2024-04-05

CURRICULUM VITAE

Contact Information

Full Name:	Woorak Choi (ORCID: https://orcid.org/0000-0001-5033-7208)
Address:	Science Hall 562, 50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea
Tel:	+82-10-6217-2289
E-mail:	woorak.c@gmail.com (woorak.c@yonsei.ac.kr)
Affiliation:	Department of Astronomy, Yonsei University

Education

2017.09 – 2024.02	Ph.D. (Ph.D. Advisor: Prof. Aeree Chung) High-resolution radio observations and GMC-scale simulations as probes of galaxy evolution Yonsei University, Seoul, Korea
2013.03 – 2017.08	Bachelor of Science in Astronomy Yonsei University, Seoul, Korea

Research Interests

Molecular line (CO) observation – GMCs – Environmentally driven galaxy evolution – Ram pressure stripping simulation – Magnetic field – Polarized continuum observation – Radio data processing

Research Experiences

2016.02 – 2016.09
Yonsei University, Department of Astronomy, Seoul, Korea
Undergraduate researcher, Adviser: Myungkook James Jee
Topic: A comparative study of colliding galaxy simulations using GADGET2 and RAMSES

I investigated the evolution of colliding galaxies using two different simulation codes, GADGET2 and RAMSES. I conducted comparisons between the codes, focusing on merging timescales and morphology.

2017.09 – 2024.02
Yonsei University, Department of Astronomy, Seoul, Korea
Research assistant, Supervisor: Aeree Chung

- Topic 1: Investigating giant molecular clouds in the central region of galaxies using high-resolution ALMA observations (Collaborate with Martin Bureau at Oxford Univ.)
- Topic 2: Analyzing the impact of the ram pressure on the multiphase ISM by using TIGRESS simulations (Collaborate with Chang-Goo Kim at Princeton Univ.)
- Topic 3: Investigating the role of magnetic field under ram pressure using high-resolution VLA polarized continuum observation.
- Topic 4: Investigating giant molecular clouds in the central region of galaxies using TIGRESS simulations (Collaborate with Chang-Goo Kim and Sanghyuk Moon at Princeton Univ.)

2019.11 – 2020.02
University of Oxford, Sub-department of Astrophysics, Oxford, UK
Visiting researcher, Supervisor: Martin Bureau
Topic: WISDOM - Investigate the properties of the GMCs in the central region of the galaxies.

2024.03 – current
Yonsei University, Department of Astronomy, Seoul, Korea
Postdoctoral Researcher, Supervisor: Aeree Chung

Computing Skills

Languages: Python, LaTex, IDL(intermediate), Matlab (intermediate), Fortran(basic)
Astronomical tools: CASA, AIPS, IRAF, SExtractor, 2DBAT, 3DBarolo, Sofia2, RAMSES (basic), Athena (basic)

Observing Experiences

<PI>
Karl G. Jansky Very Large Array, C-config. (7.4 hours, PI of 20A-310, Accepted)
ALMA Cycle 8, (15.3 hours, PI of 2021.1.01491.S, Accepted)

<co-I>
ALMA Cycle 8, (13.4 hours, co-I of 2021.1.01098.S, Accepted)

ALMA Cycle 9, (co-I, PI-Thomas Wiliams, 2022.1.00141.S, Accepted)
ALMA Cycle 9, (co-I, PI-Martin Bureau, 2022.1.01122.S, Accepted)
ALMA Cycle 9, (co-I, PI-Bumhyun Lee, 2022.1.01556.S, Accepted)
Karl G. Jansky Very Large Array, B-config. (co-I, PI-Anan Lu, 23A-265, 5.5 hours, Accepted)
Karl G. Jansky Very Large Array, B-config. (co-I, PI-Anan Lu, 24A-294, 22 hours, Accepted)

Publications

<1st Author>

- Title: Ram Pressure Stripping of the Multiphase ISM: A Detailed View from TIGRESS Simulations
- Author: **Woorak Choi**, Chang-Goo Kim, Aeree Chung
- DOI: https://doi.org/10.3847/1538-4357/ac82ba

- Title: WISDOM Project - XV. Giant Molecular Clouds in the Central Region of the Barred Spiral Galaxy NGC 5806
- Author: **Woorak Choi**, Lijie Liu, Martin Bureau, Michelle Cappellari, Timothy A. Davis, Fu-Heng Liang, Anan Lu, Thomas G. Williams, Aeree Chung
- DOI: https://doi.org/10.1093/mnras/stad1211

<Co-Author>

- Title: WISDOM Project - X. The morphology of the molecular ISM in galaxy centres and its dependence on galaxy structure
- Author: Timothy A Davis, Jindra Gensior, Martin Bureau, Michele Cappellari, **Woorak Choi**, Jacob S Elford, J M Diederik Kruijssen, Federico Lelli, Fu-Heng Liang, Lijie Liu, Ilaria Ruffa, Toshiki Saito, Marc Sarzi, Andreas Schruba, Thomas G Williams
- DOI: 10.1093/mnras/stac600

- Title: WISDOM project – XI. Star formation efficiency in the bulge of the AGN-host Galaxy NGC 3169 with SITELLE and ALMA
- Author: Anan Lu, Hope Boyce, Daryl Haggard, Martin Bureau, Fu-Heng Liang, Lijie Liu, **Woorak Choi**, Michele Cappellari, Laurent Chemin, Mélanie Chevance, Timothy A Davis, Laurent Drissen, Jacob S Elford, Jindra Gensior, J M Diederik Kruijssen, Thomas Martin, Etienne Massé, Carmelle Robert, Ilaria Ruffa, Laurie Rousseau-Nepton, Marc Sarzi, Gabriel Savard, Thomas G Williams
- DOI: 10.1093/mnras/stac1583

- Title: WISDOM Project – XII. Clump properties and turbulence regulated by clump-clump collisions in the dwarf galaxy NGC 404
- Author: Lijie Liu, Martin Bureau, Guang-Xing Li, Timothy A Davis, Dieu D Nguyen, Fu-Heng Liang, **Woorak Choi**, Mark R Smith, Satoru Iguchi
- DOI: 10.1093/mnras/stac2287
-
- Title: WISDOM Project -- XVII. Beam-by-beam Properties of the Molecular Gas in Early-type Galaxies
- Author: Williams, Thomas G, Bureau, Martin, Davis, Timothy A., Cappellari, Michele, **Choi, Woorak**, Elford, Jacob S, Iguchi, Satoru, Gensior, Jindra, Liang, Fu-Heng, Lu, Anan, Ruffa, Ilaria, Zhang, Hengyue
- DOI: https://doi.org/10.1093/mnras/stad2455

Paper in preparation

<1st Author>

- Title: Giant Molecular Clouds in the Central Region of the Barred Spiral Galaxy NGC 613
- Author: **Woorak Choi**, Martin Bureau, Lijie Liu, Michelle Cappellari, Timothy A. Davis, Fu-Heng Liang, Anan Lu, Thomas G. Williams, Aeree Chung
- Submitted to MNRAS

- Title: High-resolution radio continuum observation using VLA of ram pressure stripping galaxy NGC 4522
- Author: **Woorak Choi**, Bumhyun Lee, Chang-Goo Kim, Aeree Chung

<Co-Author>

- Title: WISDOM Project. Giant molecular clouds in the lenticular galaxy NGC 1387
- Author: Fu-Heng Liang, Martin Bureau, Lijie Liu, Timothy A Davis, Hope Boyce, Marc Sarzi, **Woorak Choi**, Jindra Gensior, Anan Lu

- Title: WISDOM Project. Giant molecular clouds in the spiral galaxy NGC 5064 reveal a high fraction of retrograde rotations
- Author: Lijie Liu, Fanglin Shu, Martin Bureau, Kyoko Onishi, Fu-Heng Liang, Timothy A Davis, **Woorak Choi**, Anan Lu

- Title: WISDOM project. Strong shear tearing molecular clouds apart in NGC 524
- Author: Anan Lu, Daryl Haggard, Martin Bureau, Fu-Heng Liang, Lijie Liu, **Woorak Choi**, Thomas G. Williams, Hope Boyce

Presentation & Poster

Date	Type	Event	Location
2024.01	Oral	East Asia Young Astronomers Meeting	Thailand
2024.01	Oral	243rd American Astronomical Society Meeting	USA
2023.04	Oral	Meeting of the Korean Astronomical Society	Jeonju
2022.08	Poster	IAUGA - Busan	Busan
2022.04	Oral	Meeting of the Korean Astronomical Society	Busan
2022.02	Oral	Environmental Workshop 2022	Seoul (Online)
2022.01	Oral	East-Asia ALMA workshop	Online
2021.10	Oral	1st KooGiG-Junior workshop	Online
2021.04	Poster	Meeting of the Korean Astronomical Society	Online
2021.02	Oral	Environmental Workshop 2021	Seoul (Online)
2020.10	Poster	Meeting of the Korean Astronomical Society	Online
2019.12	Oral	Galaxy Evolution Seminar in Oxford Univ.	Oxford
2019.10	Oral	Meeting of the Korean Astronomical Society	Cheongsong
2019.04	Poster	Meeting of the Korean Astronomical Society	Busan
2019.02	Poster	The 2nd Yonsei Astro Poster Jamboree	Seoul
2018.08	Poster	Radio telescope user's meeting	Daejeon
2018.04	Poster	Meeting of the Korean Astronomical Society	Hongcheon

Awards

Best Poster Presentation Award in KAS Meeting (2018.04)
Brain Korea 21 (BK21) scholarship (2017.09-2023.08)

Others

<Teaching Assistant (TA)>
2016 (2016.02-2017.02): Teaching Assistant for the advanced course for middle school students at Yonsei University
2017-2 (2017.09-2017.12): Astronomy 101
2018-1 (2018.03-2018.06): Astrophysics I
2018-2 (2018.09-2018.12): Introduction to Astronomy II
2019-1 (2019.03-2019.06): Introduction to Astronomy I

<Computing & Network Assistant in Department of Astronomy>
2019.09-2020.08

<BK21 Research Assistant (RA)>
2020.09-2023.02

<Volunteer>
2022 IAUGA-Busan Volunteering: 40 hours

<Committee>
2022.03-2023.02: President of Korea Young Astronomers Meeting (KYAM, official division of Korean Astronomical Society, https://k-yam.weebly.com/)

<Public Outreach>
2014-2016: Astronomy magazine & website (Wouldyoulike**, www.wouldyoulike.org): Head manager and writer, 12k USD awarded from KOFAC

** "Wouldyou" has the same pronunciation as the Korean word “우주”, and “우주” means universe in Korean.

Academic References

- Prof. Aeree Chung
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  Department of Astronomy
  Yonsei University

- Prof. Martin Bureau
  martin.bureau@physics.ox.ac.uk / +44-1865-273377
  Sub-department of Astrophysics and Wadham College
  University of Oxford

- Dr. Chang-Goo Kim
  changgoo@princeton.edu / +1-609-258-2611
  Department of Astrophysical Sciences
  Princeton University