ILSEUNG HAN

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Institute of Space Sciences (ICE-CSIC)
Carrer de Can Magrans, 08193 Cerdanyola del Vallès, Barcelona, Spain

RESEARCH INTERESTS

Star and Planet Formation, Disk Substructures, Grain Growth, Radio Interferometry, Polarization

POSITION

Institute of Space Sciences (ICE-CSIC) **Barcelona, Spain**
Postdoctoral Researcher Dec 2024 – Present
Supervisors: Dr. Anaëlle Maury and Dr. Valentin Le Gouellec

Seoul National University (SNU) **Seoul, Republic of Korea**
Postdoctoral Researcher Oct 2024 – Dec 2024
Supervisor: Prof. Woojin Kwon

EDUCATION

University of Science and Technology (UST) **Daejeon, Republic of Korea**
Korea Astronomy and Space Science Institute (KASI)
Ph.D. in Astronomy and Space Science Sep 2017 – Aug 2024
Thesis: *A Comprehensive Study of Grain Growth in Class I Young Stellar Objects*
Supervisors: Prof. Woojin Kwon (SNU) and Prof. Sang-Sung Lee (UST/KASI)

Kyungpook National University (KNU) **Daegu, Republic of Korea**
B.S. in Astronomy and Atmospheric Sciences Mar 2012 – Aug 2017
Thesis: *Spectral Analysis of SN 2011fe in M101 and Implications for Explosion Mechanism*
Supervisor: Prof. Tae-Seog Yoon

APPROVED OBSERVING PROPOSALS

PI:

1. 2021, **ALMA,** Cycle 8, 21.7 hr, 2021.01582.S, A-ranked, *Multi-band Polarimetric Observations to Study Grain Growth in the Class I Protobinary System L1551 IRS 5*

Co-I:

7. 2023, **ALMA**, Cycle 10, 25.9 hr, 2023.1.00545.S, C-ranked, PI: Nagayoshi Ohashi, *Weighting All Protostars in Ophiuchus through Their Disk Kinematics*
6. 2023, **ALMA**, Cycle 10, 10.4 hr, 2023.1.00439.S, C-ranked, PI: Merel van 't Hoff, *Probing a Temperature Enhancement at the Disk-Envelope Interface*
5. 2023, **ALMA**, Cycle 10, 29.4 hr, 2023.1.00273.S, B-ranked, PI: Hsi-Wei Yen, *Investigating the Connection between Magnetic Field Morphology in Protostellar Envelopes and Disk Formation*
4. 2023, **JCMT**, 23B, 38.1 hr, M23BP016, PI: Jinshi Sai, *Impact of Dense Core Properties on Disk Size*
3. 2023, **JCMT**, 23A, 45 hr, M23AP020, PI: Jinshi Sai, *Impact of Dense Core Properties on Disk Size*
2. 2022, **ALMA**, Cycle 9, 25.9 hr, 2022.1.01357.S, B-ranked, PI: Woojin Kwon, *Grain Growth in the Early Protostellar Systems Revealed by eDisk*
1. 2020, **JCMT**, 20A, 224 hr, M20AL018, PI: Derek Ward-Thompson, *B-Fields in Star-Forming Region Observations 3 (BISTRO-3)*

MAJOR COLLABORATIONS

PEBBLES *Dec 2024 – Present*
ERC Advanced Grant 2023 (PI: Dr. Anaëlle Maury)

Early Planet Formation in Embedded Disks (eDisk) *Apr 2021 – Present*
ALMA Cycle 7 Large Program (PIs: Nagayoshi Ohashi, John J. Tobin, Jes K. Jørgensen)

PRESENTATIONS

International:

6. **Poster** (remote), ALMA at 10 years: Past, Present, and Future, Dec 4–8, Puerto Varas, Chile, *Early Planet Formation in Embedded Disks (eDisk): A Keplerian Disk and Streamers in the Class I Protostellar System IRAS 04169+2702*
5. **Oral**, ASIAA Special Seminar, Feb 21, 2023, Taipei, Taiwan, *eDisk: A Compact but Structured Keplerian Disk and Large-scale Spiral Structures Revealed in the Class I Protostellar System IRAS 04169+2702*
4. **Poster**, Protostars and Planets VII, Apr 10–15, 2023, Kyoto, Japan, *Early Planet Formation in Embedded Disks (eDisk): A Compact but Structured Keplerian Disk and Large-scale Spiral Structures Revealed in the Class I Protostellar System IRAS 04169+2702*
3. **Oral**, East-Asian ALMA Science Workshop 2023, Feb 14–17, 2023, New Taipei City, Taiwan, *eDisk: A Compact but Structured Keplerian Disk and Large-scale Spiral Structures Revealed in the Class I Protostellar System IRAS 04169+2702*
2. **Poster**, 31st International Astronomical Union General Assembly (IAUGA) 2022, Aug 2–11, 2022, Busan, Republic of Korea, *Grain Growth and Dust Segregation Revealed by Multi-wavelength Analysis of the Class I Protostellar Disk WL 17*
1. **Poster**, 13th Asia-Pacific Regional IAU Meeting (APRIM) 2017, Jul 3–7, 2017, Taipei, Taiwan, *Spectral Analysis of SN 2011fe in M101*

Domestic:

9. **Oral**, 110th Korean Astronomical Society (KAS) Fall Meeting, Oct 16–18, 2024, Gangneung, Republic of Korea *From Dust to Planets: When Do Grains Grow in Disks?*
8. **Oral** (invited), Amanogawa Galaxy Astronomy Research Center (AGARC) Colloquium in Kagoshima University, Oct 9, 2024, Kagoshima, Japan *From Dust to Planets: When Do Grains Grow in Disks?*
7. **Oral** (invited), Astronomy Colloquium in Kyungpook National University, June 18, 2024, Daegu, Republic of Korea *From Dust to Planets: When Do Grains Grow in Disks?*
6. **Oral**, 108th Korean Astronomical Society (KAS) Fall Meeting, Oct 18–20, 2023, Jeju, Republic of Korea, *eDisk: A Keplerian Disk and Streamers in the Class I Protostellar System IRAS 04169+2702*
5. **Oral**, SNU ARC 2nd H.S. Yun Astronomy Workshop, Aug 29–30, 2023, Seoul, Republic of Korea, *eDisk: A Keplerian Disk and Streamers in the Class I Protostellar System IRAS 04169+2702*
4. **Oral**, 2023 Radio Summer School & Radio Telescope Users' Meeting, Aug 21–23, 2023, Siheung, Republic of Korea, *eDisk: A Keplerian Disk and Streamers in the Class I Protostellar System IRAS 04169+2702*
3. **Oral**, 106th, Korean Astronomical Society (KAS) Fall Meeting, Oct 12–14, 2022, Gyeongju, Republic of Korea, *Grain Growth and Dust Segregation Revealed by Multi-wavelength Analysis of the Class I Protostellar Disk WL 17*
2. **Poster**, 102nd Korean Astronomical Society (KAS) Fall Meeting, Oct 15–16, 2020, Zoom, Republic of Korea, *Grain Growth Revealed by Multi-wavelength Analysis of Non-axisymmetric Substructures in the Protostellar Disk WL 17*
1. **Poster**, 97th Korean Astronomical Society (KAS) Fall Meeting, Oct 12–13, 2017, Yeosu, Republic of Korea, *Spectral Analysis of SN 2011fe in M101 and Implications for Explosion Mechanism*

HONORS AND AWARDS

UST Outstanding Research Assistant 2024

METASPACE Best Poster Award
2017 Korean Astronomical Society (KAS) Fall Meeting 2017
"Spectral Analysis of SN 2011fe in M101 and Implications for Explosion Mechanism"

UST Outstanding Internship Award
2016 UST Summer Research Internship 2016
"Photometric Study on the Old Open Cluster Ruprecht 6"

SKILLS

Programming Languages and Frameworks
Python, R, IDL, Fortran, CASA, RADMC-3D, LaTeX, Linux, Mac OS, Windows

Languages
Korean (native), English (intermediate)

REFERENCES

Prof. Woojin Kwon
Department of Earth Science Education
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Prof. Sang-Sung Lee
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Prof. Yusuke Aso
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Prof. Shigehisa Takakuwa
Department of Physics and Astronomy
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Dr. John J. Tobin
National Radio Astronomy Observatory, USA
jtobin@nrao.edu

PUBLICATIONS

First author:

3. **Han, I.**, Kwon, W., Aso, Y., et al., *Multi-band Polarimetric Observations to Study Grain Growth in the Class I Protobinary System L1551 IRS 5*, 2024, in preparation
2. **Han, I.**, Kwon, W., Aso, Y., et al., *Early Planet Formation in Embedded Disks (eDisk) VXII: A Compact but Structured Keplerian Disk and Large-scale Streamers Revealed in the Class I Protostellar System IRAS 04169+2702*, 2024, ApJ, will be submitted soon
1. **Han, I.**, Kwon, W., Aso, Y., et al., *Grain Growth and Dust Segregation Revealed by Multiwavelength Analysis of the Class I Protostellar Disk WL 17*, 2023, ApJ, 956, 9 [ADS]

Co-author:

32. Wu, J., Qiu, K., Poidevin, F., et al., *A Tale of Three: Magnetic Fields along the Orion Integral-shaped Filament as Revealed by the JCMT BISTRO Survey*, 2024, ApJL, 977, 31 [ADS]
31. Choi, Y., Kwon, W., Pattle, K., et al., *The JCMT BISTRO Survey: The Magnetic Fields of the IC 348 Star-forming Region*, 2024, ApJ, 977, 32 [ADS]
30. Yen, H.-W., Williams, J. P., Sai, J., et al., *Early Planet Formation in Embedded Disks (eDisk) XV: Influence of Magnetic Field Morphology in Dense Cores on Sizes of Protostellar Disks*, 2024, ApJ, 969, 125 [ADS]
29. Encalada, F. J., Looney, L. W., Takakuwa, S., et al., *Early Planet Formation in Embedded Disks (eDisk). XIII. Aligned Disks with Nonsettled Dust around the Newly Resolved Class 0 Protobinary R CrA IRAS 32*, 2024, ApJ, 966, 32 [ADS]
28. Takakuwa, S., Saigo, K., Kido, M., et al., *Early Planet Formation in Embedded Disks (eDisk). XIV. Flared Dust Distribution and Viscous Accretion Heating of the Disk around R CrA IRS 7B-a*, 2024, ApJ, 964, 24 [ADS]
27. Wang, J.-W., Koch, P. M., Clarke, S. D., et al., *Filamentary Network and Magnetic Field Structures Revealed with BISTRO in the High-Mass Star-Forming Region NGC 2264: Global Properties and Local Magnetogravitational Configurations*, 2024, ApJ, 962, 136 [ADS]
26. Flores, C., Ohashi, N., Tobin, J. J., et al., *Early Planet Formation in Embedded Disks (eDisk). XII. Accretion streamers, protoplanetary disk, and outflow in the Class I source Oph IRS 63*, 2023, ApJ, 958, 98 [ADS]
25. Thieme, T. J., Lai, S.-P., Ohashi, N., et al., *Early Planet Formation in Embedded Disks (eDisk). VIII. A Small Protostellar Disk around the Extremely Low-Mass and Young Class 0 Protostar, IRAS 15398-3359*, 2023, ApJ, 958, 60 [ADS]

24. Aso, Y., Kwon, W., Ohashi, N., et al., *Early Planet Formation in Embedded Disks (eDisk). VI. Kinematic Structures around the Very-low-mass Protostar IRAS 16253-2429*, 2023, ApJ, 954, 101 [ADS]

23. Sai, J., Yen, H.-W., Ohashi, N., et al., *Early Planet Formation in Embedded Disks (eDisk). V. Possible Annular Substructure in a Circumstellar Disk in the Ced110 IRS4 System*, 2023, ApJ, 954, 67 [ADS]

22. Kido, M., Takakuwa, S., Saigo, K., et al., *Early Planet Formation in Embedded Disks (eDisk). VII. Keplerian Disk, Disk Substructure, and Accretion Streamers in the Class 0 Protostar IRAS 16544-1604 in CB 68*, 2023, ApJ, 953, 190 [ADS]

21. Karoly, J., Ward-Thompson, D., Pattle, K., et al., *The JCMT BISTRO Survey: Studying the Complex Magnetic Field of L43*, 2023, ApJ, 952, 29 [ADS]

20. Yamato, Y., Aikawa, Y., Ohashi, N., et al., *Early Planet Formation in Embedded Disks (eDisk). IV. The Ringed and Warped Structure of the Disk around the Class I Protostar L1489 IRS*, 2023, ApJ, 951, 11 [ADS]

19. van't Hoff, M. L. R., Tobin, J. J., Li, Z.-Y., et al., *Early Planet Formation in Embedded Disks (eDisk). III. A First High-resolution View of Submillimeter Continuum and Molecular Line Emission toward the Class 0 Protostar L1527 IRS*, 2023, ApJ, 951, 10 [ADS]

18. Lin, Z.-Y. D., Li, Z.-Y., Tobin, J. J., et al., *Early Planet Formation in Embedded Disks (eDisk). II. Limited Dust Settling and Prominent Snow Surfaces in the Edge-on Class I Disk IRAS 04302+2247*, 2023, ApJ, 951, 9 [ADS]

17. Ohashi, N., Tobin, J. J., Jørgensen, J. K., et al., *Early Planet Formation in Embedded Disks (eDisk). I. Overview of the Program and First Results*, 2023, ApJ, 951, 8 [ADS]

16. Ward-Thompson, D., Karoly, J., Pattle, K., et al., *First BISTRO Observations of the Dark Cloud Taurus L1495A-B10: The Role of the Magnetic Field in the Earliest Stages of Low-mass Star Formation*, 2023, ApJ, 946, 62 [ADS]

15. Tahani, M., Bastien, P., Furuya, R. S., et al., *JCMT BISTRO Observations: Magnetic Field Morphology of Bubbles Associated with NGC 6334*, 2023, ApJ, 944, 139 [ADS]

14. Ching, T.-C., Qiu, K., Li, D., et al., *The JCMT BISTRO-2 Survey: Magnetic Fields of the Massive DR21 Filament*, ApJ, 941, 122 [ADS]

13. Hwang, J., Kim, J., Pattle, K., et al., *The JCMT BISTRO Survey: A Spiral Magnetic Field in a Hub-filament Structure, Monoceros R2*, 2022, ApJ, 941, 51 [ADS]

12. Sheehan, P. D., Tobin, J. J., Li, Z.-Y., et al., *A VLA View of the Flared, Asymmetric Disk around the Class 0 Protostar L1527 IRS*, 2022, ApJ, 934, 95 [ADS]

11. Kwon, W., Pattle, K., Sadavoy, S., et al., *B-fields in Star-forming Region Observations (BISTRO): Magnetic Fields in the Filamentary Structures of Serpens Main*, 2022, ApJ, 926, 163 [ADS]

10. Lyo, A.-R., Kim, J., Sadavoy, S., et al., *The JCMT BISTRO Survey: An 850/450 μm Polarization Study of NGC 2071IR in Orion B*, 2021, ApJ, 918, 85 [ADS]

9. Eswaraiah, C., Li, D., Furuya, R. S., et al., *The JCMT BISTRO Survey: Revealing the Diverse Magnetic Field Morphologies in Taurus Dense Cores with Sensitive Submillimeter Polarimetry*, 2021, ApJL, 912, 27 [ADS]

8. Arzoumanian, D., Furuya, R. S., Hasegawa, T., et al., *Dust polarized emission observations of NGC 6334. BISTRO reveals the details of the complex but organized magnetic field structure of the high-mass star-forming hub-filament network*, 2021, A&A, 647, 78 [ADS]

7. Ngoc, N. B., Diep, P. N., Parsons, H., et al., *Observations of Magnetic Fields Surrounding LkHα 101 Taken by the BISTRO Survey with JCMT-POL-2*, 2021, ApJ, 908, 10 [ADS]

6. Yen, H.-W., Koch, P. M., Hull, C. L. H., et al., *The JCMT BISTRO Survey: Alignment between Outflows and Magnetic Fields in Dense Cores/Clumps*, 2021, ApJ, 907, 33 [ADS]

5. Doi, Y., Hasegawa, T., Furuya, R. S., et al., *The JCMT BISTRO Survey: Magnetic Fields Associated with a Network of Filaments in NGC 1333*, 2020, ApJ, 899, 28 [ADS]

4. Liu, J., Qiu, K., Berry, D., et al., *The JCMT BISTRO Survey: The Magnetic Field in the Starless Core ρ Ophiuchus C*, 2019, ApJ, 877, 43 [ADS]

3. Wang, J.-W., Lai, S.-P., Eswaraiah, C., et al., *JCMT BISTRO Survey: Magnetic Fields within the Hub-filament Structure in IC 5146*, 2019, ApJ, 876, 42 [ADS]

2. Soam, A., Pattle, K., Ward-Thompson, D., et al., *Magnetic Fields toward Ophiuchus-B Derived from SCUBA-2 Polarization Measurements*, 2018, ApJ, 861, 65 [ADS]

1. Kim, S. C., Kyeong, J., Park, H. S., et al., *BVI Photometric Study of the Old Open Cluster Ruprecht 6*, 2017, JKAS, 50, 79 [ADS]