

# Jeong-Gyu Kim | Curriculum Vitae

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## Education

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<b>Seoul National University</b>	<b>Seoul, Korea</b>
<i>Ph.D. in Astronomy</i>	08/2018
<i>Advisor: Prof. Woong-Tae Kim</i>	
<i>M.S. in Astronomy</i>	02/2012
<i>B.S. in Astronomy, cum laude</i>	02/2010

## Employment and Research Experience

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<b>Lyman Spitzer, Jr. Postdoctoral Fellow</b>	<b>Princeton, NJ, USA</b>
<i>Department of Astrophysical Sciences, Princeton University</i>	2018–present
<b>Visiting Student Research Collaborator</b>	<b>Princeton, NJ, USA</b>
<i>Department of Astrophysical Sciences, Princeton University</i>	2014–2016 (2mo/yr)
<i>Mentor: Prof. Eve Ostriker</i>	

## Honors

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<b>Lyman Spitzer, Jr. Fellowship</b>	
<i>Princeton University</i>	2018–2021
<b>Outstanding Thesis Award</b>	
<i>College of Natural Sciences, Seoul National University</i>	2018
<b>National Junior Research Fellowship</b> (Grants obtained as PI: \$41,300/yr)	
<i>National Research Foundation of Korea</i>	2014–2018
<i>Project name: “Expansion of Dusty Magnetized H II Regions and Their Dynamic Impact on the Interstellar Medium”</i>	
<b>SNU Fellowship for the Next Generation of Basic Research</b>	
<i>Seoul National University</i>	2013
<b>Scholarship for Superior Academic Performance</b>	
<i>Brain Korea 21</i>	2012
<b>Lotte Scholarship</b>	
<i>Full tuition awarded by Lotte Foundation</i>	2010–2011
<b>National Scholarship For Science and Engineering</b>	
<i>Full tuition awarded by National Research Foundation of Korea</i>	2003–2004, 2008–2009

## Publications

### Journal Publications – ADS Search.....

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

14. *Efficiently Cooled Stellar Wind Bubbles in Turbulent Clouds: II. Numerical Simulations and Theory Compared*  
Lancaster, L., Ostriker, E. C., **Kim, J.-G.**, & Kim, C.-G., *ApJ* accepted
13. *Efficiently Cooled Stellar Wind Bubbles in Turbulent Clouds: I. Theory and Applications to Star-Forming Clouds*  
Lancaster, L., Ostriker, E. C., **Kim, J.-G.**, & Kim, C.-G., *ApJ* accepted
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 *ApJ* accepted
11. *The environmental dependence of the  $X_{\text{CO}}$  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, Polytopic 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

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- **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

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- **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

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- *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

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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 Interstellar Medium”*, 2016

## Computer Skills

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

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

**Simulation Code:** *Athena/Athena++*

## Other Experience

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**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

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◦ **Prof. Woong-Tae Kim**

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◦ **Prof. Takashi Hosokawa**

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