Jeong-Gyu Kim | Curriculum Vitae

Department of Astrophysical Sciences, 4 Ivy Lane
Princeton University, Princeton – NJ 08544, USA
+1 (609) 933 8470 • kimjg@astro.princeton.edu

Education

Seoul National University — **Seoul, Korea**
Ph.D. in Astronomy — *08/2018*
Advisor: Prof. Woong-Tae Kim

M.S. in Astronomy — *02/2012*

B.S. in Astronomy, cum laude — *02/2010*

Employment and Research Experience

Lyman Spitzer, Jr. Postdoctoral Fellow — **Princeton, NJ, USA**
Department of Astrophysical Sciences, Princeton University — *2018–present*

Visiting Student Research Collaborator — **Princeton, NJ, USA**
Department of Astrophysical Sciences, Princeton University — *2014–2016 (2mo/yr)*
Mentor: Prof. Eve Ostriker

Honors

Lyman Spitzer, Jr. Fellowship
Princeton University — *2018–2021*

Outstanding Thesis Award
College of Natural Sciences, Seoul National University — *2018*

National Junior Research Fellowship (Grants obtained as PI: \$41,300/*yr*)
National Research Foundation of Korea — *2014–2018*
Project name: *"Expansion of Dusty Magnetized H II Regions and Their Dynamic Impact on the Interstellar Medium"*

SNU Fellowship for the Next Generation of Basic Research
Seoul National University — *2013*

Scholarship for Superior Academic Performance
Brain Korea 21 — *2012*

Lotte Scholarship
Full tuition awarded by Lotte Foundation — *2010–2011*

National Scholarship For Science and Engineering
Full tuition awarded by National Research Foundation of Korea — *2003–2004, 2008–2009*

Publications

Journal Publications – ADS Search

** Most important publications ; # Led by a student under direct supervision

13. *Stellar Wind Bubbles in Turbulent Clouds: A Fractal Theory Validated with Hydrodynamic Simulations*
Lancaster, L., Ostriker, E. C., **Kim, J.-G.**, & Kim, C.-G., *submitted to ApJ 12/2020*
12. *** Star Formation Efficiency and Dispersal of Giant Molecular Clouds with UV Radiation Feedback: Dependence on Gravitational Boundedness and Magnetic Fields*
Kim, J.-G., Ostriker, E. C., & Filippova, N. arxiv:2011.07772 *(submitted to ApJ 10/2020)*
11. *The environmental dependence of the X_{CO} conversion factor*
Gong, M., Ostriker, E. C., Kim, C.-G., & **Kim, J.-G.** 2020, ApJ, 903, 142
10. *Factories of CO-dark gas: molecular clouds with limited star formation efficiencies by far-ultraviolet feedback*
Inoguchi, M., Hosokawa, T., Mineshige, S., & **Kim, J.-G.** 2020, MNRAS, 497, 5061I
9. *# Diffuse Ionized Gas in Simulations of Multiphase, Star-forming Galactic Disks*
Kado-Fong, E., **Kim, J.-G.**, Ostriker, E. C., & Kim, C.-G. 2020, ApJ, 897, 143
8. *Modeling UV Radiative Feedback from Massive Stars: III. Escape of Radiation from Star-Forming Giant Molecular Clouds*
Kim, J.-G., Kim, W.-T., & Ostriker, E. C. 2019, ApJ, 883, 102
7. *** Modeling UV Radiative Feedback from Massive Stars: II. Dispersal of Star-Forming Giant Molecular Clouds by Photoionization and Radiation Pressure*
Kim, J.-G., Kim, W.-T., & Ostriker, E. C. 2018, ApJ, 859, 68
6. *Modeling UV Radiative Feedback from Massive Stars: I. Implementation of Adaptive Ray Tracing Method and Tests*
Kim, J.-G., Kim, W.-T., Ostriker, E. C.,& Skinner A. M. 2017, ApJ, 851, 93
5. *Disruption of Molecular Clouds by Expansion of Dusty H II Regions*
Kim, J.-G., Kim, W.-T., & Ostriker, E. C. 2016, ApJ, 819, 137
4. *Instability of Magnetized Ionization Fronts Surrounding H II regions*
Kim, J.-G., Kim, W.-T. 2014, ApJ, 797, 135
3. *Nature of Wiggle Instability of Galactic Spiral Shocks*
Kim, W.-T., Kim, Y., & **Kim, J.-G.** 2014, ApJ, 789, 68
2. *Instability of Evaporation Fronts in the Interstellar Medium*
Kim, J.-G., Kim, W.-T. 2013, ApJ, 779, 48
1. *Gravitational Instability of Rotating, Pressure-Confined, Polytropic Gas Disks with Vertical Stratification*
Kim, J.-G., Kim, W.-T., Seo Y. M., & Hong, S. S. 2012, ApJ, 761, 131

Papers in Preparation

Implementation of a Module for Heating and Cooling in the ISM Coupled with Radiative Transfer
Kim, J.-G., Gong, M., Kim, C.-G., & Ostriker, E. C. *2021, in preparation*

Molecular Cloud Destruction Controlled by Radiation, Winds, and Supernovae Feedback
Kim, J.-G., Lancaster, L., Kim, C.-G., & Ostriker, E. C. *2021, in preparation*

r-process Enrichment During the Formation of a Globular Cluster: Case of M15
Hotokezaka, K., **Kim, J.-G.**, Beniamini, P., & Cen, R. *2021, in preparation*

Selected Conferences and Talks

- **Invited Seminar**, *Modeling Dispersal of Molecular Clouds by UV Radiation Feedback*
  CCAPP (Zoom) Seminar, Ohio State University, OH, USA, Nov 24, 2020
- **Invited Seminar**, *Modeling Dispersal of Molecular Clouds by UV Radiation Feedback*
  Thunch (Zoom) Seminar, Princeton University, NJ, USA, Nov 12, 2020
- **Invited Seminar**, *Modeling Dispersal of Molecular Clouds by UV Radiation Feedback*
  Astronomy (Zoom) Seminar, University of Kentucky, KY, USA, Oct 29, 2020
- **Invited Talk**, *Modeling Dispersal of Molecular Clouds by UV Radiation Feedback*
  Ringberg Workshop on Computational Galaxy Formation, Tegernsee, Germany, Apr 20, 2020 (Cancelled due to COVID-19)
- **Invited Review**, *Numerical Modeling of Warm Ionized Medium: A Large-scale Perspective*
  WIM in Galaxies Workshop, Green Bank Observatory, WV, USA, Oct 8, 2019
- **Contributed Talk**, *Modeling UV Radiation Feedback from Massive Stars*
  The Self-organized Star Formation Process, Institut Pascal, Orsay, France, Sep 30, 2019
- **Special Seminar**, *Modeling UV Radiation Feedback from Massive Stars*
  Korea Astronomy and Space Science Institute, Daejeon, South Korea, Aug 29, 2019
- **Special Colloquium**, *Modeling UV Radiation Feedback from Massive Stars*
  Max Planck Institute for Radio Astronomy, Bonn, Germany, Jul 3, 2019
- **Contributed Talk**, *Diffuse Ionized Gas in TIGRESS Simulations of the ISM*
  European Week of Astronomy & Space Science 2019, Lyon, France, Jun 27, 2019
- **Contributed Talk**, *Dispersal of GMCs by UV Radiation Feedback from Massive Stars*
  Zooming in on Star Formation, Nafplio, Greece, Jun 13, 2019
- **Invited Talk**, *Adaptive Ray Tracing in Athena*
  Athena++ Workshop 2019, Las Vegas, USA, Mar 18–22, 2019
- **Poster**, *Modeling UV Radiation Feedback from Massive Stars: Dispersal of GMCs and Escape of Radiation*
  van de Hulst Centennial Symposium: The interstellar Medium of Galaxies: Status and Future Perspectives, Leiden, the Netherlands, Nov 5–9, 2018
- **Poster**, *Dispersal of Giant Molecular Clouds by UV Radiation Feedback from Massive Stars*
  15th Potsdam Thinkshop: The role of feedback in galaxy formation: from small-scale winds to large-scale outflows, Potsdam, Germany, Sep 3–7, 2018

- **Poster**, *Dispersal of Giant Molecular Clouds by Photoionization and Radiation Pressure*
  231st AAS Meeting, Washington D.C., USA, Jan 11, 2018
- **Invited Colloquium**, *Dispersal of Giant Molecular Clouds by Photoionization and Radiation Pressure*
  Osaka University, Japan, Dec 21, 2017
- **Contributed Talk**, *Dispersal of Molecular Clouds by Photoionization and Radiation Pressure*
  Star Formation in Different Environments, Quy Nhon, Vietnam, Aug 7, 2017
- **Seminar Talk**, *Modeling Radiative Feedback from Massive Stars*
  Star Formation/ISM Rendezvous, Princeton University, USA, Nov 28, 2016
- **Contributed Talk**, *Modeling Radiative Feedback from Massive Stars: Implementation of Adaptive Ray Tracing Method into the Athena Code*
  ASTRONUM 2016 , Monterey, USA, Jun 8, 2016

Mentoring

- **Lachlan Lancaster**, Princeton PhD student, *Stellar Wind Bubble Expansion in the Turbulent ISM* (thesis project), co-advised with Prof. Eve Ostriker and Dr. Chang-Goo Kim, 2019–present
- **Erin Kado-Fong**, Princeton PhD student, *Diffuse Ionized Gas in Simulations of Multiphase, Star-forming Galactic Disks* (semester project), co-advised with Prof. Eve Ostriker and Dr. Chang-Goo Kim, 2018–2020
- **Nina Filippova**, Princeton undergraduate, *Numerical Magnetohydrodynamics Simulations of Star Formation and Giant Molecular Cloud Destruction* (senior thesis), co-advised with Prof. Eve Ostriker, 2019–2020

Teaching Experience

- *Man and the Universe* (non-major course), Teaching Assistant for Prof. Jonghak Woo, Fall 2012
- *Observational Astronomy*, Teaching Assistant for Prof. Jonghak Woo, Spring 2012

Competitively-Obtained Computing Time

Co-I, 1.6 M CPU-hrs from KISTI on Tachyon2,
"*Galactic Star Formation and Outflows Regulated by UV Radiation and Supernova Feedback*", 2017

Co-I, 1.2 M CPU-hrs from KISTI on Tachyon2,
"*Expansion of Dusty H II Regions and Its Dynamical Impact on the Instestellar Medium*", 2016

Computer Skills

Programming Language: C/C++, MPI, Python, IDL

Visualization/Software: DDT, GDB, Git, yt, VisIt, ParaView

Simulation Code: *Athena/Athena++*

Other Experience

Journal referee: ApJ, MNRAS

Military Service: Served as a weather observer in the Republic of Korea Air Force, 2005-2007

Departmental Service:

- SNU Astronomy Journal Club Coordinator, 2011–2013
- Part-time lecturer for *An Introduction to IDL Programming for Undergraduates*, Feb 2014
- Lead editor of *A quick guide to SNU astro graduate students.*, 2014
- Volunteered multiple times for Astronomy Open House, 2010–2014

Academic References

- **Prof. Woong-Tae Kim**
  wkim@astro.snu.ac.kr
  Department of Physics and Astronomy
  Seoul National University
  +82-2-880-6769

- **Prof. Takashi Hosokawa**
  hosokawa@tap.scphys.kyoto-u.ac.jp
  Department of Physics
  Kyoto University
  +81-75-753-3840

- **Prof. Eve C. Ostriker**
  eco@astro.princeton.edu
  Department of Astrophysical Sciences
  Princeton University
  +1-609-258-7240