

CHENGYAN XIE

Building 5, Xiamen University, Xiamen, Fujian, China
19720182203975@stu.xmu.edu.cn \diamond [ORCID](#) \diamond github: [@wddlx](#)

EDUCATION

Xiamen University Sept 2018 - June 2022 (expected)
B.S. in astronomy, Department of Astronomy, School of Physics. Advisor: Taotao Fang
Overall grade 89.7/100.0 (US scale: 3.78/4.00) | ranking: 5/112;
Major grade 92.0/100.0 (US scale: 3.91/4.00)

PUBLICATIONS

Spiral Arm Pattern Motion in the SAO 206462 Protoplanetary Disk. ([Link](#))
Chengyan, Xie et al. The Astrophysical Journal Letters, 906, 2 (2021): L9.

SOFTWARE DEVELOPMENT

- **Spiral Arm Motion Calculator (SAMC)** Link: [github](#)
- Self-developed, the first Python package to compute the spiral arm motion.
- Involved in applying the package to different cases and creating a user-friendly interface as the main developer and maintainer.
- Estimating the errors from data reduction and fitting process with this package. Expected to publish a first-author paper in the near future.

RESEARCH PROJECTS

Arm Motion Measurement for Eccentric Driver Simulation Mar. 2021 – Present
Advisor(s): Dr. Bin Ren and Prof. Ruobing Dong

- Inspected the morphology and motion pattern of spiral arms from simulated figures via self-developed codes. Discovered some possible features in spiral arm motions to distinguish spiral arms activated by companions with eccentric orbits from circular cases.
- Developing a Python package SAMC to fit the spiral arm motion accurately.
- Formulating a theory about how the eccentricity and the phase of the companion affect the motion of different parts of the spiral arms via our Python package.
- Working in progress, one first-author research paper expected.

Spiral Arm Pattern Motion in the SAO 206462 Protoplanetary Disk Aug. 2020 – Jan. 2021
Advisor(s): Dr. Bin Ren and Prof. Ruobing Dong

- Obtained the forming mechanism of the spiral arms and the locations of possible planets in the SAO 206462 system by analyzing the motion pattern and speed via self-developed python package SAMC.
- Found the first possible system with two planets driving the two spiral arms respectively.
- Expanded the scope of use of Ren's method of calculating spiral arm motion, reducing the separation time of observations from 5 years to 1 year.
- Published the results as the first author on *The Astrophysical Journal Letters*.

Detecting exoplanets in the X-ray band

Oct. 2019 – May 2020

Advisor(s): Prof. Taotao Fang

- Discussed the detectability of exoplanets in the X-ray band with next-generation telescopes like Hot Universe Baryon Surveyor (HUBS) and Advanced Telescope for High Energy Astrophysics (Athena) via Xspec and Python.

- Obtained required exposure time to detect exoplanets by simulating the soft X-ray emission from Charge-exchange effects of exoplanets and the X-ray emission from the host star via Xspec and Python package PyAtomDB

TALKS

2021 PKU Undergraduate Astronomy Symposium, Beijing, China

Sept. 2021

Spiral Arm Motion Project in protoplanetary disks (awarded the Lin-bridge Prize)

Tsinghua University Planet group meeting, Beijing, China

April 2021

Spiral Arm Motion Project (invited)

SELECTED HONORS AND AWARDS

- Lin-bridge Prize for Excellent Undergraduate Research, Peking University 2021
- Ge Jiashu scholarship (top~ 1%, ~ 1600 US dollar), Xiamen University 2021
- Maotai scholarship (top~ 5%, ~ 800 US dollar), Xiamen University 2020
- First Prize in Mathematics Competition of Chinese College Students, Fujian Mathematical Society 2020
- First Prize in Physics Competition for College Students (top~ 2%), Xiamen University 2019
- First Prize in Chinese Physics Olympiad (top ~ 0.3%), Jiangsu Physical Society 2017

SKILLS

Programming: Proficient in Python, L^AT_EX, familiar with C, C++, Shell, CIAO, XSPEC.

Languages: English(fluent), Mandarin (native).

TEACHING EXPERIENCES

'Oscillations, Waves and Optics', Teaching Assistant, Xiamen University

2021 fall

OUTREACH

Video "Eight minutes to get familiar with exoplanet detection" (八分钟走近系外行星) [bilibili](#)