

AIYUAN YANG | CURRICULUM VITAE

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Education & Background

Max Planck Institute for Radio Astronomy (MPIfR) <i>Postdoctoral researcher</i>	Aug. 2018 – Now <i>Bonn, Germany</i>
National Astronomical Observatories (NAOC), CAS <i>Ph.D. student of Astrophysics</i>	Sep. 2014 – Aug. 2018 <i>Beijing, China</i>
University of Hertfordshire <i>SKA Joint Ph.D. student of Astrophysics</i>	Feb. 2016 – Oct. 2017 <i>Hatfield, UK</i>
Xinjiang Astronomical Observatories (XAO), CAS & NAOC <i>Joint Master student of Astrophysics</i>	Sep. 2011 – Jul. 2014 <i>Xinjiang & Beijing, China</i>
Xinjiang University (XJU) <i>Student of Physics</i>	Sep. 2007 – Jul. 2011 <i>Xinjiang, China</i>

Research Interests

- The birth of HII regions: HCHII regions
- Line study to investigate the outflow properties of high-mass star formation
- Multi-band continuum study (from radio to near infrared) of ISM related to star formation
- Observations of radio interferometer and single-dish telescopes
- Multi-band (from radio to submm) RRLs study
- Young PNe associated with OH and water masers
- Multi-band Galactic plane surveys

Research Experience & Projects


Pulsar nulling phenomena <i>Master, Prof. Dr. Jinlin Han</i>	2011-2014
<ul style="list-style-type: none">• To understand pulsar nulling phenomenon, we proposed a new method to 10 nulling pulsars, among a total sample of ~185.	
Kinematic distance of Galactic Planetary Nebulae (PNe) <i>Ph.D., Prof. Dr. Wenwu Tian,</i>	2014-2016
<ul style="list-style-type: none">• To obtain the spectra of HI and CO for 18 PNe, we used the software KVISA and archival data;• To estimate the kinematic distances, we analysed the velocity of emission/absorption features of HI and CO for the 18 PNe, based on the axisymmetric rotation curve model for the Galaxy and the script written by C.	
Hyper-compact HII regions <i>Ph.D., Prof. Dr. Mark Thompson</i>	2016-Now
<ul style="list-style-type: none">• To obtain a sample of positive spectral radio objects (i.e., $\alpha > 0.0$), we measure the spectral index of sources from Galactic plane surveys of Radio (THOR, CORNISH, MAGPIS) between 1-5 GHz.• To measure the multi-band emission properties of these positive spectral radio objects, we analysed the continuum data from Galactic plane surveys of FIR (Hi-GAL), MIR (GLIMPSE), NIR (UKIDSS), submm (ATLASGAL).• To observe at higher frequencies (>5GHz), we proposed VLA observations and arranged the observation at X-band (8-12 GHz) and K-band (18-26 GHz) for the HCHII region candidates selected from the above 2 steps.• To measure the physical properties of HCHII region candidates, we reduced the VLA data and build the radio SED between 1-26 GHz.	
Molecular Outflows of massive clumps <i>Ph.D., Prof. Dr. Mark Thompson, Dr. James Urquhart</i>	2017-Now
<ul style="list-style-type: none">• To extract CO spectra and identify outflow wings, I created a python pipeline.• To identify outflows, we applied the pipeline to the ATLASGAL clumps using CO data from the CHIMPS survey.• To systematically discuss when outflow activity switches on, how it evolves in the massive clumps, we map the outflow lobes of these outflow clumps and measure their outflow properties.• To select more examples of outflows, I have been working on CO outflows using CO data from the SEDIGISM survey.	
Enrolled in the VLA survey: GLOSTAR <i>Postdoc MPIfR, Prof. Dr. K. M. Menten</i>	2018-Now
<ul style="list-style-type: none">• The GLOSTAR survey ($2^\circ < \ell < 60^\circ$, $-1^\circ < b < 1^\circ$) observes lines (formaldehyde, methanol maser, and radio recombination lines) and continuum, using VLA B- and D-configuration and the Effelsberg at C-band.• Calibrate the B-configuration continuum data ($2 < \ell < 28$, $36 < \ell < 40$) of the GLOSTAR survey, using Orbit.• Work on the source extraction, classification, and catalog construction of the GLOSTAR survey.• Work on the follow-up observations of HII regions and PNe of the GLOSTAR survey.	

Other PI projects | *MPIfR*







In progress

- Multi-band surveys of radio recombination lines (RRL) for a sample of 114 young regions, with PI data observed by the APEX, IRAM 30m, and Effelsberg.
- Study the maser-emitting planetary nebulae, and PI data observed by VLA and Effelsberg.
- Study the connection between outflows and broad RRL of HCHII regions, and data supported by ALMA, VLA, APEX, IRAM and Effelsberg.







Publications





As of Nov. 2021: **7 first-author papers:** 6 published and 1 under review;
15 co-authored papers: 10 published and 5 under review;
 22 papers in total, 187 citations, h-index = 6. See the ADS Public Library 

• First-Author Papers

7. **A. Y. Yang**, Urquhart, J. S. ; Thompson, M. A. ; Menten, K. M. ; Wyrowski, F., 2021, & **The SEDIGISM Team**, A&A, **Under Review**; “*The SEDIGISM survey: a search for molecular outflows*”;
6. **A. Y. Yang**; Urquhart, J. S. ; Thompson, M. A. ; Menten, K. M. ; Wyrowski, F. ; Brunthaler, A. ; Tian, W. W. ; Rugel, M. ; Yang, X. L. ; Yao, S. ; Mutale, M., 2021, A&A, 645A, 110Y, 2021, “*A population of hypercompact H II regions identified from young H II regions*” ;  [arXiv:2011.07620](#)
5. **A. Y. Yang**; Thompson M. A.; W. W. Tian, S. Bihr; H. Beuther; L. Hindson, 2019, MNRAS, 482, 2681Y; “*A search for hyper-compact HII regions in the Galactic Plane*”;  [arXiv:1809.00404](#)
4. **A. Y. Yang**; Thompson M. A.; Urquhart J.S.; W. W. Tian; 2018, ApJS, 235, 3; “*Massive Outflows Associated with ATLASGAL Clumps*”;  [arXiv:1712.04599](#)
3. **A. Y. Yang**; W. W. Tian; H. Zhu; D. Wu; 2016, ApJS, 223, 6; “*Kinematic Distances of Galactic Planetary Nebulae*”;  [arXiv:1601.03269](#) ;
2. **A. Y. Yang**; H. Zhu; W. W. Tian; D. Wu; 2015, Progress in Astronomy (Chinese), 33, 284; “*The Current Research of Planetary Nebulae Distance*”;  [Paper link](#)
1. **A. Y. Yang**; J. L. Han; N. Wang; 2014, SCIENCE CHINA Physics, Mechanics & Astronomy, 57(8), 1600-1606; “*A New Method to Analysis Pulsar Nulling Phenomena*”;  [arXiv:1310.6610](#)

• Co-Author Papers

15. K. R. Neralwar; Menten, K. M.; ..., **A. Y. Yang**; , 2021, A&A, Submitted.; & The SEDIGISM Team, “*The SEDIGISM survey: Connection between cloud morphology and integrated properties*”;
14. K. R. Neralwar; Menten, K. M.; ..., **A. Y. Yang**; & The SEDIGISM Team, 2021, A&A, Submitted.; *The SEDIGISM survey: the influence of spiral arms on the molecular gas distribution of the inner Milky Way*;
13. Jun Yang; Yongjun Chen, Leonid I. Gurvits; Zsolt Paragi, **A. Y. Yang**, Xiaolong Yang and Zhiqiang Shen; 2021, MNRAS, Submitted.; “*Structural and spectral properties of Galactic plane variable radio sources* ”,
12. Shan Su-Su; Fan Yang; You-Jun Lu; Xing Wei; Wen-Wu Tian; Hai-Yan Zhang; Rui Guo; Xiao-Hong Cui; **A. Y. Yang**; Bo Zhang; and Ji-Feng Liu; 2021, ApJS, Submitted.; “*Significant TESS Timing Offsets of 31 Hot Jupiters*”,
11. Urquhart, J. S.; ...; Menten, K. M.; ..., **A. Y. Yang**, 2021, MNRAS, Submitted.; “*ATLASGAL – Evolutionary trends in high-mass star formation*”;
10. D. Colombo; Menten, K. M.; ..., **A. Y. Yang**; & The SEDIGISM Team, 2021, A&A, Accepted; “*The SEDIGISM survey: the influence of spiral arms on the molecular gas distribution of the inner Milky Way*”;  [arXiv:2110.06071](#)
9. Brunthaler, A.; Menten, K. M.; ..., **A. Y. Yang**; & The GLOSTAR Team, 2021, A&A, 651, A85, **MPIFR/NRAO press release**, “*A global view on star formation: The GLOSTAR Galactic Plane Survey I. Overview and first results for the Galactic longitude range $28^\circ < \ell < 36^\circ$* ”;  [arXiv:2106.00377](#)
8. Dokara, Rohit., Menten, K. M. ,..., **A. Y. Yang**; & The GLOSTAR Team; 2021, A&A, 651, A86, **MPIFR/NRAO press release**; “*A global view on star formation: The GLOSTAR Galactic plane survey. II. Supernova Remnants in the first quadrant of the Milky Way*”;  [arXiv:2103.06267](#)
7. Ortiz-León Gisela N.; Menten, K. M. ;..., **A. Y. Yang**; & The GLOSTAR Team; , 2021, A&A, 651, A87, **MPIFR/NRAO press release**; “*A Global View on Star Formation: The GLOSTAR Galactic Plane Survey. III. 6.7 GHz Methanol maser survey in Cygnus X* ”;  [arXiv:2105.07471](#)
6. Nguyen, H., Menten, K. M., ..., **A. Y. Yang**; & The GLOSTAR Team; 2021; A&A, 651, A88, **MPIFR/NRAO press release**; “*A global view on star formation: The GLOSTAR Galactic plane survey IV. Radio continuum detections of young stellar objects in the Galactic Centre region*”;  [arXiv:2105.03212](#)
5. Eden, D. J., ..., **A. Y. Yang**; & The CHIMPS Team; 2020, MNRAS, 498, 5936E; “*CHIMPS2: survey description and 12CO emission in the Galactic Centre*”;  [arXiv:2009.05073](#)

4. S. S. Shan; H. Zhu; W. W. Tian; H. Y. Zhang ; **A. Y. Yang**; M. F. Zhang; 2019, RAA, 19, 92S; “*The distance measurements of supernova remnants in the fourth Galactic quadrant*”;  [arXiv:1901.02882](https://arxiv.org/abs/1901.02882) ,
3. Bai, X.; ...; **A. Y. Yang** et al., 2019, “*The Large High Altitude Air Shower Observatory (LHAASO) Science White Paper*”;  [arXiv:1905.02773](https://arxiv.org/abs/1905.02773)
2. Shan, S. S.; Zhu, H.; Tian, W. W.; Zhang, M. F.; Zhang, H. Y.; Wu, D.; **A. Y. Yang**; 2019, ApJS, 236, 35S; “*Distances of Galactic Supernova Remnants Using Red Clump Stars*”;  [arXiv:1810.06014](https://arxiv.org/abs/1810.06014)
1. Thompson M. A.; ...; **A. Y. Yang**; 2016; “*MeerGAL: the MeerKAT Galactic Plane Survey*”;  [Paper link](#)

Proposals

Total: 1108.8 h

Approved: 1011.7h | New Submitted: 97.1 h | PI: 360.5 h | Co-I: 748.3 h

• PI proposals

13. PI: **Aiyuan Yang, approved**, CoI: Friderich Wyrowski, Karl Menten et al., VLA ID: VLA/21B-131, 2021, B-configuration., 2 h;
12. PI: **Aiyuan Yang, approved**, Effelsberg project ID: 19-21, 2021, 20.6 h;
11. PI: **Aiyuan Yang, submitted**, Effelsberg ID: 101-21, 2021, 62 h;
10. PI: **Aiyuan Yang, submitted**, CoI: Friderich Wyrowski, Karl Menten et al., VLA project ID: VLA/22A-294, Feb. 2021, D-configuration., 4.4 h;
9. PI: **Aiyuan Yang, submitted**, CoI: James Urquhart, VLA ID: VLA/22A-297, Aug. 2021, D-configuration. 12 h;
8. PI: **Aiyuan Yang, observed**, CoI: Friderich Wyrowski, Karl Menten, et al., Effelsberg ID: 77-19, , 2019, 88 h;
7. PI: **Aiyuan Yang, observed**, CoI: Friderich Wyrowski, Karl Menten et al., IRAM ID: 043-19, 2019, 33 h;
6. PI: **Aiyuan Yang**, CoI: Thompson M. A., W. W. Tian, VLA project ID: VLA18B-065, Feb. 2018, A-config, observed 9 h;
5. PI: **Aiyuan Yang, observed**, CoI: Thompson M. A., W. W. Tian, VLA ID: VLA/19B-040, Feb. 2018, A-config, 13 h;
4. PI: **Aiyuan Yang**, CoI: Thompson M. A., W. W. Tian, VLA ID: VLA/19B-041, Feb. 2018, C-config, observed 4.5 h;
3. PI: **Aiyuan Yang, observed**, CoI: Friderich Wyrowski, Karl Menten et al., APEX project ID: 9516A-2019, 2019, 100 h;
2. PI: **Aiyuan Yang, observed**, CoI: Thompson M. A., W. W. Tian, VLA ID: VLA18A-066, Aug. 2017, C-configuration., 13.5 h;
1. PI: **Aiyuan Yang, observed**, CoI: Thompson M. A., W. W. Tian, VLA ID: VLA17A-070, C-config, Aug. 2016, 3 h;

• Co-I proposals

5. CoI: **Aiyuan Yang, approved**, PI: Wenjin Yang, Karl Menten et al., Effelsberg ID: 17-21, 2021, , 37.6 h;
4. CoI: **Aiyuan Yang**, PI: Karl Menten, Effelsberg ID: 102-20, 2021, approved 600 h;
3. CoI: **Aiyuan Yang, approved**, PI: M. Rugel Karl Menten et al., Effelsberg ID: 13-20, 2021, 30 h;
2. CoI: **Aiyuan Yang, submitted**, PI: Rohit Dokara, Karl Menten et al., VLA ID: VLA/22A-172, Aug. 2021, D-configuration, Aug. 2021, 8.7 h;
1. CoI: **Aiyuan Yang, submitted**, PI: Andreas Brunthaler, Karl Menten et al., VLBA ID: VLBA/22A-390, Aug. 2021, 72 h;

Language and Skills

- **Computer Language:** python, C, R, and HTML
- **Language:** English (fluent), Deutsch (beginner); Chinese (first language)
- **software:** CASA, Obit, KVIS, TOPCAT, DS9, AEGEAN, BLOBCAT, Latex, and GILDAS

Honors and Awards

- CAS Presidential Scholarship (2018).
- China Scholarship Council Scholarship, SKA project, China-UK (2016-2017)
- National Scholarship of China (2015-2016)
- National Scholarship of China (2015-2016)
- Advanced Micro Devices (AMD) Scholarship at NAOC (2015-2016)
- Outstanding student at NAOC (2014-2016)
- Outstanding student leader of College of Physics Science and Technology at XJU (2009)
- Government grants for outstanding students (2007-2011)

Presentations

- Workshop talk, The SEDIGISM workshop, Bonn, Germany, Sep. 2021, “*Molecular outflows in the SEDIGISM survey*”
- Talk at the MPIfR, Bonn, Germany, March. 2020, “*Hypercompact HII regions identified from young HII regions*”
- Talk at the MPIfR, Bonn, Germany, Nov. 2018, “*Multi-band study of ISM related to massive star formation*”
- Seminar talk, Chinese radio astronomy annual conference, Hefei, Anhui, China, Nov. 2017, “*Searching for hyper-compact HII regions using JVLA survey data*”
- Seminar talk, the 2th Chinese annual conference of SKA, Shanghai, China, Dec., 2017, “*A search for steep positive radio spectrum object: make predictions for SKA and its precursors*”

Professional References

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