

Employment

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

Education

09/2016–08/2022 **Ph.D in Astronomy**, Seoul National University

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

Honors

08/2022 **Best PhD Thesis Award**, SNU CNS

03/2017–02/2022 **Global Ph.D. Fellowship**, NRF 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

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

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

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

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

Publications

In press **Moon, S.** and Ostriker, E. C. Theory of Turbulent Equilibrium Spheres with Power-Law Linewidth-Size Relation. *Accepted for publication in ApJ*. <https://arxiv.org/abs/2409.03226>

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. <https://academic.oup.com/mnras/article/531/4/4045/7688465>

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. <https://doi.org/10.3847/1538-4357/acc250>

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. <http://dx.doi.org/10.3847/1538-4357/ac3a7b>

- 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. <http://dx.doi.org/10.3847/1538-4357/abfa93>
- 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. <http://dx.doi.org/10.3847/1538-4365/ab09e9>
- 09/2016 Kim, W.-T. and **Moon, S.** (2016). Equilibrium Sequences and Gravitational Instability of Rotating Isothermal Rings. *The Astrophysical Journal*, 829, 45. <http://dx.doi.org/10.3847/0004-637X/829/1/45>

Presentations (recent 5 years)

- 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**, KASI, Daejeon, Korea
- 06/2024 **Seminar**, Yonsei Univ., Seoul, Korea
- 06/2024 **Seminar**, Seoul Nat'l Univ., Seoul, Korea
- 06/2024 **Seminar**, CCA Galaxy Group Meeting, 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, USA
- 12/2023 **Seminar**, Bahcall Lunch, Princeton, USA
- 06/2023 **Poster**, The Physics of Star Formation, Lyon, France
- 05/2023 **Invited Talk**, ATHENA++ Workshop 2023, New York, USA
- 04/2023 **Contributed Talk**, Galactic Center Workshop, Granada, Spain
- 08/2022 **Contributed Talk**, IAUS373, Busan, Korea (*e-talk*)
- 06/2022 **Poster**, AAS240, Pasadena, USA
- 04/2022 **Contributed Talk**, 2022 KAS Spring Meeting, Busan, Korea
- 01/2022 **Seminar**, TAG Special Seminar, KASI, Daejeon, Korea
- 01/2022 **Workshop**, Origins Workshop, Salt Lake City, USA (*virtual*)
- 11/2021 **Seminar**, Internal Group Meeting, Heidelberg, Germany (*virtual*)
- 11/2021 **Seminar**, CCA Galaxy Group Meeting, New York, USA (*virtual*)
- 10/2021 **Contributed Talk**, 2021 KAS Fall Meeting, Jeju, Korea
- 04/2021 **Contributed Talk**, 2021 KAS Spring Meeting (*virtual*)
- 01/2021 **Workshop**, 2nd Numerical Galaxy Formation Mini-Workshop, Seoul, Korea (*virtual*)
- 01/2020 **Workshop**, Numerical Galaxy Formation Mini-Workshop, Seoul, Korea

11/2019	Seminar , Star Formation/ISM Rendezvous, Princeton, USA
07/2019	Invited Talk , ASTRONUM 2019, Paris, France
04/2019	Contributed Talk , 2019 KAS Spring Meeting, Busan, Korea
03/2019	Invited Talk , ATHENA++ Workshop 2019, Las Vegas, USA

Competitively-Obtained Computing Time

2021	National Supercomputing Center, KISTI, Korea (1.4×10^7 core-hours) <i>Co-I: Effects of Magnetic Fields on Star Formation in Galactic Nuclear Rings and Formation of Circumnuclear Disks</i>
2019	National Supercomputing Center, KISTI, Korea (2.0×10^7 core-hours) <i>Co-I: Understanding Star Formation in Centers of Disk Galaxies</i>

Departmental Services and Teaching Experience

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

Academic References

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