Curriculum Vitae: Chong-Chong He

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Education

Ph.D., Astronomy; University of Maryland — 2018 - 5/2023 (expected)
Thesis: *Multiscale Radiation-MHD Simulations of Compact Star Clusters*. Advisor: Massimo Ricotti

M.S., Astronomy; University of Maryland — 2016 - 2018
Thesis: *Simulating Star Clusters Across Cosmic Time*. Advisor: Massimo Ricotti

Visiting Honors Student Program; Georgia Institute of Technology — Spring 2015

B.S., Physics, WITH HIGHEST HONOR; Jilin University — 2012 - 2016
Upper Division GPA: 3.92/4 Cumulative GPA 3.91/4

Honors & Awards

Future Investigators in NASA Earth and Space Science and Technology (FINESST) — 2021 - 2024

Ann G. Wylie Dissertation Fellowship (declined) — 2021
$15,000 stipend and a tuition to support outstanding doctoral students for their dissertation.

Dean's Honored Graduates, Jilin University — 2016
The highest honor awarded to graduating seniors in the college

China Youth Science and Technology Innovation Award, P.R. China — 2016

Tang-Ao Qing Supreme Award for Excellence in Research & Practice, Jilin University — 2016

National Scholarship, P.R. China — 2015

Scholarship for Overseas Study, China Scholarship Council — 2014

Selected Talks

Star Formation/ISM Seminar, Princeton University — 2022/12

Invited talk, the Center for Relativistic Astrophysics Seminar, Georgia Tech — 2022/11

Aspen Winter Conference, Aspen Center for Physics — 2022/3

237th AAS Meeting | American Astronomical Society — 2021/1

Invited talk, the Anton Pannekoek Insitute for Astronomy, University of Amsterdam — 2020/11

Invited talk, the Emmy Noether Research Group on Massive Star Formation, University of Tübingen — 2020/11

Teaching/Mentoring Experience

Undergraduate Research Tutor; University of Maryland — 2021 -

- Mentoring an undergraduate on academic research

Graduate Teaching Assistant; University of Maryland 2016 - 2021

- Check my **teaching portfolio here**
- Courses taught include *Introduction to Astronomy*, *Galaxies*, *Cosmology*, *Origin of the Universe*, *Stars and Stellar Systems*, *Solar System Astronomy*, and *Life in the Universe*.
- Responsibilities include leading classroom discussions and labs, preparing homework and exam solutions, grading, and holding office hours to provide additional guidance to students.

Skills

Programming Languages & Softwares

- Python, Julia, LaTeX; advanced
- C, Fortran, Mathematica, MATLAB; proficient
- C++, HTML/CSS, JavaScript; basic

High-Performance Computing

- Experienced in MPI Parallel Programming

Data Science

- Knowledge of Machine Learning, including Deep Learning and Neural Networks (**Coursera certification**)

Professional Services

2020 - **Referee**: MNRAS

2018 - **Member**: American Astronomical Society

Selected Press Coverage

- Amsterdam Science (2020, Sept). "Cosmic Flashlights in the Early Galaxies" Retrieved 2020, Oct 6, from https://amsterdamscience.org/wp-content/uploads/ScienceAmsterdamMagazine_2020-digitaal.pdf (page 20)

Selected Outreach

- **Computational Science Blog**, a blogging site I created where I write articles about computational astrophysics and machine learning for the general public with college or high school background.
- **2020** Produced animations for **"The Great Conjunction 2020"**, an outreach program by the Astrophysics Group at the University of Exeter. Video link: https://youtu.be/dbVpl9UYzHU?t=128 and https://youtu.be/mxYJpQONSlI?t=293 (retrieved 2020-12-8). Source code: https://github.com/chongchonghe/Python-solar-system
- **2018 – 2020** Lecture Assistant, GRAD-MAP Python Bootcamp, University of Maryland

List of Publications: Chong-Chong He

Check ADS for a **full list of publications** or **a list of refereed/under-review publications**

First-author refereed/under-review publications

- **C.-C. He** & M. Ricotti, 2022, "Massive Prestellar Cores in Radiation-magneto-turbulent Simulations of Molecular Clouds", arXiv e-prints, **arXiv:2210.11629**.
- **C.-C. He**, 2021, "A Fast and Accurate Analytic Method of Calculating Galaxy Two-point Correlation Functions", **The Astrophysical Journal, 921, 59**
- **C.-C. He**, M. Ricotti, & S. Geen, 2020, "Simulating star clusters across cosmic time - II. Escape fraction of ionizing photons from molecular clouds", **Monthly Notices of the Royal Astronomical Society, 492, 4858**.
- **C.-C. He**, M. Ricotti, & S. Geen, 2019, "Simulating star clusters across cosmic time - I. Initial mass function, star formation rates, and efficiencies", **Monthly Notices of the Royal Astronomical Society, 489, 1880**.
- **C.-C. He** & L. Keek, 2016, "Anisotropy of X-Ray Bursts from Neutron Stars with Concave Accretion Disks", **The Astrophysical Journal, 819, 47**.

Papers with significant contributions

- D. K. Galloway, Z. Johnston, A. J. Goodwin, & **C.-C. He**, 2022, "Robust inference of neutron-star parameters from thermonuclear burst observations", ApJS in press (**arXiv:2210.03598**).

  > *I wrote the code DiskAnisotropy which is a core module of the code presented in this paper.*

Papers in preparation

Authors with * are students I mentored/co-mentored.

- **C.-C. He** & M. Ricotti, 2022 *in prep.*, "Magnetic Braking Fails to Work: Formation of Large Circumstellar Disks in Magnetically Critical Cores"
- R. Hix*, **C.-C. He**, & M. Ricotti, 2022 *in prep.*, "Two Modes of Star Formation in Strongly Magnetized Molecular Clouds"
- **C.-C. He** & M. Ricotti, 2023 *in prep.*, "Mock JWST Spectra of Proto-globular Clusters at z > 6 and Implications on LyC Escape Fraction"

Conference Proceedings/Abstracts

- **C. He**, 2021, "Destructing Molecular Clouds with Photoionization Feedback and the Escape of Ionizing Photons", **American Astronomical Society Meeting Abstracts, 53, 329.03**.

Selected Essays

- **2020 "Simulating a real solar system with 70 lines of Python code"**, medium.com