# Curriculum Vitae

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Ph.D. candidate, Millimeter and Submillimeter Astronomy Department,
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| Date of Birth: | December 26, 1993 |
| Place of Birth: | Yuncheng/Shanxi, China |
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## Research Interests

★ High-mass star-forming regions ★ Astronomical masers ★ Isotope abundance ratios ★ Molecular outflows ★ Magnetic fields ★ Hot molecular cores ★ Origin of elements ★ Nucleosynthesis ★ Galactic chemical-evolution model ★ Astrochemistry ★ NGC 253

## Education

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| 2019–expected 2024 | Ph.D. in Astronomy & Astrophysics, Max-Planck-Institut für Radioastronomie (MPIfR) Supervisors: Dr. Christian Henkel, Prof. Dr. Karl M. Menten<br>Thesis: "The influence of stellar objects onto the interstellar medium: isotopic compositions and maser lines" |
| 2016–2019 | M.S. in Astronomy, Center for Astronomy, Guangzhou University (GZHU)<br>Supervisor: Prof. Dr. Jiangshui Zhang<br>Thesis: "A Systematic TMRT Observational Study of Galactic $^{12}C/^{13}C$ Ratios from Formaldehyde" |
| 2012–2016 | B.S. in Optical Information Science and Technology, GZHU |

## Honors & Awards

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| 2022.09-2023.03 | Ph.D. scholarship from the MPIfR |
| 2019.09-2022.09 | Ph.D. scholarship from the China Scholarship Council (CSC) |
| 2019 | Excellent Graduate Student Award from the GZHU |
| 2018 | Annual College scholarship from the GZHU |
| 2017 | Annual College scholarship from the GZHU |
| 2016 | Annual Graduate Student Entrance scholarship from the GZHU |
| 2015 | The 13th Challenge Cup of Guangdong Undergraduate Students Extracurricular Academic Science and Technology Competition Second Prize |
| 2014 | The 14th Guangzhou University Challenge Cup Competition First Prize |
| 2014 | Annual College scholarship from the GZHU |
| 2014 | Outstanding Student Leader Award from the GZHU |
| 2013 | Annual College scholarship from the GZHU |
| 2013 | Outstanding Student Leader Award from the GZHU |

## Refereeing Duty

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| since September 2023 | The Astrophysical Journal |

## Publications

**In total: 20 refereed papers and 1 non-refereed paper.**
A complete list of publications can be found via ADS
**First-author (five refereed papers):**

1. **Yan, Y. T.**; Henkel, C.; Menten, K. M.; Wilson, T. L.; Wootten, A.; Gong, Y.; Wyrowski, F.; Yang, W,; Brunthaler, A.; Kraus A.; Winkel, B.; *Discovery of widespread non-metastable ammonia masers in the Milky Way*, accepted for publication in A&A, arXiv:2403.18001

2. **Yan, Y. T.**; Henkel, C.; Kobayashi, C.; Menten, K. M.; Gong, Y.; Zhang, J. S.; Yu, H. Z.; Yang, K.; Xie, J. J.; Wang, Y. X.; *Direct measurements of carbon and sulfur isotope ratios in the Milky Way*, 2023, A&A, 670, A98

3. **Yan, Y. T.**; Henkel, C.; Menten, K. M.; Gong, Y.; Nguyen, H.; Ott, J.; Ginsburg A., Wilson, T. L.; Brunthaler, A.; Belloche, A.; Zhang, J. S.; Budaiev, N.; Jeff, D.; *Discovery of non-metastable ammonia masers in Sagittarius B2*, 2022, A&A, 666, L15

4. **Yan, Y. T.**; Henkel, C.; Menten, K. M.; Gong, Y.; Ott, J.; Wilson, T. L.; Wootten, A.; Brunthaler, A.; Zhang, J. S.; Chen, J. L.; Yang, K.; *Discovery of ammonia (9,6) masers in two high-mass star-forming regions*, 2022, A&A, 659, A5

5. **Yan, Y. T.**; Zhang, J. S.; Henkel, C.; Mufakharov, T.; Jia, L. W.; Tang, X. D.; Wu, Y. J.; Li, J.; Zeng, Z. A.; Wang, Y. X.; Li, Y. Q.; Huang, J.; Jian, J. M.; *A Systematic TMRT Observational Study of Galactic* $^{12}C/^{13}C$ *Ratios from Formaldehyde*, 2019, ApJ, 877, 154

**Co-author (15 refereed papers and 1 non-refereed paper):**

1. Bouvier, M.; Viti, S.; Behrens, E.; Butterworth, J.; Huang, K. -Y.; Mangum, J. G.; Harada, N.; Martín, S.; Rivilla, V. M.; Muller, S.; Sakamoto, K.; Yoshimura, Y.; Tanaka, K.; Nakanishi, K.; Herrero-Illana, R.; Colzi, L.; Gorski, M. D.; Henkel, C.; Humire, P. K.; Meier, D. S.; van der Werf, P. P.; **Yan, Y. T.** *An ALCHEMI inspection of sulphur-bearing species towards the central molecular zone of NGC 253*, 2024, accepted for publication in A&A, arXiv:2405.08408

2. Butterworth, J.; Viti, S.; Van der Werf, P. P.; Mangum, J. G.; Martín, S.; Harada, N.; Emig, K. L.; Muller, S.; Sakamoto, K.; Yoshimura, Y.; Tanaka, K.; Herrero-Illana, R.; Colzi, L.; Rivilla, V. M.; Huang, K. Y.; Bouvier, M.; Behrens, E.; Henkel, C.; **Yan, Y. T.**; Meier, D. S.; Zhou, D.; *Molecular isotopologue measurements toward super star clusters and the relation to their ages in NGC253 with ALCHEMI*, 2024, accepted for publication in A&A, arXiv:2402.10721

3. Gong, Y.; Henkel, C.; Menten, K. M.; R. Chen, C. -H.; Zhang, Z. Y.; **Yan, Y. T.**; Weiss, A.; Langer, N.; Wang, J. Z.; Mao, R. Q.; Tang, X. D.; Yang, W.; Ao, Y. P.; Wang, M.; *Sulfur Isotope Ratios in the Large Magellanic Cloud*, 2023, A&A, 679, L6

4. Zou, Y. P.; Zhang, J. S.; Henkel, C.; Romano, D.; Liu, W.; Zheng, Y. H.; **Yan, Y. T.**; Chen, J. L.; Wang, Y. X.; Zhao, J. Y.; *A Systematic Observational Study on Galactic Interstellar Ratio* $^{18}O/^{17}O$. *II.* $C^{18}O$ *and* $C^{17}O$ *J = 2-1 Data Analysis*, 2023, ApJS, 268, 56

5. Zhu, Feng-Yao; Wang, Junzhi; **Yan, Yaoting**; Zhu, Qing-Feng; Li, Juan; *Origins of the shocks in high-mass starless clump candidates*, 2023, MNRAS, 523, 2770Z

6. Zhao, J. Y.; Zhang, J. S.; Wang, Y. X.; Qiu, J. J.; **Yan, Y. T.**; Yu, H. Z.; Chen, J. L.; Zou, Y. P.; *A Multitransition Methanol Survey toward a Large Sample of High-mass Star-forming Regions*, 2023, ApJS, 266, 29

7. Zhu, Feng-Yao; Wang, Junzhi; **Yan, Yaoting**; Zhu, Qing-Feng; Li, Juan; *Spatial distributions and kinematics of shocked and ionized gas in M17*, 2023, MNRAS, 522, 503Z

8. Wang, Y. X.; Zhang, J. S.; Yu, H. Z.; Wang, Y.; **Yan, Y. T.**; Chen, J. L.; Zhao, J. Y.; Zou, Y. P.; *A Possible Chemical Clock in High-mass Star-forming Regions:* $N(HC_3N)/N(N_2H^+)$*?*, 2023, ApJS, 264, 48

9. Qiu, Jian-Jie; Zhang, Yong; Nakashima, Jun-ichi; Zhang, Jiang-Shui; Koning, Nico; Tang, Xin-Di; **Yan, Yao-Ting**; Feng, Huan-Xue; *Molecules in the peculiar age-defying source IRAS 19312+1950*, 2023, A&A, 669, A121

10. Wang, Y. X.; Zhang, J. S.; **Yan, Y. T.**; Qiu, J. J.; Chen, J. L.; Zhao, J. Y.; Zou, Y. P.; Wu, X. C.; He, X. L.; Gong, Y. B.; Cai, J. H.; *Cyanopolyyne line survey towards high-mass star-forming regions with TMRT*, 2022, A&A, 663, A177

11. Chen, J. L.; Zhang, J. S.; Henkel, C.; **Yan, Y. T.**; Yu, H. Z.; Qiu, J. J.; Tang, X. D.; Wang, J.; Liu, W.; Wang, Y. X.; Zheng, Y. H.; Zhao, J.; *Interstellar Nitrogen Isotope Ratios: New $NH_3$ Data from the Galactic Center out to the Perseus Arm*, 2021, ApJS, 257, 39

12. Martín, S.; Mangum, J. G.; Harada, N.; Costagliola, F.; Sakamoto, K.; Muller, S.; Aladro, R.; Tanaka, K.; Yoshimura, Y.; Nakanishi, K.; Herrero-Illana, R.; Mühle, S.; Aalto, S.; Behrens, E.; Colzi, L.; Emig, K. L.; Fuller, G. A.; García-Burillo, S.; Greve, T. R.; Henkel, C.; Holdship, J.; Humire, P.; Hunt, L.; Izumi, T.; Kohno, K.; König, S.; Meier, D. S.; Nakajima, T.; Nishimura, Y.; Padovani, M.; Rivilla, V. M.; Takano, S.; van der Werf, P. P.; Viti, S.; **Yan, Y. T.**; *ALCHEMI: an ALMA Comprehensive High-resolution Extragalactic Molecular Inventory. Survey presentation and first results from the ACA array*, 2021, A&A, 656, A46

13. Xie, Jin-Jin; Wu, Jing-Wen; Fuller, Gary A.; Peretto, Nicolas; Ren, Zhi-Yuan; Chen, Long-Fei; **Yan, Yao-Ting**; Li, Guo-Dong; Duan, Yan; Xia, Ji-Feng; Wang, Yong-Xiong; Li, Di.; *Studying infall in infrared dark clouds with multiple $HCO^+$ transitions*, 2021, RAA, 21, 208

14. Yu, H. Z.; Zhang, J. S.; Henkel, C.; **Yan, Y. T.**; Liu, W.; Tang, X. D.; Langer, N.; Luan, T. C.; Chen, J. L.; Wang, Y. X.; Deng, G. G.; Zou, Y. P.; *Galactic Interstellar Sulfur Isotopes: A Radial $^{32}S/^{34}S$ Gradient?*, 2020, ApJ, 899, 145

15. Zhang, J. S.; Liu, W.; **Yan, Y. T.**; Yu, H. Z.; Liu, J. T.; Zheng, Y. H.; Romano, D.; Zhang, Z. -Y.; Wang, J. Z.; Chen, J. L.; Wang, Y. X.; Zhang, W. J.; Lu, H. H.; Chen, L. S.; Zou, Y. P.; Yang, H. Q.; Wen, T.; Lu, F. S.; *A Systematic Observational Study on Galactic Interstellar Ratio $^{18}O/^{17}O$. I. $C^{18}O$ and $C^{17}O$ J = 1-0 Data Analysis*, 2020, ApJS, 249, 6

16. Zhang, J. S.; **Yan, Y. T.**; Liu, W.; Yu, H. Z.; Chen, J. L.; Henkel, C.; *Systematic observations on Galactic Interstellar isotope ratios*, 2020, IAUGA, 30, 278

## Accepted Observation Proposals as PI

## In total: 1740.5 hours

▶ The 100-m Effelsberg Radio Telescope, **158.3** hours
→ project IDs: *13-20, 91-20, 30-22, 34-22, 68-22.*
▶ The IRAM 30-m Telescope, **272.7** hours
→ project IDs: *004-20, 117-20, 125-20, 031-21, 033-21, 047-21, 063-22, 103-23.*
▶ The Karl G. Jansky Very Large Array, **8.5** hours
→ project IDs: *VLA/21A-157, VLA/22A-106, VLA/24B-174.*
▶ NASA/JPL Deep Space Network DSS-43 70-m Telescope, **45.0** hours
▶ The Atacama Pathfinder Experiment (APEX), **24.0** hours
→ project ID: *M9509C_113.*
▶ The ARO 12-M Telescope, **470.0** hours
→ project IDs: *Yan-2016B, 2017B, 2018B, 2019A, 2020A.*
▶ The James Clerk Maxwell Telescope, **165.0** hours
→ project IDs: *M16BP037, M16XP019, M19AP021.*
▶ The Shanghai Tianma 65m Radio Telescope, **400.0** hours
▶ The Sub-Millimeter Radio Telescope, **197.0** hours
→ project IDs: *Yan-2016A, 2017B.*

## Presentations

★*Non-metastable ammonia masers in the high-mass star-forming regions.*
@ Heritage of SOFIA, University of Stuttgart, Germany (poster) April 2024
★*The isotopic abundance ratios of carbon and sulfur in the Milky Way and ammonia masers.*
@ Chongqing University, Chongqing, China (**invited**) October 2023
★*Ammonia masers in the Milky Way.*
@ Zhejiag Lab, Hangzhou, China September 2023
★*Carbon and sulfur isotope ratios in the Milky Way.*
@ Astrochemistry conference, XAO, Xinjiang, China August 2023
★*Carbon isotope ratios in the Milky Way.*
@ TMRT 10th anniversary, Shanghai, China (**invited**, online) November 2022
★*Ammonia masers in the Milky Way.*
@ MPIfR group meeting, Bonn, Germany September 2022
★*Discovery of ammonia (9,6) masers in Cep A and G34.26+0.15.*
@ 12th IMPRS conference, Bonn, Germany May 2022
★*Discovery of ammonia (9,6) masers in two high-mass star-forming regions.*
@ PoSTER 2022 (poster) May 2022
★*Direct measurements of carbon and sulfur isotope ratios in the Milky Way.*
@ 50th YERAC (poster) August 2021
★*C, N, O, S isotope ratios in the Milky Way.*
@ 8th IMPRS conference, Bonn, Germany July 2021
★*Carbon and Sulfur isotope ratios in our Galaxy and NGC 253.*
@ MPIfR group meeting, Bonn, Germany July 2020
★*A Systematic TMRT Observational Study of Galactic $^{12}C/^{13}C$ Ratios from Formaldehyde.*
@ 2019 Symposium on Molecular Cloud and Star Formation, Xinjiang, China July 2019

## Experience

♡ Observation experience > **2000.0 hours** (on-site + remote) with the Effelsberg 100-m, the IRAM 30-m, the TMRT 65-m, the Arecibo 305-m, the ARO 12-m, and the SMT 10-m. 2016 – 2023
♡ Teaching data reduction during Radio Astronomy Summer School at Shanghai Astronomical Observatory (SHAO) July 9-July 14, 2017
♡ Two weeks IRAM EMIR Pool observations (**volunteer**) April 06–13, May 25–June 01, 2021
♡ 10th IRAM 30-meter School on Millimeter Astronomy November 15–23, 2021
♡ The scientific writing workshop (online), Bonn, Germany June 8–11, 2020
♡ 2018 FAST Radio Astronomy Summer School July 8–13, 2018
♡ 2016 Annual Meeting of the Chinese Astronomical Society November 01–03, 2016
♡ JCMT Data Reductions and Analysis Workshop at SHAO October 16, 2016
♡ 2015 Radio Astronomy Summer School at SHAO July 19–25, 2015

## Professional References

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