

Postdoctoral Research Associate  
Department of Astrophysical Sciences  
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## Employment

10/2022–present    **Postdoctoral Research Associate**, Princeton University

## Education

09/2016–08/2022    **PhD in Astronomy**, Seoul National University

03/2012–08/2016    **BS in Astronomy (minor: physics)**, Seoul National University

## Honors

08/2022            **Best PhD Thesis Award**, College of Natural Sciences, Seoul National University

03/2017–02/2022    **Global Ph.D. Fellowship**, National Research Foundation of Korea

## Advising Experience

2022–2024            **Woorak Choi**, PhD student in Yonsei University, *Giant molecular clouds in the nuclear ring of barred galaxies*, co-advised with Prof. Aeree Chung and Dr. Chang-Goo Kim

## Code Development Contributions

2021–present        Core developer of the TIGRESS++ project (private repository)

2024                **tesphere**: A python implementation of the turbulent equilibrium sphere model

2023                **GRID-dendro**: A python implementation of the hierarchical structure identification algorithm

2018–2019            **James-0BC**: MPI + C++ implementation (in *Athena++* code) of the James algorithm for self-gravity in 3D Cartesian/cylindrical coordinates.

## Competitively-Obtained Computing Time

2021                National Supercomputing Center, KISTI, Korea ( $1.4 \times 10^7$  core-hours)  
*Co-I: Effects of Magnetic Fields on Star Formation in Galactic Nuclear Rings and Formation of Circumnuclear Disks*

2019                National Supercomputing Center, KISTI, Korea ( $2.0 \times 10^7$  core-hours)  
*Co-I: Understanding Star Formation in Centers of Disk Galaxies*

## Publications

*Submitted*            **Moon, S.** and Ostriker, E. C. **Prestellar Cores in Turbulent Clouds I. Numerical Modeling and Evolution to Collapse.** (*submitted to ApJ*)

*Submitted*            **Moon, S.** and Ostriker, E. C. **Prestellar Cores in Turbulent Clouds II. Properties of Critical Cores.** (*submitted to ApJ*)

11/2024            **Moon, S.** and Ostriker, E. C. (2024). **Theory of Turbulent Equilibrium Spheres with Power-law Linewidth–Size Relation.** *The Astrophysical Journal*, 975, 295.

07/2024 Choi, W. et al. (including **Moon, S.**). [WISDOM Project - XXI. Giant molecular clouds in the central region of the barred spiral galaxy NGC 613: a steep size-linewidth relation](#). *Monthly Notices of the Royal Astronomical Society*, 531, 4045.

04/2023 **Moon, S.**, Kim, W.-T., Kim, C.-G., and Ostriker, E. C. (2023). [Effects of Magnetic Fields on Gas Dynamics and Star Formation in Nuclear Rings](#). *The Astrophysical Journal*, 946, 114.

01/2022 **Moon, S.**, Kim, W.-T., Kim, C.-G., and Ostriker, E. C. (2022). [Effects of Varying Mass Inflows on Star Formation in Nuclear Rings of Barred Galaxies](#). *The Astrophysical Journal*, 925, 99.

06/2021 **Moon, S.**, Kim, W.-T., Kim, C.-G., and Ostriker, E. C. (2021). [Star Formation in Nuclear Rings with the TIGRESS Framework](#). *The Astrophysical Journal*, 914, 9.

04/2019 **Moon, S.**, Kim, W.-T., and Ostriker, E. C. (2019). [A Fast Poisson Solver of Second-order Accuracy for Isolated Systems in Three-dimensional Cartesian and Cylindrical Coordinates](#). *The Astrophysical Journal Supplement Series*, 241, 24.

09/2016 Kim, W.-T. and **Moon, S.** (2016). [Equilibrium Sequences and Gravitational Instability of Rotating Isothermal Rings](#). *The Astrophysical Journal*, 829, 45.

### Recent Presentations (past 5 years)

11/2024 **Seminar**, American Museum of Natural History, New York, USA

08/2024 **Invited Talk**, *Star Formation Workshop*, McMaster University, Hamilton, Canada

06/2024 **Seminar**, Kyung Hee Univ., Suwon, Korea

06/2024 **Seminar**, Chungnam Nat'l Univ., Daejeon, Korea

06/2024 **Seminar**, Korea Astronomy and Space Science Institute, Daejeon, Korea

06/2024 **Seminar**, Yonsei Univ., Seoul, Korea

06/2024 **Seminar**, Seoul Nat'l Univ., Seoul, Korea

06/2024 **Seminar**, Center for Computational Astrophysics, New York, USA

05/2024 **Poster**, *The Early Phase of Star Formation*, Ringberg Castle, Germany

02/2024 **Seminar**, Space Telescope Science Institute, Baltimore, USA

02/2024 **Seminar**, *Star Formation/ISM Rendezvous*, Princeton Univ., Princeton, USA

12/2023 **Seminar**, *Bahcall Lunch*, Institute of Advanced Study, Princeton, USA

06/2023 **Poster**, *The Physics of Star Formation*, Lyon, France

05/2023 **Invited Talk**, *Athena++ Workshop*, New York, USA

04/2023 **Contributed Talk**, *Galactic Center Workshop*, Granada, Spain

08/2022 **Contributed Talk**, *IAU Symposium 373*, Busan, Korea (*e-talk*)

06/2022 **Poster**, AAS 240, Pasadena, USA

04/2022 **Contributed Talk**, *KAS Spring Meeting*, Busan, Korea

01/2022 **Seminar**, Korea Astronomy and Space Science Institute, Daejeon, Korea

01/2022 **Workshop**, *Origins Workshop*, Salt Lake City, USA (*virtual*)

11/2021 **Seminar**, Heidelberg Univ., Germany (*virtual*)

11/2021	<b>Seminar</b> , Center for Computational Astrophysics, New York, USA ( <i>virtual</i> )
10/2021	<b>Contributed Talk</b> , <i>KAS Fall Meeting</i> , Jeju, Korea
04/2021	<b>Contributed Talk</b> , <i>KAS Spring Meeting</i> ( <i>virtual</i> )
01/2021	<b>Workshop</b> , <i>2nd Numerical Galaxy Formation Mini-Workshop</i> , Seoul, Korea ( <i>virtual</i> )
01/2020	<b>Workshop</b> , <i>Numerical Galaxy Formation Mini-Workshop</i> , Seoul, Korea
11/2019	<b>Seminar</b> , <i>Star Formation/ISM Rendezvous</i> , Princeton Univ., Princeton, USA
07/2019	<b>Invited Talk</b> , <i>ASTRONUM 2019</i> , Paris, France
04/2019	<b>Contributed Talk</b> , <i>KAS Spring Meeting</i> , Busan, Korea
03/2019	<b>Invited Talk</b> , <i>Athena++ Workshop</i> , Las Vegas, USA

### Professional Services and Teaching Experience

2024–present	<b>Referee</b> , The Astrophysical Journal, Astronomische Nachrichten
2022–present	<b>Regular Host</b> , Astro-coffee discussion at Princeton Astrophysics
2021–2022	<b>Founder and Organizer</b> , SNU Astronomy Graduate Student Journal Club
2019	<b>Founding Member</b> , SNU Open Astronomy Innovation Group
2018–2019	<b>Founder and Organizer</b> , SNU Astronomy Graduate Student Colloquium (aka Golloquium)
2017	<b>Graduate Student Representative</b> in SNU Astronomy Department
2017	<b>Teaching Assistant</b> , Computational Astronomy
2016	<b>Teaching Assistant</b> , Introduction to Astrophysics

December 27, 2024