Jeonghoon (Jay) Lim CurriculumVitae

Department of Physics and Astronomy,
Iowa State University
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Research Interests

- **Computational Astrophysics:** Magnetohydrodynamics, Particle-Mesh Methods
- **Protoplanetary Disks:** MHD Turbulence, Non-ideal MHD Effects, Planetesimal and Planet Formation
- **Turbulence:** MHD Turbulence Dynamo, Decaying Turbulence

Education

- **Doctor of Philosophy** **Fall 2020 - Expected in Spring 2026**
  Ph.D in Astrophysics
  Department of Physics and Astronomy, Iowa State University
  Major Professor: Dr. Jacob B. Simon
- **Master's Degree** **Spring 2018 - Spring 2020**
  M.S. in Astronomy
  Department of Astronomy and Space Science, Chungnam National University, South Korea
  Major Professor: Dr. Jungyeon Cho
  Thesis title: "Statistics of Turbulence Driven by Solenoidal and Compressive Drivings"
- **Bachelor's Degree** **Spring 2012 - Spring 2018**
  B.S. in Astronomy
  Department of Astronomy and Space Science, Chungnam National University, South Korea

Research Experience

Graduate Research Assistant **Spring 2021 - Present**

*Department of Physics and Astronomy, Iowa State University; supported by **NASA FINESST Award***

- Developing the turbulence forcing module and incorporating and making it available in the state-of-the-art developed code (Athena).
- Investigating the interaction between turbulence and streaming instability and how it affects planetesimal formations.

Graduate Research Assistant **Spring 2018 - Spring 2020**

Department of Astronomy and Space Science, Chungnam National University, South Korea

- Evaluated turbulence dynamo in MHD turbulence using compressive driving scheme.
- Investigated decay of hydrodynamic turbulence with non-isothermal equation of state. This project is published to Journal of the Korean Astronomical Society.

Teaching Experience as a Graduate Student

Graduate Teaching Assistant

- *Department of Physics and Astronomy, Iowa State University*
  - PHYS 111 Labs (General Physics I - Laboratories, Fall 2020)
    - Led lab experiments and discussions
    - Provided written feedback to Lab Notebook Assignment
    - Held weekly help room

- *Department of Astronomy and Space Science, Chungnam National University, South Korea*
  - Galactic Astronomy and Practice (Junior Level, Spring 2019)
    - Organized study sessions
    - Provided oral and written feedback for weekly assignments
    - Graded student assignments on a weekly basis

Publications and Professional Presentations

Publications

- **Jeonghoon Lim**, Jacob B. Simon, Rixin Li, Philip J. Armitage, Daniel Carrera, Wladimir Lyra, David G. Rea, Chao-Chin Yang, Andrew N. Youdin, "Streaming Instability and Turbulence: Conditions for Planetesimal Formation", DOI: 10.3847/1538-4357/ad47a2
- **Jeonghoon Lim**, Jungyeon Cho, and Heesun Yoon (2020). "Generation of Solenoidal Modes and Magnetic Fields in Turbulence Driven by Compressive Driving", The Astrophysical Journal, 893, 75, DOI: iopscience.iop.org/article/10.3847/1538-4357/ab8066
- **Jeonghoon Lim** and Jungyeon Cho (2020). "Decay of Turbulence in Fluids with Polytropic Equations of State", Journal of the Korean Astronomical Society, 53, 49, DOI: http://koreascience.or.kr/article/JAKO202012941166990.page

Oral Presentations

- Clumping of mm-cm sized solid particles in the presence of turbulent gas, Jeonghoon Lim, Astro Seminar, Iowa State University, Nov 4, 2022
- Generation of Solenoidal Modes and Magnetic Fields in Turbulence Driven by Compressive Driving, Jeonghoon Lim, Astro Seminar, Iowa State University, Oct 30, 2020
- Generation of Magnetic Fields in Turbulence Driven by Compressive Driving, Jeonghoon Lim and Jungyeon Cho, Magnetic Fields in the Universe 7, Quy Nhon, Vietnam, February 16-22, 2020
- Generation of Solenoidal Modes in Turbulence Driven by Compressive Driving, Jeonghoon Lim and Jungyeon Cho, Korean Astronomical Society Fall Meeting, Seoul, South Korea, October 16-18, 2019

Professional Services

- Local Organizing Committee at 8th East-Asia School and Workshop on Laboratory, Space, and Astrophysical Plasmas, July 30 - August 3, 2018

Honors/Awards

- Future Investigators in NASA Earth and Space Science and Technology (FINESST, $50,000 per year) 2022 - 2025

- The Korean Government Scholarship Program for Study Overseas 2020-2022
- Journal of the Korean Astronomical Society Award for Graduate Research 2020
- Graduate Academic Merit Scholarship, Chungnam National University 2019
- Graduate Academic Merit Scholarship, Chungnam National University 2018
- Undergrad Academic Merit Scholarship, Chungnam National University 2016

Programs and Software

- **Languages:** C, Julia, Python, VISIT, Fortran, IDL
- **Community Research Numerical Tool:** Athena

References

- Dr. Jacob B. Simon
  Iowa State University
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  Ames, IA 50011
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  Phone: 515-294-2219