(SZ)**

10.2017

RMB 80,000 per year for one year awarded to recognize excellent academic achievement

**Dean's List Award, CUHK(SZ)**

10.2016

Awarded for outstanding academic performance in 4 consecutive years (2016 / 17 / 18 / 19).

## SKILLS

### Programming

Python (data analysis, data pipelines, visualization),  
Matlab (FEM simulation, optimization),  
Bash, Latex, Git, Linux, C++

### Astronomical codes & softwares

Astropy, RADMC-3D (radiative transfer), JWST pipeline (data reduction), JWST APT (observation planning), MIRISim, Mirage, SimCADO, SimMETIS (telescope simulation)

## LANGUAGES

**English** (C1, IELTS 7.5) | **Chinese** (Native) | **German** (A1)