SAN HAN

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

EDUCATION

Yonsei University

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

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

RESEARCH EXPERIENCE

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

– Supervised by Prof. Sukyoung 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–now**

– Supervised by Prof. Sukyoung 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. Sukyoung 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
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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

Cosmic evolution of black hole-spin and galaxy orientations: clues from the NewHorizon and Galactica simulations   (Submitted) **Dec 2023**
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; submitted to **A&A**, arXiv:2401.03712

Accepted

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$^{\rm rd}$ 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)   **2019**
KSC-2019-CHA-0006

KISTI HPC R&D Innovation Support Program (Creative Research)   **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

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

Brain Korea 21 Plus, National Research Foundation of Korea   **2017-2023**
The 6th Asian-Pacific Astronomy Olympiad, won the I-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**