

# SAN HAN

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 <https://github.com/sanhancluster> ◇  <https://bitbucket.org/sanhancluster>

## EDUCATION

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Yonsei University

- Ph.D. (Joint Program), Astronomy (Expected) **2017–2024**
- B.S., Astronomy **2013–2016**

Korea Science Academy (high school) **2010–2012**

## RESEARCH EXPERIENCE

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**Large zoom-in simulation of a galaxy cluster** **2019–now**

- Supervised by Prof. Suhyoung K. Yi. Playing a primary role in the design and execution of NewCluster project, a high-resolution cosmological zoom-in simulation of a galaxy cluster.

**Code Development for Simulations** **2019–2023**

- Developed RAMSES-yOMP, a modified version of the hydrodynamic simulation code RAMSES that features performance enhancement and chemical/dust evolution.
- Developed an efficient reading and imaging package for RAMSES output based on NumPy.

**Velocity dispersion profiles of galaxies** **2021–2023**

- Supervised by Prof. Suhyoung K. Yi. Compared simulations and IFU observations to reconcile the origin of the various velocity dispersion profiles of galaxies.

**Preprocessing of dark halos in clusters** **2017–2018**

- Supervised by Dr. Rory Smith and Prof. Suhyoung K. Yi. Used a cosmological simulation of galaxy clusters to quantify the impact of preprocessing on the population of dark halos in galaxy clusters.

## SKILLS

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### Languages

Korean (Native), English

### Programming & Data analysis

Python, Fortran, Java, Linux

### High Performance Computing

RAMSES, MPI, OpenMP

## PUBLICATIONS

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**ADS Publication List** <https://ui.adsabs.harvard.edu/public-libraries/8GkonQ6JQfWG3Vhc-mDIkg> **ORCID** [0000-0001-9939-713X](https://orcid.org/0000-0001-9939-713X)

### Recently Submitted

*On the Origin of the Variety of Velocity Dispersion Profiles of Galaxies* (Submitted) **Aug 2023**  
**S. Han**, S. K. Yi, S. Oh, M. Pak, S. M. Croom, J. Devriendt, Y. Dubois, T. Kimm, K. Kraljic, C. Pichon, M. Volonteri; submitted to **ApJ**, arXiv:2310.15534

## Accepted

- Diffuse Light in Milky-Way like Haloes* (Accepted) **Jan 2024**  
E. Contini, **S. Han**, S. Jeon, J. Rhee, S. K. Yi; **ApJL**
- On the Significance of the Thick Disks of Disk Galaxies* (Accepted) **Nov 2023**  
S. K. Yi, J. K. Jang, J. Devriendt, Y. Dubois, **S. Han**, T. Kimm, K. Kraljic, M. Park, S. Peirani, C. Pichon, J. Rhee; **ApJS**, arXiv:2308.03566
- The Connection between the Intracluster Light and its Host Halo: Formation Time and Contribution from Different Channels* **2024**  
E. Contini, S. Jeon, J. Rhee, **S. Han**, S. K. Yi; **ApJ**, 167, 12
- The Intracluster Light and its Link with the Dynamical State of the Host Group/Cluster: the Role of the Halo Concentration* **2023**  
E. Contini, S. Jeon, J. Rhee, **S. Han**, S. K. Yi; **ApJ**, 958, 12
- Star Formation History and Transition Epoch of Cluster Galaxies Based on the Horizon-AGN Simulation* **2022**  
S. Jeon, S. K. Yi, Y. Dubois, A. Chung, J. Devriendt, **S. Han**, R. A. Jackson, T. Kimm, C. Pichon, J. Rhee; **ApJ**, 941, 13
- YZiCS: On the Mass Segregation of Galaxies in Clusters* **2020**  
S. Kim, E. Contini, H. Choi, **S. Han**, J. Lee, S. Oh, X. Kang, S. K. Yi; **ApJ**, 905, 8
- YZiCS: Unveiling the Quenching History of Cluster Galaxies Using Phase-space Analysis* **2020**  
J. Rhee, R. Smith, H. Choi, E. Contini, S. L. Jung, **S. Han**, S. K. Yi; **ApJ**, 247, 18
- YZiCS: Preprocessing of Dark Halos in the Hydrodynamic Zoom-in Simulation of Clusters*, **2018**  
**S. Han**, R. Smith, H. Choi, L. Cortese, B. Catinella, E. Contini, S. K. Yi; **ApJ**, 866, 78

## SELECTED CONFERENCE TALKS / POSTERS

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IAP colloquium: New simulations for new problems in galaxy formation (Talk)	<b>Dec 2023</b>
Korea Astronomy Society Fall Meeting (Talk)	<b>Oct 2023</b>
Ramses User Meeting (Talk)	<b>Apr 2023</b>
Korea Astronomy Society Spring Meeting (Talk)	<b>Apr 2023</b>
European Astronomical Society Annual Meeting (Poster)	<b>Jun 2022</b>
Ramses User Meeting (Talk)	<b>Sep 2021</b>
Ramses User Meeting (Talk)	<b>Oct 2021</b>
American Astronomical Society 233 <sup>rd</sup> Meeting (Talk)	<b>Jan 2019</b>
Ramses User Meeting (Talk)	<b>Sep 2018</b>
Korea Astronomy Society Fall Meeting (Talk)	<b>May 2018</b>
Korea Astronomy Society Spring Meeting (Poster)	<b>May 2018</b>

## SELECTED SUPERCOMPUTER TIME

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<b>KISTI HPC R&amp;D Innovation Support Program (Grand Challenge)</b>	<b>2019</b>
KSC-2019-CHA-0006	
<b>KISTI HPC R&amp;D Innovation Support Program (Creative Research)</b>	<b>2018–2023</b>
KSC-2023-CRE-0343, KSC-2022-CRE-0409, KSC-2022-CRE-0344, KSC-2022-CRE-0088, KSC-2021-CRE-0486, KSC-2020-CRE-0280, KSC-2020-CRE-0055, KSC-2018-CRE-0114	

## TEACHING EXPERIENCE

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**Teaching Assistant**, Yonsei University

- Earth & Universe **Fall 2018**
- Galaxy & Universe 2 **Spring 2018**
- Astrophysics 2 **Fall 2017**
- Understanding of Space **Spring 2017**

**Teaching Assistant**, Korea Astronomy Olympiad Winter School **2016-2017**

## **AWARDS AND SCHOLARSHIPS**

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**Brain Korea 21 Plus**, National Research Foundation of Korea **2017-2023**  
**The 6<sup>th</sup> Asian-Pacific Astronomy Olympiad**, won the I-st prize **Dec 2010**

## **OTHER ACTIVITIES**

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**WouldYouLike**, A student-run astronomy magazine dedicated to public outreach. Contributed as a writer. **2014-2016**  
**Byeol-arum**, Astronomical observation and outreach club. Participated as a science educator for the public. **2013-2016**