Jung Minyong

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wispedia@snu.ac.kr

Research Interset

Cosmological simulations; dwarf galaxies; ultra-faint dwarfs; machine learning; disk formation; direct N-body methods; star cluster formation

Education

Seoul National University – SNU Mar. 2017 – Feb. 2021
Bachelor of Science - Double Major in Physics Education and Astronomy

Seoul National University – SNU Mar. 2021 – Present
MS/PhD Student in Physics

Primary Refereed Publications

Dark Matter Deficient Galaxies Produced Via High-velocity Galaxy Collisions In High-resolution Numerical Simulations. *Astrophys. J. 899, 25 (2020).*
E. -J. Shin[†], **M. Jung**[†], G. Kwon[†] , J. -H Kim[*], J. Lee, Y. Jo, B. K. Oh

Merger-tree-based Galaxy Matching: A Comparative Study across Different Resolutions. *Astrophys. J. 965, 156 (2024)*
M. Jung[*], Kim, J. -H[*], B. K. Oh, S. E. Hong, J. Lee, and J. Kim

The *AGORA* High-resolution Galaxy Simulations Comparison Project. IV: Halo and Galaxy Mass Assembly in a Cosmological Zoom-in Simulation at $z \leq 2$. *Astrophys. J. 968, 125 (2024)*
S. Roca-Fàbrega[*], J. -H Kim[*], J. R. Primack[*], **M. Jung**[*], and other 23 co-authors for the *AGORA* Collaboration

The *AGORA* High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo. *Astrophys. J. 964, 123 (2024)*
M. Jung[*], S. Roca-Fàbrega[*], J. -H Kim[*], and other 18 co-authors for the *AGORA* Collaboration

Evolution of Nuclear Star Cluster in Dwarf Galaxy through Mergers and In-Situ Star Formation. *Submitted to ApJ*
Y. Jo[*], **M. Jung**, S. Kim, G. L. Bryan, J. -H Kim, and Lee, A.

The *AGORA* High-resolution Galaxy Simulations Comparison Project. VII: Satellite quenching in zoom-in simulation of a Milky Way-mass halo. *Submitted to A&A*
R. Rodríguez-Cardoso[*], S. Roca-Fàbrega[*], **M. Jung**[*], T. H. Nguyen[*], and other 18 co-authors for the *AGORA* Collaboration

The *AGORA* High-resolution Galaxy Simulations Comparison Project. VIII: Formation and Evolution of Disk in Milky Way Mass Progenitor Galaxies at $1 < z < 5$. *In prep.*
M. Jung[*], J. -H Kim[*], T. H. Nguyen[*], R. Rodríguez-Cardoso[*] et al.

Other Refereed Publications

The *AGORA* High-resolution Galaxy Simulations Comparison Project. VI: Similarities and Differences in the Circumgalactic Medium. *Astrophys. J. 962, 29 (2024)*
S. Strawn[*], S. Roca-Fàbrega[*], J. R. Primack[*], J. -H Kim[*], and other 28 co-authors including **M. Jung**

Inferring Cosmological Parameters on SDSS via Domain-generalized Neural Networks and Light-cone Simulations. *Astrophys. J. 975, 38 (2024)*
J. -Y Lee, J. -H Kim[*], **M. Jung**, and other 6 co-authors

Awards

Outstanding Presentation Award Apr. 23, 2023
Oral Session (#) *The Korean Physical Society*

Outstanding Project Award (1st Place) June. 30, 2023
The 14^{th} KIAS CAC Summer School on Artificial Intelligence & Parallel Computing (#) *Korea Institute for Advanced Study*

Outstanding Project Award (3rd Place) Feb. 24, 2024
2024 Winter School on Programming for Accelerators - Advanced Course (#) *SNU THUNDER Research Group*

[†]these authors contributed equally to this work
[*]corresponding author

Undergraduate Thesis

시계열 분석을 통한 코로나-19 확진자 증감 예측 – Free Energy Minimization 알고리즘을 기반으로 –
(Forecasting COVID-19 Case Fluctuations Through Time Series Analysis — Based on the Free Energy Minimization Algorithm —)
Advisor: Junghyo Jo

IllustrisTNG 시뮬레이션에서 암흑물질 없는 은하의 통계적 성질
(Statistical Properties of Dark Matter-Deficient Galaxies in the IllustrisTNG Simulation)
Advisor: Myungshin Im

Oral Presentaions

Numerical Galaxy Formation Mini-Workshop (#) Jan. 16. 2020
Dark matter deficient galaxies produced via high-velocity galaxy collisions in high-resolution numerical simulations *Shin, E. -J & M. Jung*

2023 Darwin+NGF Workshop (#) Jan. 11. 2023
The AGORA High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo *M. Jung*

2023 KPS spring meeting (#) Apr. 21. 2023
The AGORA High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo *M. Jung*

XV International Conference on Gravitation, Astrophysics and Cosmology (ICGAC15, #) Jul. 3. 2023
The AGORA High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo *M. Jung*

2023 Santa Cruz Galaxy Workshop (#) Aug. 10. 2023
The AGORA High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo *M. Jung*

SNU ARC 2nd H.S. Yun Astronomy Workshop (#) Aug. 30. 2023
The AGORA High-resolution Galaxy Simulations Comparison Project. V: Satellite Galaxy Populations In A Cosmological Zoom-in Simulation of A Milky Way-mass Halo *M. Jung*

2023 108th KAS Fall Meeting (#) Oct. 18. 2023
Merger-tree-based Galaxy Matching: A Comparative Study across Different Resolutions *M. Jung*

The 2nd Workshop on Galaxies and Dark Matter (Hosted by SNU LAMP Foundation) Feb. 27. 2024
The AGORA High-resolution Galaxy Simulations Comparison Project: A MW-mass Galaxy and Substructures in a Cosmological Zoom-in Simulation *M. Jung*

The 2nd CTP Bosan Workshop: AGORA in Asia + 5th Numerical Galaxy Formation Meeting in Korea (#) May. 7. 2024
The Satellite Galaxy Population in the AGORA CosmoRun, and Resolution Convergence Test in the TNG Simulation *M. Jung*

2024 110th KAS Fall Meeting (#) Oct. 16. 2024
The AGORA High-resolution Galaxy Simulations Comparison Project. IX: Formation and Evolution of Disk in Milky Way Mass Progenitor Galaxies at $1 < z < 5$ *M. Jung*

The 3rd Workshop on Galaxies and Dark Matter (#) Feb. 27. 2025
The AGORA High-resolution Galaxy Simulations Comparison Project. IX: Formation and Evolution of Disk in Milky Way Mass Progenitor Galaxies at $1 < z < 5$ *M. Jung*

Poster Presentations

2023 DARWIN-Dwarf galaxy researcher workshop (#) Aug. 16, 2023
Merger-tree-based Galaxy Matching: A Comparative Study across Different Resolutions *M. Jung*

The 11th KIAS Workshop on Cosmology & Structure Formation (#) Oct. 27, 2024
The AGORA High-resolution Galaxy Simulations Comparison Project. IX: Formation and Evolution of Disk in Milky Way Mass Progenitor Galaxies at $1 < z < 5$ *M. Jung*

Experience

Undergraduate Internship Mar. 2019 – Aug. 2020
Department of Physics & Astronomy (Advisor: Prof. Kim Ji-hoon) *SNU*

- Studied cosmological hydrodynamical simulations
- Investigated the kinematics of dark matter and baryons in galaxies via simulations
- Conducted a statistical analysis of the spin of galaxies

Technical Skills, Language Skills, and Interests

Programming Languages: Python, C, C++, CUDA
Programs: ENZO, GADGET-4, MUSIC
Libraries: yt, scipy, pandas, pytorch
Interests: Cosmological simulation, Machine learning, Cosmology