

# 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. Sukeyoung K. Yi. Playing a primary role in the design and execution of New-Cluster 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 image drawing package for RAMSES output based on numpy.

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

- Supervised by Prof. Sukeyoung 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. Sukeyoung 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 Link** <https://ui.adsabs.harvard.edu/public-libraries/8GkonQ6JQfWG3Vhc-mDIkg>

### 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

*On the Significance of the Thick Disks of Disk Galaxies*

(Submitted) Jun 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; submitted to **ApJS**, arXiv:2308.03566

## Accepted

*The Intracluster Light and its Link with the Dynamical State of the Host Group/Cluster: the Role of the Halo Concentration* (Accepted) Sep 2023

E. Contini, S. Jeon, J. Rhee, **S. Han**, S. K. Yi; Accepted by **ApJ**, arXiv:2310.0326

*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)	Dec 2023
Korea Astronomy Society Fall Meeting (Talk)	Oct 2023
Ramses User Meeting (Talk)	Apr 2023
Korea Astronomy Society Spring Meeting (Talk)	Apr 2023
European Astronomical Society Annual Meeting (Poster)	Jun 2022
Ramses User Meeting (Talk)	Sep 2021
Ramses User Meeting (Talk)	Oct 2021
American Astronomical Society 233 <sup>rd</sup> Meeting (Talk)	Jan 2019
Ramses User Meeting (Talk)	Sep 2018
Korea Astronomy Society Fall Meeting (Talk)	May 2018
Korea Astronomy Society Spring Meeting (Poster)	May 2018

## SELECTED SUPERCOMPUTER TIME

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<b>KISTI HPC R&amp;D Innovation Support Program (Grand Challenge)</b>	2019
KSC-2019-CHA-0006	
<b>KISTI HPC R&amp;D Innovation Support Program (Creative Research)</b>	2018–2023
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**