




# KIM HYEONGHAN

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Unified Astronomy Thesaurus (UAT) keywords:

Large-scale structure, Gravitational lensing, Dark matter distribution

## EDUCATION

<b>Post-doctoral researcher</b>   Duke University; Supervisor: Prof. M. Troxel	Sep. 2025 – NC, USA
<b>PhD of Science, Astronomy</b>   <i>Major: Astronomy</i> Yonsei University; Supervisor: Prof. M. James Jee	Aug. 2025 Seoul, KR
<b>Bachelor of Science, Astronomy</b>   <i>Major: Astronomy</i> Yonsei University	Feb. 2018 Seoul, KR

## UNDER-REVIEW & REFEREED PUBLICATIONS (21)

### First author (4)

- [4] **Hyeonghan, K.**, Jee, M. J., W. Lee et al. *Direct Evidence of a Major Merger in the Perseus Cluster*. Nature Astronomy, 9, 925 (Jun 2025)
- [3] **Hyeonghan, K.**, Jee, M. J., Cha, S. et al. *Weak-Lensing Detection of Intracluster Filaments in the Coma Cluster*. Nature Astronomy, 8, 377 (Mar 2024)
- [2] **Hyeonghan, K.**, Cho, H., Jee, M. J. et al. *Weak-Lensing Analysis of the Complex Cluster Merger Abell 746 with Subaru/Hyper Suprime-Cam*. ApJ, 962, 100 (Feb 2024)
- [1] **Hyeonghan, K.**, Jee, M. J., Rudnick, L. et al. *Discovery of a Radio Relic in the Massive Merging Cluster SPT-CL J2023-5535 from the ASKAP-EMU Pilot Survey*. ApJ, 900, 127 (Sep 2020)

### Second/third or corresponding<sup>†</sup> author (5)

- [5] Kim, S., **Hyeonghan, K.**<sup>†</sup>, Lee, W., et al. *Weak-Lensing Analysis of the Galaxy Cluster Abell 85: Constraints on the Merger Scenarios of Its Southern Subcluster*. submitted to ApJ arXiv:2511.02323
- [4] Jiménez-Teja, Y., Román, J., **Hyeonghan, K.**, et al. *Deep view of the intracluster light in the Coma cluster of galaxies*. A&A, 694, 216 (Feb 2025)
- [3] Cha, S., **Hyeonghan, K.**, Scofield, Z. P. et al. *Precision MARS Mass Reconstruction of Abell 2744: Synergizing the Largest Strong Lensing and Densest Weak Lensing Datasets from JWST*. ApJ, 961, 186 (Feb 2024)
- [2] Martínez-Paredes, M., González-Martín, O., **Hyeonghan, K.** et al. *Modeling the Unresolved NIR-MIR SEDs of Local ( $z < 0.1$ ) QSOs*. ApJ, 922, 157 (Dec 2021); Contribution: IR photometry and modeling
- [1] Finner, K., **Hyeonghan, K.**, Jee, M. J. et al. *Exemplary Merging Clusters: Weak-lensing and X-Ray Analysis of the Double Radio Relic, Merging Galaxy Clusters MACS J1752.0+4440 and ZWCL 1856.8+6616*. ApJ, 918, 72 (Sep 2021)

### Contributing author (12)

- [12] Cho, B. Y. et al. (including **Hyeonghan, K.**) *Joint JWST–DECam Lensing Reveals That the Bullet Cluster Is a Minor Merger*. submitted to ApJ
- [11] Wang, Q. et al. (including **Hyeonghan, K.**) *Reproducing Abell 2744 with the HyperMillennium Simulation*. submitted to MNRAS arXiv:2510.27291
- [10] Jain, S. et al. (including **Hyeonghan, K.**) *SDSS-C4 3028: the Nearest Blue Galaxy Cluster Devoid of an Intracluster Medium*. OJAp, DOI: 10.33232/001c.144911 (Sep 2025)

- [9] Cha, S. et al. (including **HyeongHan, K.**) *A High-Caliber View of the Bullet Cluster Through JWST Strong and Weak Lensing Analyses*. ApJL, 987, L15 (June 2025)
- [8] Finner, K. et al. (including **HyeongHan, K.**) *Weak-Lensing Characterization of the Dark Matter in 29 Merging Clusters that Exhibit Radio Relics*. ApJS, 277, 28 (Mar 2025)
- [7] Rajpurohit, K. et al. (including **HyeongHan, K.**) *Abell 746: A highly disturbed cluster undergoing multiple mergers*. ApJ, 966, 38 (May 2024)
- [6] Lee, W. et al. (including **HyeongHan, K.**) *Discovery of a large-scale bent radio jet in the merging cluster Abell 514*. ApJL, 957, 4 (Nov 2023)
- [5] Finner, K. et al. (including **HyeongHan, K.**) *Near-IR Weak-Lensing (NIRWL) Measurements in the CANDELS Fields I: Point-Spread Function Modeling and Systematics*. ApJ, 958, 33 (Nov 2023)
- [4] Lee, W. et al. (including **HyeongHan, K.**) *Discovery of a Double Radio Relic in ZwCl1447.2+2619: A Rare Testbed for Shock-acceleration Models with a Peculiar Surface-brightness Ratio*. ApJ, 924, 18 (Jan 2022)
- [3] Kim, J. et al. (including **HyeongHan, K.**) *Head-to-Toe Measurement of El Gordo: Improved Analysis of the Galaxy Cluster ACT-CL J0102-4915 with New Wide-field Hubble Space Telescope Imaging Data*. ApJ, 923, 101 (Dec 2021)
- [2] Norris, R. et al. (including **HyeongHan, K.**) *The Evolutionary Map of the Universe pilot survey*. PASA, 38, 46 (Sep 2021)
- [1] Di Mascolo, L. et al. (including **HyeongHan, K.**) *Multiwavelength view of SPT-CL J2106-5844. The radio galaxies and the thermal and relativistic plasmas in a massive galaxy cluster merger at  $z \simeq 1.13$* . A&A, 650, 153 (Jun 2021)

## SELECTED TALKS AND POSTERS

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### Contributed Talks

ASKAP-EMU Virtual Meeting (Jul 2020)  
 EMU-CCW Virtual Meeting (Sep 2020)  
 102nd Korean Astronomical Society Meeting (Sep 2020)  
 103rd Korean Astronomical Society Meeting (Apr 2021)  
 240th American Astronomical Society at Pasadena, US (Jun 2022)  
 International Astronomical Union General Assembly 2022 at Busan, South Korea (Aug 2022)  
 108th Korean Astronomical Society Meeting (Oct 2023)  
 243rd American Astronomical Society at New Orleans, US (Jan 2023)  
 109th Korean Astronomical Society Meeting (Apr 2024)  
 2024 European Astronomical Society Meeting at Padova, Italy (Jul 2024)  
 111st Korean Astronomical Society Meeting (Apr 2025)

### Posters

KAS (Oct 2019), KIAS 9th Cosmology workshop (Korean Institute for Advanced Study; Nov 2020),  
 GCF (Galaxy Cluster Formation; Jun 2021), EAS (2024),  
 Galaxy clusters & Radio relics II (CfA, Sep 2024), KIAS 11th Cosmology workshop (Oct 2024)

## HONORS AND AWARDS

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<b>Yonsei Merit Academic Paper Award</b>	2020
<b>Yonsei Merit Academic Student Award</b>	2021
<b>BLEU Fellowship (Brain Korea)</b>	2023
<b>Yonsei Merit Academic Paper Award</b>	2024

## ACCEPTED PROPOSALS

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### 6 successful PI proposals

XMM-Newton AO20 (125 ks), AO21 (125 ks), AO23 (160 ks), ATCA 2020OCT (23.5 hrs),  
Subaru/HSC 2024B (5 hrs), 2025B(3 hrs)

### >16 successful Co-I proposals

JWST (Cycle3), Chandra (Cycle22, 24), XMM-Newton (AO23, 25), ALMA (Cycle8), Gemini-N/GMOS (2021A),  
uGMRT (Cycle36,37,38,41), MMT/MegaCam (2022A), MMT/Binospec (2022A), MeerKAT (2023, 2024),  
Subaru/HSC (2024A), VLA (2025A)

## TEACHING EXPERIENCE

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<b>Mentor at Duke University, Manvik Kongwad, NCSSM</b>	Sep 2025 - present NC, USA
<b>MSc project supervisor, Soojin Kim, Seoul National University</b>	Nov 2024 - present
Weak-Lensing Analysis of the Galaxy Cluster Abell 85: Constraints on the Merger Scenarios of Its Southern Subcluster (submitted to ApJ)	Seoul, KR
<b>Understanding of space</b>	2018, 2020
TA; Yonsei University	Seoul, KR

## WORK EXPERIENCE

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<b>Korea Astronomy and Space science Institute (KASI) Student Researcher</b>	January 2019 – August 2020
Supervisor: Dr. B. W. Sohn and Dr. M. Martínez-Paredes	Daejeon, KR
• Martínez-Paredes, M., González-Martín, O., HyeonHan, K., et al. 2021, ApJ, 922, 157	
<b>Korean VLBI Network (KVN) System Assistant</b>	July – August 2016
Yonsei University	Seoul, KR
• KVN maintenance	

## PUBLIC OUTREACH

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<b>YTN Science</b>	2024
Link: <a href="https://youtu.be/xfwcomfaOaQ?si=gQ25wE7e3H629QGN">https://youtu.be/xfwcomfaOaQ?si=gQ25wE7e3H629QGN</a>	
<b>Sciencewithpeople</b>	2024
Link: <a href="https://youtu.be/49fXbZZPGx0?si=yTWZp6MbLB2gnkdF">https://youtu.be/49fXbZZPGx0?si=yTWZp6MbLB2gnkdF</a>	
<b>Sciencewithpeople</b>	2025
Link: <a href="https://youtu.be/E-HVNDdaCjs?si=K75h6Gl1no9j7qYi">https://youtu.be/E-HVNDdaCjs?si=K75h6Gl1no9j7qYi</a>	

## SKILLS

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**Languages:** Korean (Native), English (Fluent)  
**Programming Languages:** Python, C, IDL  
**Miscellaneous:** Photoshop, Blender

## OTHERS

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<b>Department of Astronomy Social Exchange Meeting LOC (chair)</b>	May 2019
<b>The 3rd Astro Poster Jamboree LOC</b>	Aug 2019
<b>9th Korea-Japan Workshop on Dark Energy LOC</b>	Nov 2022
<a href="https://sites.google.com/view/9kjwde/home?authuser=0">https://sites.google.com/view/9kjwde/home?authuser=0</a>	
<b>Yonsei Merging Cluster Workshop 2023 LOC (chair) / SOC</b>	Dec 2023
<a href="https://yhep-indico.yonsei.ac.kr/event/549/">https://yhep-indico.yonsei.ac.kr/event/549/</a>	

Last updated: Dec/02/2025