

Yichen Sun (孙逸辰)

Nanjing University · No. 163, Xianlin Avenue, Qixia District, Nanjing, China

· Tel: +86 18051987851/+31 6 57354201

Email: yichen_sun@smail.nju.edu.cn · ORCID: [0000-0003-0477-1606](https://orcid.org/0000-0003-0477-1606)

Personal Website: <https://alex-sco.github.io/>

Personal Profile

PhD candidate in Astrophysics, Nanjing University (expected June 2027).

Research interests: CNO isotopic abundances · Molecular clouds · Galactic chemical evolution · Astrochemistry · Radiative transfer · PDR modelling

Education and Long-term Visits

Ph.D. student in Astrophysics (Supervisor: Zhi-Yu Zhang)

School of Astronomy & Space Science, Nanjing University 2021.9.1-present

Bachelor's degree in Astronomy 2021.6

School of Astronomy & Space Science, Nanjing University 2017.9.1-2021.6.30

Ph.D. guest in Astrophysics (Supervisor: Serena Viti)

Leiden Observatory, Leiden University 2024.10-2026.10

Research Publications

As the first-author:

- ◆ Sun, Y.-C., Zhang, Z.-Y., Wang, J., et al. “An improved method to measure $^{12}\text{C}/^{13}\text{C}$ and $^{14}\text{N}/^{15}\text{N}$ abundance ratios: revisiting CN isotopologues in the Galactic outer disc” 2024, MNRAS, 527, 8151. doi:10.1093/mnras/stad3643
- ◆ Sun, Y.-C., Zhang, Z.-Y., Wang, J., et al. “Widespread hyperfine anomalies for ^{12}CN $N=1\rightarrow 0$ in the Galactic disk” (A&A under review)

As the co-author:

- ◆ Bisbas, T. G., Zhang, Z.-Y., Gjerger, E., et al. “ α -enhanced astrochemistry: the carbon cycle in extreme galactic conditions”, 2024, MNRAS, 527, 8886. doi:10.1093/mnras/stad3782
- ◆ Lin, L.-R., Zhang, Z.-Y., Wang, J., et al. “Inadequate turbulent support in low-metallicity molecular clouds”, 2025, Nature Astronomy, 9, 406, doi:10.1038/s41550-024-02440-3
- ◆ Li, F., Zhang, Z.-Y., Wang, J., et al. “Properties of Dense Molecular Gas along the Major Axis of M82” 2022, ApJ, 933, 139. doi:10.3847/1538-4357/ac7526
- ◆ Luo, G., Colzi, L., Liu, T. et al. “A new measurement of the Galactic $^{12}\text{C}/^{13}\text{C}$ gradient from sensitive HCO^+ absorption observations”, 2024, A&A, 690, A372, doi:10.1051/0004-6361/202451412

Proposals with observed time

- ◆ ALMA: Cycle-8 ACA supplement (PI), Cycle-9, Cycle-10, Cycle-11, Cycle-12 (Co-I)
 - $^{12}\text{CN}/^{13}\text{CN}$ and $^{12}\text{C}^{18}\text{O}/^{13}\text{C}^{18}\text{O}$ observations for Galactic molecular clouds
 - 3-mm and 1.3-mm line survey

- ◆ **SMT:** call for proposal 2022A, 2024A (PI)
 - ^{12}CN N=2-1 and 3-2 hyperfine components observations towards Galactic molecular clouds
- ◆ **ARO 12-m:** call for proposal 2024 (PI)
 - ^{12}CN N=1-0 hyperfine components observations towards molecular clouds
- ◆ **IRAM 30-m and NOEMA:** call for proposal 2022 (co-I), 2024 (PI)
 - 3-mm line survey, mapping $^{12}\text{CN}/^{13}\text{CN}$ data towards molecular clouds

Research Expertise

Observations: Millimeter/submillimeter spectral-line surveys for single-dish and interferometer data, isotopologue analysis (GILDAS, CASA)

Radiative transfer: Non-LTE excitation modelling, (RADEX/SpectraRADEX, LIME)

Astrochemistry: Chemical modelling in PDR and dense gas (3D-PDR, UCLCHEM)

Selected Research Seminars and Talks

- ◆ Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain, October 2026
- ◆ Max Planck Institute for Radio Astronomy, Bonn, Germany, October, 2026
- ◆ University of Cologne, Cologne, Germany, October, 2026
- ◆ Max Planck institute for Astronomy, Heidelberg, Germany, September, 2026
- ◆ Paris Observatory Meudon Campus, Paris, France, September, 2026
- ◆ Leiden Observatory, Leiden, the Netherlands, June, 2026
- ◆ the Kapteyn Astronomical Institute, Groningen, the Netherlands, March, 2026
- ◆ The Kavli Institute for Astronomy and Astrophysics at Peking University, Beijing, China, December, 2021

Selected Conferences

- ◆ **COSPAR 2026**, August 2026, Florence, Italy (**Oral Talk**)
- ◆ Exploring the Evolution of CNOPS Elements from Earth and Space, Sesto, Italy, February, 2026 (**Oral Talk**)
- ◆ The 2nd International Workshop on Astrochemistry, Chongqing, China, July, 2024 (**Oral talk, outstanding presentation award**)
- ◆ Origin of Elements and Cosmic Evolution: From Big-Bang to Supernovae and Mergers, Beijing, China, November 2023 (**oral talk**)
- ◆ Academic Symposium on Molecular Clouds and Star Formation, October 2023 Chongqing, China (**poster, outstanding poster award**)
- ◆ The 16th International Symposium on Nuclei in the Cosmos-School of Nuclear Astrophysics, Chengdu, China, September 2021 (**poster and oral talk, outstanding poster award**)

Selected Honors

- Innovation prize of the elite program scholarship (2018)
- First prize of People's Scholarship (2019)
- Outstanding graduates of Nanjing University (2021)
- President's Special Award for Ph.D. Students of Nanjing University (2021)