Chang-Goo Kim
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Curriculum Vitae

Center for Computational Astrophysics
Flatiron Institute
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CURRENT POSITION

Sep. 2017 – **Flatiron Research Fellow**
Center for Computational Astrophysics · Flatiron Institute · New York · NY · USA
Visiting Postdoctoral Research Associate
Department of Astrophysical Sciences · Princeton University · Princeton · NJ · USA

EDUCATION

Feb. 2011 **Ph.D. in Astronomy**
Department of Physics and Astronomy · Seoul National University · Seoul · Korea
Dissertation (Advised by Prof. Woong-Tae Kim): *Thermal and Dynamical Evolution of a Gaseous Medium and Star Formation in Disk Galaxies*

Feb. 2005 **B.S. in Astronomy**
Department of Physics and Astronomy · Seoul National University · Seoul · Korea

EMPLOYMENT

Sep. 2016 – Aug. 2017 **Associate Research Scholar**
Dept. of Astrophysical Sciences · Princeton University · Princeton · NJ · USA

Sep. 2013 – Aug. 2016 **Postdoctoral Research Associate**
Dept. of Astrophysical Sciences · Princeton University · Princeton · NJ · USA

Oct. 2011 – Aug. 2013 **CITA National Fellow**
Dept. of Physics and Astronomy · Univ. of Western Ontario · London · ON · Canada

Mar. 2011 – Aug. 2011 **BK21 Postdoctoral Fellow**
Dept. of Physics and Astronomy · Seoul National University · Seoul · Korea

AWARDS

Feb. 2011 **Department Award for Excellent Thesis**
Awarded by Dept. of Physics and Astronomy · Seoul National University

2007 – 2009 **BK21 Short-term Travel Grants for Superior Students, three times (2 mo/yr)**
Awarded by Dept. of Physics and Astronomy · Seoul National University

2007 – 2008 **Lotte Scholarship**
Full Tuition awarded by the Lotte Foundation

2005 – 2006 **Graduate Student Instructor Fellowship**
Full Tuition awarded by Seoul National University

TEACHING EXPERIENCE

Research Advisor

Department of Astrophysical Sciences · Princeton University · Princeton · NJ · USA

2017 –
- Alwin Mao for PhD thesis project
- *Self-gravitating structures in decaying MHD turbulence*
- **On-going.** Co-advising with Prof. Eve Ostriker

2017 –
- Erin Flowers for PhD semester project
- *Effects of spatial correlations of supernovae in ISM turbulence*
- **On-going.** Co-advising with Prof. Eve Ostriker

2014 – 2015
- Roberta Raileanu for Junior Thesis, Summer Research
- *Superbubbles in the multiphase ISM and the loading of galactic winds*
- Published to ApJ. Co-advised with Prof. Eve Ostriker

Department of Astronomy · Yonsei University · Seoul · Korea

2017 –
- Woorak Choi for PhD thesis project
- *Ram pressure stripping in the multiphase, turbulent, magnetized ISM*
- **On-going.** Co-advising with Prof. Aeree Chung

Department of Physics and Astronomy · Seoul National University · Seoul · Korea

2015 – 2017
- Wankee Cho for PhD thesis project
- *Statistical properties of the turbulent and stratified ISM*
- Now at Samsung. Co-advised with Dr. Jongsoo Kim and Prof. Bon-Chul Koo

Teaching Assistant (Graduate Student Instructor)

Department of Physics and Astronomy · Seoul National University · Seoul · Korea

2005 – 2010 *Solar System Astronomy and Lab., Astronomical Observation & Lab. I & II, Astronomy and Lab., Introduction to Astrophysics I & II, Stars and Stellar Systems, Man & the Universe*

GRANTS/PROPOSALS

2018 **Co-I,** NASA TCAN (submitted; PI: Julian Borrill)

PROFESSIONAL ACTIVITIES

2017 – **Leader,** Resolved ISM/SF working group in the SMAUG* collaboration
*SMAUG is an international collaboration that aims to build a fully predictive galaxy formation theory utilizing next-generation cosmological simulations with physics-based subgrid models for small-scale baryonic physics

2017 **Review Panelist**, NSF Astronomy and Astrophysics Grant Program

2016 – 2017 **Organizer,** Star Formation/ISM Rendezvous Seminars at Princeton University

2012 – **Referee,** Astrophysical Journal, Astrophysical Journal Letters, Monthly Notices of the Royal Astronomical Society

INVITED/CONTRIBUTED TALKS (last 3 years)

2017 **Invited Talk,** CMB Foreground workshop, UC at San Diego · San Diego, CA · USA

2017 **Seminar Talk,** Center for Computational Astrophysics, Flatiron Institute · New York, NY

2017 **Invited Talk,** The ISM beyond 3D, Institut d'Astrophysique Spatiale · Orsay · France

2017 **Seminar Talk,** Theoretical Astrophysics Group, Osaka University · Osaka · Japan
2017 **Seminar Talk,** Astrophysics Seminar, UC at Santa Barbara · Santa Barbara · CA · USA
2017 **Colloquium,** UC at Santa Barbara · Santa Barbara · CA · USA
2016 **Colloquium,** Shanghai Jiao Tong University · Shanghai · China
2016 **Invited Conference Talk,** 7th East-Asian Numerical Astrophysics Meeting, Beijing · China
2016 **Colloquium,** Korea Astronomy & Space Science Institute · Daejeon · Korea
2016 **Colloquium,** Seoul National University · Seoul · Korea
2016 **Poster,** KAS Fall Meeting, Daejeon · Korea
2016 **Invited Conference Talk,** How Galaxies Form Stars, Stockholm · Sweden
2016 **Invited Conference Talk,** Computational Galaxy Formation, Ringberg Castle · Germany
2015 **Seminar Talk,** Informal Seminar, Institute for Advanced Study · Princeton · NJ · USA
2015 **Seminar Talk,** SFIR Seminar, Princeton University · Princeton· NJ · USA
2015 **Contributed Talk,** Magnetic Fields in the Universe V, Corsica · France
2015 **Contributed Talk,** IAU Symposium #315, Honolulu · HI · USA

REFERENCES

Prof. Woong-Tae Kim (thesis advisor)
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Department of Physics and Astronomy
Seoul National University
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Prof. Eve C. Ostriker (postdoc mentor)
eco@astro.princeton.edu
Department of Astrophysical Sciences
Princeton University
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Prof. James M. Stone (collaborator)
jmstone@astro.princeton.edu
Department of Astrophysical Sciences
Princeton University
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Prof. Snezana Stanimirovic (collaborator)
sstanimi@astro.wisc.edu
Department of Astronomy
University of Wisconsin-Madison
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Bibliography

REFEREED PUBLICATIONS (12 first-authored; 2 co-authored)

14. *"Numerical Simulations of Multiphase Winds and Fountains from Star-forming Galactic Disks. I. Solar Neighborhood TIGRESS Model"*
Kim, C.-G. and Ostriker, E. C. 2018, ApJ, 853, 173

13. *"**T**hree-phase **I**nterstellar medium in **G**alaxies **R**esolving **E**volution with **S**tar formation and **S**upernova feedback (**TIGRESS**): Algorithms, Fiducial model, and Convergence"*
Kim, C.-G. and Ostriker, E. C. 2017, ApJ, 846, 133

12. *"Recovering Interstellar Gas Properties with HI Spectral Lines: A Comparison between Synthetic Spectra and 21-SPONGE"*
Murray, C. E., Stanimirovic, S., **Kim, C.-G.**, et al., 2017, ApJ, 837, 55

11. *"Chemistry and radiative shielding in star forming galactic disks"*
Safranek-Shrader, C., Krumholz, M. R., **Kim, C.-G.** et al. 2017, MNRAS, 465, 885

10. *"Superbubbles in the Multiphase ISM and the Loading of Galactic Winds"*
Kim, C.-G., Ostriker, E. C., & Raileanu, R. 2017, ApJ, 834, 25

9. *"Vertical Equilibrium, Energetics, and Star Formation Rates in Magnetized Galactic Disks Regulated by Momentum Feedback from Supernovae"*
Kim, C.-G. and Ostriker, E. C. 2015, ApJ, 815, 67

8. *"Momentum Injection by Supernovae in the Interstellar Medium"*
Kim, C.-G. and Ostriker, E. C. 2015, ApJ, 802, 99

7. *"Three Dimensional Hydrodynamic Simulations of Multiphase Galactic Disks with Star Formation Feedback: II. Synthetic HI 21 cm Line Observations"*
Kim, C.-G., Ostriker, E. C., & Kim, W.-T. 2014, ApJ, 786, 64

6. *"Long-Term Evolution of Decaying Magnetohydrodynamic Turbulence in the Multiphase Interstellar Medium*"
Kim, C.-G. and Basu, S. 2013, ApJ, 778, 88

5. *"Three Dimensional Hydrodynamic Simulations of Multiphase Galactic Disks with Star Formation Feedback: I. Regulation of Star Formation Rates"*
Kim, C.-G., Ostriker, E. C., & Kim, W.-T. 2013, ApJ, 776, 1

4. *"Regulation of Star Formation Rates in Multiphase Galactic Disks: Numerical Tests of the Thermal/Dynamical Equilibrium Model"*
Kim, C.-G., Kim, W.-T., & Ostriker, E. C. 2011, ApJ, 743, 25

3. *"Galactic Spiral Shocks with Thermal Instability in Vertically Stratified Galactic Disks"*
Kim, C.-G., Kim, W.-T., & Ostriker, E. C. 2010, ApJ, 720, 1454

2. *"Galactic Spiral Shocks with Thermal Instability"*
Kim, C.-G., Kim, W.-T., & Ostriker, E. C. 2008, ApJ, 681, 1148

1. *"Interstellar Turbulence Driving by Galactic Spiral Shocks"*
Kim, C.-G., Kim, W.-T., & Ostriker, E. C. 2006, ApJ, 649, L13

CONFERENCE PROCEEDINGS

2. *"Feedback Regulated Turbulence, Magnetic Fields, and Star Formation Rates in Galactic Disks"*
   Kim, C.-G. and Ostriker, E. C. 2016, IAU Symposium, 315, 38 (arXiv:1511.00018)
1. *"Numerical modeling of multiphase, turbulent galactic disks with star formation feedback"*
   Kim, C.-G., Ostriker, E. C., and Kim, W.-T. 2015, Highlights of Astronomy, 16, 609 (arXiv:1211.5161)

PAPERS in PREPARATION (1 submitted)

1. *"The X_{CO} Conversion Factor from Galactic Multiphase ISM Simulations"*
   Gong, M., Ostriker, E. C., and **Kim, C.-G**. ApJ submitted
2. *"Wouthuysen-Field effect and Ly-alpha Radiative Transfer in the Warm Neutral Medium"*
   Seon, K. and **Kim, C.-G.** in preparation
3. *"Synthetic Polarization Dust Maps of TIGRESS: EB asymmetry"*
   Kim, C.-G. and Steve K. Choi in preparation
4. *"The 21-SPONGE HI Absorption Line Survey II: The Temperature of Galactic HI"*
   Murray, Claire E., et al. (including **Kim, C.-G.)** in preparation