

SAN HAN

sanhan@yonsei.ac.kr ◊  <https://sanhancluster.github.io>

Yonsei University, 50 Yonsei-ro Seodaemun-gu, Seoul, 03722, Republic of Korea

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

EDUCATION

Yonsei University

- Ph.D. (Joint Program), Astronomy
- B.S., Astronomy

(Expected) **Mar 2017–Jun 2024**
Mar 2013–Feb 2017

Korea Science Academy (high school)

Mar 2010–Feb 2013

RESEARCH EXPERIENCE

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 the NewCluster project, a high-resolution cosmological zoom-in simulation of a galaxy cluster.

Code Development for Simulations

2019–now

- 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

2021–2024

- 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

Languages

Korean (Native), English

Programming & Data analysis

Python, Fortran, Java, Linux

High Performance Computing

RAMSES, MPI, OpenMP

PUBLICATIONS

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

Galaxies with grains: unraveling dust evolution and extinction curves with hydrodynamical simulations (Submitted) **Feb 2024**
Y. Dubois, F. R. Montero, C. Guerra, M. Trebitsch, **S. Han**, R. Beckmann, S. K. Yi, J. Lewis, J. Jang; submitted to **A&A**, arXiv:2402.18515

Accepted

Cosmic evolution of black hole-spin and galaxy orientations: clues from the NewHorizon and Galactic simulations **2024**
S. Peirani, Y. Suto, R. S. Beckmann, M. Volonteri, Y. Lin, Y. Dubois, S. K. Yi, C. Pichon, K. Kraljic, M. Park, J. Devriendt, **S. Han**, W. Chen; accepted to **A&A**, arXiv:2401.03712

Diffuse Light in Milky-Way like Haloes **2024**
E. Contini, **S. Han**, S. Jeon, J. Rhee, S. K. Yi; **ApJL**, 962, 7

On the Significance of the Thick Disks of Disk Galaxies **2024**
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**, 271, 25

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

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 rd 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

KISTI HPC R&D Innovation Support Program (Grand Challenge) KSC-2019-CHA-0006	2019
KISTI HPC R&D Innovation Support Program (Creative Research) 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	2018–2023

TEACHING EXPERIENCE

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	Jan 2016–Jan 2017

AWARDS AND SCHOLARSHIPS

Brain Korea 21 Plus , National Research Foundation of Korea	2017–2023
The 6th Asian-Pacific Astronomy Olympiad , won the 1-st prize	Dec 2010

OTHER ACTIVITIES

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