

Academic Staff Resume

Name: Chih-Hao Hsia
Title: Assistant Professor
Space Science Institute,
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Academic Qualification:

Ph.D. in Astronomy, Graduate Institute of Astronomy, NCU, Taiwan, 2003–2008
Master in Astronomy, Graduate Institute of Astronomy, NCU, Taiwan, 2001–2003
Bachelor in Mathematics, Department of Mathematics, NCU, Taiwan, 1995–2000

Teaching Area

For graduate student:
Introduction to Modern Astronomy (Compulsory)
For undergraduate student:
Astronomy
Masters series of science and technology

Research Area

Planetary Nebulae, Proto-Planetary Nebulae, and Evolved stars
OH/IR Masers
Star Formation and Young Stellar Objects
Exoplanets and Asteroids
Ultraviolet, Optical, Infrared, and Radio Astronomy
Chemical abundance and Interstellar Medium
Novae and Supernovae
Space Astronomical Chemistry

Working Experience

Assistant Professor at Space Science Institute, Macau University of Science and Technology,
December 2017 - Now
Research Associate at Space Science Institute, Macau University of Science and Technology,
October 2016 – November 2017
Visiting Assistant Professor at Space Science Institute, Macau University of Science and
Technology, December 2015 – October 2016
Assistant Research Scientist at Shenzhen Institute of Research and Innovation, The
University of Hong Kong, March 2014 – October 2016

Academic Publication

Journal Articles:

1. **Hsia, C.-H.**, Ip, W.-H., & Li, J.-Z., "Evidence for a Binary Origin of the Young Planetary Nebula Hubble 12", 2006, *Astronomical Journal*, vol. 131, pp. 3040 – 3046
2. Kwok, S. & **Hsia, C.-H.**, "Multiple Coaxial Rings in the Bipolar Nebula Hubble 12", 2007, *Astrophysical Journal*, vol. 660, pp. 341 – 345
3. **Hsia, C.-H.**, & Li, J.-Z., "The H-alpha Halo Distribution of 10 Nearby Planetary Nebulae based on SHASSA Imaging Data", 2009, *Journal of Taipei Astronomical Museum*, vol. 7, pp. 9 – 23
4. Lin, Z.-Y., Lin, H.-C., Ye, Q.-Z., Lin, C.-S., Lara, L. M., Ip, W.-H., **Hsia, C.-H.**, Hsiao, H.-Y., & Lin, C.-H., "The Observation of Comet C/2007 N3 (Lulin) from SLT at Lulin Observatory", 2009, *Journal of Taipei Astronomical Museum*, vol. 7, pp. 1 – 8
5. **Hsia, C.-H.**, Kwok, S., Zhang, Y., Koning, N., & Volk, K., "An Optical-Infrared Study of the Young Multipolar Planetary Nebula NGC 6644", 2010, *Astrophysical Journal*, vol. 725, pp. 173 – 183
6. Kwok, S., Chong, S.-N., **Hsia, C.-H.**, Zhong, Y., & Koning, N. "Discovery of a Multipolar Structure with an Equatorial Disk in NGC 6072", 2010, *Astrophysical Journal*, vol. 708, pp. 93 – 100
7. Zhang, Y., **Hsia, C.-H.**, & Kwok, S. "Planetary nebulae detected in the Spitzer Space telescope GLIMPSE 3D Legacy Survey", 2012, *Astrophysical Journal*, vol. 745, pp. 59
8. Zhang, Y., **Hsia, C.-H.**, & Kwok, S. "Discovery of a Halo around the Helix nebula NGC 7293 in the WISE All-sky Survey", 2012, *Astrophysical Journal*, vol. 755, pp. 53
9. Zhang, Y., Fang, X., Chau, W., **Hsia, C.-H.**, Liu, X.-W., Kwok, S., & Koning, N., "[Fe III] Emission Lines in the Planetary Nebula NGC 2392", 2012, *Astrophysical Journal*, vol. 754, pp. 28
10. Yuan, J.-H., Li, J.-Z., Huang, Y.-F., **Hsia, C.-H.**, & Miao, J., "The Discovery of a Protostar Driving a Bipolar outflow based on the GLIMPSE Data", 2012, *Astronomy & Astrophysics*, vol. 540, pp. 95
11. Imai, H., Chong, S.-N., He, J.-H., Nakashima, J.-I., **Hsia, C.-H.**, Sakai, T., Deguchi, S., & Koning, N., "Extremely Strong CO13 J=3-2 Line in the "Water Fountain" IRAS 16342-3814: Evidence for the Hot-Bottom Burning", 2012, *Publications of the Astronomical Society of Japan*, vol. 64, pp. 98

12. Fok, T. K. T., Nakashima, J.-I., Yung, B. H. K., **Hsia, C.-H.**, & Deguchi, S., "Maser Observations of Westerlund 1 and Comprehensive Considerations on Maser Properties of Red Supergiants Associated with Massive Clusters", 2012, *Astrophysical Journal*, vol. 760, pp. 65
13. **Hsia, C.-H.**, Chau, W., Zhang, Y., & Kwok, S., "Hubble Space Telescope Observations and Geometric Models of Compact Multipolar Planetary Nebulae", 2014, *Astrophysical Journal*, vol. 787, pp. 25
14. **Hsia, C.-H.**, & Zhang, Y., "Discovery of New Low-Excitation Planetary Nebulae", 2014, *Astronomy & Astrophysics*, vol. 563, pp. 63
15. Nakashima, J.-I., Ladeyschikov, D. A., Sobolev, A. M., Zhang, Y., **Hsia, C.-H.**, & Yung, B. H. K., "Wide Field CO Mapping in the Region of IRAS 19312+1950", 2016, *Astrophysical Journal*, vol. 825, pp. 16
16. **Hsia, C.-H.**, Sadjadi, S., Zhang, Y., & Kwok, S., "The 6um feature as A Tracer of Aliphatic Components of Interstellar carbonaceous Grains", 2016, *Astrophysical Journal*, vol. 832, pp. 213
17. Yung, B. H. K., Nakashima, J.-I., **Hsia, C.-H.**, & Imai, H., "Do Water Fountain Jets really Indicate the Onset of the Morphological Metamorphosis of Circumstellar Envelopes?", 2017, *Monthly Notices of the Royal Astronomical Society*, vol. 465, pp. 4482
18. Zhang, Y., Sadjadi, S., **Hsia, C.-H.**, & Kwok, S., "Search for Hydrogenated C60 (fulleranes) in Circumstellar Envelopes", 2017, *Astrophysical Journal*, vol. 845, pp. 76
19. Huang, X. -J., Lu, Z. -P., Li, J. -Y., Mei, B., **Hsia, C.-H.**, & Zhao, H. -B., "Scattering Law Analysis Based on Hapke and Lommel-Seeliger Models for Asteroidal Taxonomy", 2017, *Research in Astronomy and Astrophysics*, vol. 17, No. 10, pp. 106
20. Yu, P. -C., Yu, C. -H., Lee, C. -D., Lin, C. -C., **Hsia, C.-H.**, Chang, C. -K., Chen, I. -C., Ngeow, C. -C., Ip, W. -H., Chen, W. -P., Laher, R., Surace, J. & Kulkarni, S. R. "Searching for Be Stars in the Open Clusters with PTF/iPTF. I. Cluster Sample and Be Star Candidates", 2018, *Astronomical Journal*, vol. 155, Issue2, article 91, pp. 17
21. Lu, X. -P., Huang, X. -J., Ip, W. -H., & **Hsia, C. -H.** "Lebedev Acceleration and Comparison of Different Photometric Models in the Inversion of Lightcurves for Asteroids", 2018, *Planetary and Space Science*, vol. 153, pp. 1
22. Fang, X., Zhang, Y., Kwok, S., **Hsia, C. -H.**, Chau, W., Ramos-Larios, G., & Guerrero, M. A. "Extended Structures of Planetary Nebulae detected in H2 Emission ", 2018, *Astrophysics Journal*, 859, 92

23. **Hsia, C. -H.**, Zhang, Y., Kwok, S., & Chau, W. "A Young Multipolar Planetary Nebula in the Making - IRAS 21282+5050", 2019, *Astrophysics and Space Science*, 364, 32

24. Wang, J, Li, H. L., Xin, L. P., Han, X. H., Meng, X. M., Brink, T. G., Cai, H. B., Dai, Z. G., Filippenko, A. V., **Hsia, C. -H.**, Hunag, L., Jia, L., Li, G. W., Li, Y. B., Liang, E. W., Lu, X. M., Mao, J., Qiu, P., Qiu, Y. L., Ren, J. J., Turpin, D., Wang, H. J., Wang, X. G., Wang, X. Y., Wu, C., Xu, Y., Yan, J. Z., Zhang, J. B., Zheng, W., & Wei, J. Y. "Photometric and Spectroscopic Studies of Superoutbursts of Three Dwarf Novae Independently Identified by the SVOM/GWAC System in 2018", 2020, *The Astronomical Journal*, 159, 35.

25. Yu, L. -L., **Hsia, C. -H.**, & Ip, W. -H. "Low-activity Main-belt Comet 133P/Elst-Pizarro: New Constraints on Its Albedo, Temperature and Activity Mechanism from a Thermophysical Perspective", 2020, *The Astronomical Journal*, 159, 66

26. Wu, C. -J., Wu, H., **Hsia, C. -H.**, Zhang, W., Ren, J. -J., Li, G. -W., Chen, J. -J., Yang, F., Shi, J. -R., Hou, Y. -H., & Liu. J. -F. "Irregular changes in Ha emission line of V423 Aur observed by LAMOST Medium-Resolution Spectrographs", 2020, *Research in Astronomy and Astrophysics*, 20, 33

27. Zhang, Y., Sadjadi, S., & **Hsia, C. -H.** "Hydrogenated fullerenes (fulleranes) in space", 2020, *Astrophysics and Space Science*, 365, 67

28. **Hsia, C. -H.**, Zhang, Y., Zhang, X. -L. & Luo, T. "Discovery of extended structures around two evolved planetary nebulae M 2-55 and Abell 2", 2020, *Research in Astronomy and Astrophysics*, 20, 107

29. Ren, J. -J., Wu, H., Wu, C. -J., Zhang, W., Chen, J. -J., **Hsia, C. -H.**, Yang, F., Liu, C., Shi, J. -R., Wu, Y. -Z., Zhu, H., Li, B., Tian, H., & Hou, Y. -H. "On the radial velocity calibrations in the LAMOST Medium-Resolution Spectroscopic Survey of Nebulae", 2020, accepted by *Research in Astronomy and Astrophysics*

30. Zhang, W., Todt, H., Wu, H., Shi, J. R., **Hsia, C. -H.**, Wu, Y. Z., Wu, C. J., Zhao, Y. H., Zhang, T. M., & Hou, Y. -H., "A New Transition Wolf-Rayet WN/C Star in the Milky Way", 2020, accepted by *Astrophysics Journal*

Conference Papers:

1. Kwok, S., & **Hsia, C.-H.**, "Discovery of Multiple Coaxial Rings in the Bipolar Nebula Hb12", 2007, in *Proceedings of the AAS/AAPT Joint Meeting, American Astronomical Society Meeting*, 209, 156

2. **Hsia, C.-H.**, & Kwok, S., "A Sample of New Planetary Nebulae in the IPHAS and DSH Catalogue", 2012, in Proceedings of the International Astronomical Union (IAU) Symposium. No. 283: an Eye to the Future, 283, pp. 388 - 389

3. **Hsia, C.-H.**, & Kwok, S., "A Systematic Study of Young Multipolar Planetary Nebulae", 2012, in Proceedings of the International Astronomical Union (IAU) Symposium. No. 283: an Eye to the Future, 283, pp. 390 - 391

4. Zhang, Y., Kwok, S., **Hsia, C.-H.**, Nakasima, J., & Koning, N., "Planetary Nebulae Detected in the Spitzer Space Telescope GLIMPSE 3D Legacy", 2012, in Proceedings of the International Astronomical Union (IAU) Symposium. No. 283: an Eye to the Future, 283, pp. 528 - 529

5. Zhang, Y., Fang, X., Chau, W., Liu, X.-W., **Hsia, C.-H.**, & Kwok, S., "[Fe III] lines in the planetary nebula NGC 2392", 2012, in Proceedings of the International Astronomical Union (IAU) Symposium. No. 283: an Eye to the Future, 283, pp. 532 - 533

6. **Hsia, C.-H.**, Chau, W., & Kwok, S., "The Optical-Infrared Study and Geometric Model of Young Multipolar Planetary nebula -- IRAS 21282+5050", 2015, in Proceedings of the 29th International Astronomical Union (IAU) Assembly Meeting, 2250740

7. **Hsia, C.-H.**, Chau, W., Zhang, Y., & Kwok, S., "The Multiple Lobes and Geometric Model of Hubble 12: A Young Planetary Nebula with two pairs of H₂ Knots", 2015, in Proceedings of the 29th International Astronomical Union (IAU) Assembly Meeting, 2254433

8. **Hsia, C.-H.**, Kwok, S., Chau, W., & Zhang, Y., "Coaxial Rings and H₂ Knots in Hubble 12", 2016, in Proceedings of Journal of Physics Conference Series, vol 728, 072009

9. Yung, B. H. K., Nakashima, J.-I., Henkel, C. & **Hsia, C.-H.** "Identification of oxygen-rich late/post-asymptotic giant branch stars and water fountains via maser and infrared criteria", 2016, in Proceedings of Journal of Physics Conference Series, vol 728, 072005

10. **Hsia, C.-H.** "The New Challenge of Planetary Nebula Research", 2018, in Proceedings of Serendipities in the Solar System and Beyond. ASP Conference, 513, 249

11. Zhang, H., Li, B. -C., Yin, J. -J., Wang, W. G., Huang, J. C., & **Hsia, C.-H.** "Scientific Objectives and Design Concept of the Spectrometers for Proposed Flyby Mission to Main Belt Comet 133P/Elst-Pizarro", 2019, in Proceedings of 50th Lunar and Planetary Science Conference, 50, 2462

Research Projects

1. The University of Hong Kong " **Small Project Funding of Research Grants Council**" , project no. 201007176028, 2010 - 2012
2. The Mucau University of Science and Technology " **Faculty Research Grants** " , project no. FRG-19-004-SSI, 2019-2020
3. **The Science and Technology Fund, Macau SAR** , project no. 0007/2019/A, 2019-2021

Professional Certification and Awards

1. The Award of the grants from University of Hong Kong " **Small Project Funding of Research Grants Council** " , project no. 201007176028, 2010 - 2012
2. **The Best Poster Award** of The Astronomical Society of the Republic of China (Taiwan), 2008
3. **The Second Prize of Taiwan astronomical sciences** , Taipei Astronomical Museum, 1998
4. **The Third Prize of Taiwan astronomical sciences** , Taipei Astronomical Museum, 1997
5. **The Fifth Prize of Taiwan astronomical sciences** , Taipei Astronomical Museum, 1996

Professional Society Membership

1. The Member, International Collaboration " **PLANetary Nebula Binaries (PLAN-B)**" , 2008 - present
2. The Referees, for few major peer-review journals including Astrophysical Journal (**ApJ**), Research in Astronomy and Astrophysics (**RAA**), Advances in Astronomy (**AdAst**), Chinese Journal of Chemical Physics (**ChJCP**) and Astronomical Journal (**AJ**)
3. The Supervisors, for one undergraduate student and a research assistant
4. The Supervisor, for Two MUST graduate student (master degree)
5. The Instructors, for three senior high schools in Taiwan