

# Curriculum Vitae – Chang-Goo Kim

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## Education

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Mar 2005 – **Ph. D in Astronomy**  
Feb 2011 Department of Physics and Astronomy, Seoul National University, Korea  
Mar 2001 – **B. S in Astronomy**  
Feb 2005 Department of Physics and Astronomy, Seoul National University, Korea

## Current position

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Jul 2023 – **Research Scholar**  
present Department of Astrophysical Sciences, Princeton University

## Employment

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Sep 2016 – **Associate Research Scholar**  
Jun 2023 Department of Astrophysical Sciences, Princeton University  
Sep 2017 – **Flatiron Research Fellow**  
Aug 2018 Center for Computational Astrophysics, Flatiron Institute  
Sep 2013 – **Postdoctoral Research Associate**  
Aug 2016 Department of Astrophysical Sciences, Princeton University  
Oct 2011 – **CITA National Fellow**  
Aug 2013 Department of Physics and Astronomy, University of Western Ontario, Canada

## Grants

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2022 – 2025 **PI**, NASA Astrophysics Theory Program; \$415,564  
2019 **PI**, Chandra cycle 21 (Theory); \$85,000  
2018 – 2021 **Co-I**, NASA TCAN (PI: Julian Borrill); \$1,398,099

## Research advising

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2016 – present **PhD thesis projects**  
Roman Hix (Princeton, 2025–), Minghao Guo (Princeton, 2022–2024), Woorak Choi (Yonsei, PhD in 2024), Sanghyuk Moon (SNU, PhD in 2022), Lachlan Lancaster (Princeton, PhD in 2022), Alwin Mao (Princeton, PhD in 2020), Munan Gong (Princeton, PhD in 2017)  
2018 – present **Research projects for graduate students**  
Ronan Hix (Princeton, 2024), Nora Linzer (Princeton, 2022), Erin Kado-Fong (Princeton, 2018), Aditi Vijayan (CCA via **KSPA**, 2018), Kareem El-Badry (CCA via **KSPA**, 2018)  
2014 – present **Research projects for undergraduate students**  
Jake Grodner (Princeton, 2025), Taeho Kim (Princeton, 2025), Austin Guo (Princeton, 2025), Tejahni Desire (Princeton, 2024), Sajia Shahrin Neha (Princeton, 2023), Ish Kaul (Princeton, 2022), Ryan Golant (Princeton, 2019), Mohammad Refat (CCA/CUNY via **AstroCom NYC**, 2018), Roberta Raileanu (Princeton, 2014)

## Teaching

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- 2021 – present **Bootcamp Lecturer**  
 - Teaching basic Unix commands and remote login (ssh), software version control (git and GitHub), Python programming language and scientific programming stack
- 2005 – 2010 **Graduate Student Instructor (Teaching Assistant)**  
 - Grading problem sets and leading problem-solving sessions for courses including *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*.  
 - Designing and leading the Lab class for Introduction to Astronomy  
 - Teaching scientific computing and numerical analysis

## Computing time allocations

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- 2022 – 2024 **15M CPU hrs (540k SBUs)**, NASA HECC, (PI: **Chang-Goo Kim**)  
 2018 – 2021 **80M CPU hrs**, NERSC, (PI: Julian Borrill)  
 2016 – 2021 **24M CPU hrs (850k SBUs)**, NASA HECC, (PI: Eve Ostriker)

## Observing proposals

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- 2019 **Co-I**, VLA Extra Large proposal (PI: Adam Leroy); Local Group L-Band Survey  
 2019 **Co-I**, VLA Regular proposal (PI: Woorak Choi), 7.4 hours, rank B

## Scientific collaboration teams

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- 2022 – present **Working Group Leader**, [Simons Collaboration on Learning the Universe](#)  
 2017 – 2022 **Working Group Leader**, [Simulating Multiscale Astrophysics to Understand Galaxies](#) (SMAUG)  
 2018 – 2021 **Working Group Leader**, Modeling Polarized Galactic Foregrounds for Cosmic Microwave Background missions (NASA TCAN)  
 2022 – 2024 **Member**, [Line Emission Mapper X-ray Probe](#)  
 2021 – present **Member**, [Local Group L-Band Survey](#)  
 2020 – present **Member**, [Galactic Australian Square Kilometre Array Pathfinder Survey](#)  
 2019 – 2020 **Member**, Space Infrared Telescope for Cosmology and Astrophysics (SPICA)  
 2017 – 2019 **Member**, [Probe of Inflation and Cosmic Origins \(PICO\)](#)

## Professional service

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- 2017 – present **Review Panelist, Reviewer**, NSF AAG, NASA ADAP, NASA FINESST  
 2012 – present **Referee**, ApJ, MNRAS, JOSS, RASTI, NatA, AA, OJAp  
 2023 – present **Coordinator**, Daily Astro Coffee at Princeton University  
 2026 – **Organizer**, Unifying Cosmic-Ray Research: Connecting Astroparticle Phenomenology with Advanced Theories, Simulations, and Observations  
 2024 – present **Organizer**, Star Formation/ISM Rendezvous Seminars at Princeton University

## References

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- Prof. Eve C. Ostriker** [eco@astro.princeton.edu](mailto:eco@astro.princeton.edu)  
 Department of Astrophysical Sciences, Princeton University
- Prof. Rachel S. Somerville** [rsomerville@flatironinstitute.org](mailto:rsomerville@flatironinstitute.org)  
 Center for Computational Astrophysics, Flatiron Institute
- Prof. James M. Stone** [jmstone@ias.edu](mailto:jmstone@ias.edu)  
 School of Natural Sciences, Institute for Advanced Study

## List of Publications ([ADS](#), [Google Scholar](#))

Metrics for Refereed Publications (from [ADS](#) as of 2026-01-14)

count: 68 — citations: 4006 — h-index: 37

### Refereed Publications as First Author (count: 17 — citations: 1978)

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68. **Kim, Chang-Goo**; Ostriker, Eve C.; Kim, Jeong-Gyu; Gong, Munan *et al.*, *Metallicity Dependence of Pressure-regulated Feedback-modulated Star Formation in the TIGRESS-NCR Simulation Suite*, [ApJ](#), **972**, 67, 2024 ([arXiv:2405.19227](#)) [[17 citations](#)]
67. **Kim, Chang-Goo**; Kim, Jeong-Gyu; Gong, Munan; Ostriker, Eve C., *Introducing TIGRESS-NCR. I. Coregulation of the Multiphase Interstellar Medium and Star Formation Rates*, [ApJ](#), **946**, 3, 2023 ([arXiv:2211.13293](#)) [[63 citations](#)]
66. **Kim, Chang-Goo**; Ostriker, Eve C.; Fielding, Drummond B.; Smith, Matthew C. *et al.*, *A Framework for Multiphase Galactic Wind Launching Using TIGRESS*, [ApJ](#), **903**, 2020 ([arXiv:2010.09090](#)) [[59 citations](#)]
65. **Kim, Chang-Goo**; Ostriker, Eve C.; Somerville, Rachel S.; Bryan, Greg L. *et al.*, *First Results from SMAUG: Characterization of Multiphase Galactic Outflows from a Suite of Local Star-forming Galactic Disk Simulations*, [ApJ](#), **900**, 61, 2020 ([arXiv:2006.16315](#)) [[132 citations](#)]
64. **Kim, Chang-Goo**; Choi, Steve K.; Flauger, Raphael, *Dust Polarization Maps from TIGRESS: E/B Power Asymmetry and TE Correlation*, [ApJ](#), **880**, 106, 2019 ([arXiv:1901.07079](#)) [[41 citations](#)]
63. **Kim, Chang-Goo**; Ostriker, Eve C., *Numerical Simulations of Multiphase Winds and Fountains from Star-forming Galactic Disks. I. Solar Neighborhood TIGRESS Model*, [ApJ](#), **853**, 173, 2018 ([arXiv:1801.03952](#)) [[192 citations](#)]
62. **Kim, Chang-Goo**; Ostriker, Eve C., *Three-phase Interstellar Medium in Galaxies Resolving Evolution with Star Formation and Supernova Feedback (TIGRESS): Algorithms, Fiducial Model, and Convergence*, [ApJ](#), **846**, 133, 2017 ([arXiv:1612.03918](#)) [[243 citations](#)]
61. **Kim, Chang-Goo**; Ostriker, Eve C.; Raileanu, Roberta, *Superbubbles in the Multiphase ISM and the Loading of Galactic Winds*, [ApJ](#), **834**, 25, 2017 ([arXiv:1610.03092](#)) [[169 citations](#)]
60. **Kim, Chang-Goo**; Ostriker, Eve C., *Vertical Equilibrium, Energetics, and Star Formation Rates in Magnetized Galactic Disks Regulated by Momentum Feedback from Supernovae*, [ApJ](#), **815**, 67, 2015 ([arXiv:1511.00010](#)) [[109 citations](#)]
59. **Kim, Chang-Goo**; Ostriker, Eve C., *Momentum Injection by Supernovae in the Interstellar Medium*, [ApJ](#), **802**, 99, 2015 ([arXiv:1410.1537](#)) [[401 citations](#)]
58. **Kim, Chang-Goo**; Ostriker, Eve C.; Kim, Woong-Tae, *Three-dimensional Hydrodynamic Simulations of Multiphase Galactic Disks with Star Formation Feedback. II. Synthetic H I 21 cm Line Observations*, [ApJ](#), **786**, 64, 2014 ([arXiv:1403.5566](#)) [[56 citations](#)]
57. **Kim, Chang-Goo**; Basu, Shantanu, *Long-term Evolution of Decaying Magnetohydrodynamic Turbulence in the Multiphase Interstellar Medium*, [ApJ](#), **778**, 88, 2013 ([arXiv:1309.4996](#)) [[7 citations](#)]
56. **Kim, Chang-Goo**; Ostriker, Eve C.; Kim, Woong-Tae, *Three-dimensional Hydrodynamic Simulations of Multiphase Galactic Disks with Star Formation Feedback. I. Regulation of Star Formation Rates*, [ApJ](#), **776**, 1, 2013 ([arXiv:1308.3231](#)) [[201 citations](#)]
55. **Kim, Chang-Goo**; Kim, Woong-Tae; Ostriker, Eve C., *Regulation of Star Formation Rates in Multiphase Galactic Disks: Numerical Tests of the Thermal/Dynamical Equilibrium Model*, [ApJ](#), **743**, 25, 2011 ([arXiv:1109.0028](#)) [[159 citations](#)]

54. **Kim, Chang-Goo**; Kim, Woong-Tae; Ostriker, Eve C., *Galactic Spiral Shocks with Thermal Instability in Vertically Stratified Galactic Disks*, **ApJ**, **720**, 1454, 2010 ([arXiv:1006.4691](#)) [[25 citations](#)]
53. **Kim, Chang-Goo**; Kim, Woong-Tae; Ostriker, Eve C., *Galactic Spiral Shocks with Thermal Instability*, **ApJ**, **681**, 1148, 2008 ([arXiv:0804.0139](#)) [[55 citations](#)]
52. **Kim, Chang-Goo**; Kim, Woong-Tae; Ostriker, Eve C., *Interstellar Turbulence Driving by Galactic Spiral Shocks*, **ApJ**, **649**, 2006 ([arXiv:astro-ph/0608161](#)) [[49 citations](#)]

## Refereed Publications w/ Significant Contribution (count: 25 — citations: 1057) \_\_\_\_\_

Name: student advised/co-advised

51. Hix, Ronan N.; Armillotta, Lucia; Ostriker, Eve; **Kim, Chang-Goo**, *Dynamically Controlled Transport of GeV Cosmic Rays in Diverse Galactic Environments*, **ApJ**, **994**, 45, 2025 ([arXiv:2509.03519](#)) [[2 citations](#)]
50. Guo, Minghao; **Kim, Chang-Goo**; Stone, James M., *Evolution of Supernova Remnants in a Cloudy Multiphase Interstellar Medium*, **ApJ**, **990**, 49, 2025 ([arXiv:2411.12809](#)) [[9 citations](#)]
49. Lancaster, Lachlan; **Kim, Chang-Goo**; Kim, Jeong-Gyu; Ostriker, Eve C. et al., *The Coevolution of Stellar Wind-blown Bubbles and Photoionized Gas. II. 3D RMHD Simulations and Tests of Semianalytic Models*, **ApJ**, **989**, 43, 2025 ([arXiv:2505.22733](#)) [[5 citations](#)]
48. Jeffreson, Sarah M. R.; Ostriker, Eve C.; **Kim, Chang-Goo**; Gensior, Jindra et al., *Learning the Universe: GalactISM Simulations of Resolved Star Formation and Galactic Outflows across Main-sequence and Quenched Galactic Environments*, **ApJ**, **975**, 113, 2024 ([arXiv:2409.09114](#))
47. Linzer, Nora B.; Kim, Jeong-Gyu; **Kim, Chang-Goo**; Ostriker, Eve C., *Ultraviolet Radiation Fields in Star-forming Disk Galaxies: Numerical Simulations with TIGRESS-NCR*, **ApJ**, **975**, 173, 2024 ([arXiv:2409.05958](#)) [[8 citations](#)]
46. Hassan, Sultan; Ostriker, Eve C.; **Kim, Chang-Goo**; Bryan, Greg L. et al., *Toward Implementation of the Pressure-regulated, Feedback-modulated Model of Star Formation in Cosmological Simulations: Methods and Application to TNG*, **ApJ**, **975**, 151, 2024 ([arXiv:2409.09121](#)) [[7 citations](#)]
45. Guo, Minghao; Stone, James M.; Quataert, Eliot; **Kim, Chang-Goo**, *Magnetized Accretion onto and Feedback from Supermassive Black Holes in Elliptical Galaxies*, **ApJ**, **973**, 141, 2024 ([arXiv:2405.11711](#)) [[41 citations](#)]
44. Steinwandel, Ulrich P.; **Kim, Chang-Goo**; Bryan, Greg L.; Ostriker, Eve C. et al., *The Structure and Composition of Multiphase Galactic Winds in a Large Magellanic Cloud Mass Simulated Galaxy*, **ApJ**, **960**, 100, 2024 ([arXiv:2212.03898](#)) [[46 citations](#)]
43. Moon, Sanghyuk; Kim, Woong-Tae; **Kim, Chang-Goo**; Ostriker, Eve C., *Effects of Magnetic Fields on Gas Dynamics and Star Formation in Nuclear Rings*, **ApJ**, **946**, 114, 2023 ([arXiv:2303.04206](#)) [[12 citations](#)]
42. Guo, Minghao; Stone, James M.; **Kim, Chang-Goo**; Quataert, Eliot, *Toward Horizon-scale Accretion onto Supermassive Black Holes in Elliptical Galaxies*, **ApJ**, **946**, 26, 2023 ([arXiv:2211.05131](#)) [[45 citations](#)]
41. Kim, Jeong-Gyu; Gong, Munan; **Kim, Chang-Goo**; Ostriker, Eve C., *Photochemistry and Heating/Cooling of the Multiphase Interstellar Medium with UV Radiative Transfer for Magnetohydrodynamic Simulations*, **ApJS**, **264**, 10, 2023 ([arXiv:2210.08024](#)) [[55 citations](#)]
40. Kado-Fong, Erin; **Kim, Chang-Goo**; Greene, Jenny E.; Lancaster, Lachlan, *Ultra-diffuse Galaxies as Extreme Star-forming Environments. II. Star Formation and Pressure Balance in H I-rich UDGs*, **ApJ**, **939**, 101, 2022 ([arXiv:2209.05500](#)) [[16 citations](#)]
39. Ostriker, Eve C.; **Kim, Chang-Goo**, *Pressure-regulated, Feedback-modulated Star Formation in Disk Galaxies*, **ApJ**, **936**, 137, 2022 ([arXiv:2206.00681](#)) [[103 citations](#)]

38. Choi, Woorak; **Kim, Chang-Goo**; Chung, Aeree, *Ram Pressure Stripping of the Multiphase ISM: A Detailed View from TIGRESS Simulations*, **ApJ**, **936**, 133, 2022 ([arXiv:2207.05263](#)) [[15 citations](#)]
37. Moon, Sanghyuk; Kim, Woong-Tae; **Kim, Chang-Goo**; Ostriker, Eve C., *Effects of Varying Mass Inflows on Star Formation in Nuclear Rings of Barred Galaxies*, **ApJ**, **925**, 99, 2022 ([arXiv:2110.14882](#)) [[19 citations](#)]
36. Lancaster, Lachlan; Ostriker, Eve C.; Kim, Jeong-Gyu; **Kim, Chang-Goo**, *Star Formation Regulation and Self-pollution by Stellar Wind Feedback*, **ApJ**, **922**, 2021 ([arXiv:2110.05508](#)) [[53 citations](#)]
35. Clark, S. E.; **Kim, Chang-Goo**; Hill, J. Colin; Hensley, Brandon S., *The Origin of Parity Violation in Polarized Dust Emission and Implications for Cosmic Birefringence*, **ApJ**, **919**, 53, 2021 ([arXiv:2105.00120](#)) [[67 citations](#)]
34. Lancaster, Lachlan; Ostriker, Eve C.; Kim, Jeong-Gyu; **Kim, Chang-Goo**, *Efficiently Cooled Stellar Wind Bubbles in Turbulent Clouds. II. Validation of Theory with Hydrodynamic Simulations*, **ApJ**, **914**, 90, 2021 ([arXiv:2104.07722](#)) [[97 citations](#)]
33. Lancaster, Lachlan; Ostriker, Eve C.; Kim, Jeong-Gyu; **Kim, Chang-Goo**, *Efficiently Cooled Stellar Wind Bubbles in Turbulent Clouds. I. Fractal Theory and Application to Star-forming Clouds*, **ApJ**, **914**, 89, 2021 ([arXiv:2104.07691](#)) [[110 citations](#)]
32. Moon, Sanghyuk; Kim, Woong-Tae; **Kim, Chang-Goo**; Ostriker, Eve C., *Star Formation in Nuclear Rings with the TIGRESS Framework*, **ApJ**, **914**, 9, 2021 ([arXiv:2104.10349](#)) [[25 citations](#)]
31. Koo, Bon-Chul; **Kim, Chang-Goo**; Park, Sangwook; Ostriker, Eve C., *Radiative Supernova Remnants and Supernova Feedback*, **ApJ**, **905**, 35, 2020 ([arXiv:2011.06322](#)) [[26 citations](#)]
30. Gong, Munan; Ostriker, Eve C.; **Kim, Chang-Goo**; Kim, Jeong-Gyu, *The Environmental Dependence of the XCO Conversion Factor*, **ApJ**, **903**, 142, 2020 ([arXiv:2009.14631](#)) [[90 citations](#)]
29. Seon, Kwang-il; **Kim, Chang-Goo**, *Ly-alpha Radiative Transfer: Monte Carlo Simulation of the Wouthuysen-Field Effect*, **ApJS**, **250**, 9, 2020 ([arXiv:2005.00238](#)) [[38 citations](#)]
28. Mao, S. Alwin; Ostriker, Eve C.; **Kim, Chang-Goo**, *Cloud Properties and Correlations with Star Formation in Self-consistent Simulations of the Multiphase ISM*, **ApJ**, **898**, 52, 2020 ([arXiv:1911.05078](#)) [[30 citations](#)]
27. Kim, Woong-Tae; **Kim, Chang-Goo**; Ostriker, Eve C., *Local Simulations of Spiral Galaxies with the TIGRESS Framework. I. Star Formation and Arm Spurs/Feathers*, **ApJ**, **898**, 35, 2020 ([arXiv:2006.05614](#)) [[58 citations](#)]
26. Kado-Fong, Erin; Kim, Jeong-Gyu; Ostriker, Eve C.; **Kim, Chang-Goo**, *Diffuse Ionized Gas in Simulations of Multiphase, Star-forming Galactic Disks*, **ApJ**, **897**, 143, 2020 ([arXiv:2006.06697](#)) [[37 citations](#)]
25. Vijayan, Aditi; **Kim, Chang-Goo**; Armillotta, Lucia; Ostriker, Eve C. *et al.*, *Kinematics and Dynamics of Multiphase Outflows in Simulations of the Star-forming Galactic Interstellar Medium*, **ApJ**, **894**, 12, 2020 ([arXiv:1911.07872](#)) [[40 citations](#)]
24. El-Badry, Kareem; Ostriker, Eve C.; **Kim, Chang-Goo**; Quataert, Eliot *et al.*, *Evolution of supernovae-driven superbubbles with conduction and cooling*, **MNRAS**, **490**, 1961, 2019 ([arXiv:1902.09547](#)) [[91 citations](#)]
23. Gong, Munan; Ostriker, Eve C.; **Kim, Chang-Goo**, *The X CO Conversion Factor from Galactic Multiphase ISM Simulations*, **ApJ**, **858**, 16, 2018 ([arXiv:1803.09822](#)) [[64 citations](#)]

**Refereed Publications as Co-Author (count: 26 — citations: 971)** \_\_\_\_\_

22. Burger, Jan D.; Springel, Volker; Ostriker, Eve C.; **Kim, Chang-Goo** et al., *Applying a star formation model calibrated on high-resolution interstellar medium simulations to cosmological simulations of galaxy formation*, **MNRAS**, **544**, 1390, 2025 ([arXiv:2502.13244](#)) [[5 citations](#)]
21. Bennett, J. S. et al. (incl. **CGK**), *Prevention is better than cure? Feedback from high specific energy winds in cosmological simulations with ARKENSTONE*, **MNRAS**, **543**, 1456, 2025 ([arXiv:2410.12909](#)) [[9 citations](#)]
20. Steinwandel, U. P. et al. (incl. **CGK**), *Pumping Iron: How Turbulent Metal Diffusion Impacts Multiphase Galactic Outflows*, **ApJ**, **991**, 16, 2025 ([arXiv:2407.14599](#)) [[9 citations](#)]
19. Lancaster, L. et al. (incl. **CGK**), *The Coevolution of Stellar Wind-blown Bubbles and Photoionized Gas. I. Physical Principles and a Semianalytic Model*, **ApJ**, **989**, 42, 2025 ([arXiv:2505.22730](#)) [[3 citations](#)]
18. Vijayakumar, V. et al. (incl. **CGK**), *Modeling the Mass Distribution and Gravitational Potential of Nearby Disk Galaxies: Implications for the Interstellar Medium Dynamical Equilibrium*, **ApJ**, **989**, 66, 2025 ([arXiv:2506.22381](#)) [[3 citations](#)]
17. Koch, E. W. et al. (incl. **CGK**), *The Karl G. Jansky Very Large Array Local Group L-Band Survey (LGLBS)*, **ApJS**, **279**, 35, 2025 ([arXiv:2506.11792](#)) [[7 citations](#)]
16. Smith, M. C. et al. (incl. **CGK**), *ARKENSTONE - II. A model for unresolved cool clouds entrained in galactic winds in cosmological simulations*, **MNRAS**, **535**, 3550, 2024 ([arXiv:2408.15321](#)) [[13 citations](#)]
15. Diesing, Rebecca; Guo, Minghao; **Kim, Chang-Goo**; Stone, James et al., *Nonthermal Signatures of Radiative Supernova Remnants*, **ApJ**, **974**, 201, 2024 ([arXiv:2404.15396](#)) [[6 citations](#)]
14. Pingel, N. M. et al. (incl. **CGK**), *The Local Group L-band Survey: The First Measurements of Localized Cold Neutral Medium Properties in the Low-metallicity Dwarf Galaxy NGC 6822*, **ApJ**, **974**, 93, 2024 ([arXiv:2407.13829](#)) [[5 citations](#)]
13. Lancaster, Lachlan; Ostriker, Eve C.; **Kim, Chang-Goo**; Kim, Jeong-Gyu et al., *Geometry, Dissipation, Cooling, and the Dynamical Evolution of Wind-blown Bubbles*, **ApJ**, **970**, 18, 2024 ([arXiv:2405.02396](#)) [[25 citations](#)]
12. Armillotta, Lucia; Ostriker, Eve C.; **Kim, Chang-Goo**; Jiang, Yan-Fei, *Cosmic-Ray Acceleration of Galactic Outflows in Multiphase Gas*, **ApJ**, **964**, 99, 2024 ([arXiv:2401.04169](#)) [[33 citations](#)]
11. Smith, Matthew C.; Fielding, Drummond B.; Bryan, Greg L.; **Kim, Chang-Goo** et al., *ARKENSTONE - I. A novel method for robustly capturing high specific energy outflows in cosmological simulations*, **MNRAS**, **527**, 1216, 2024 ([arXiv:2301.07116](#)) [[33 citations](#)]
10. Gong, M. et al. (incl. **CGK**), *Implementation of Chemistry in the Athena++ Code*, **ApJS**, **268**, 42, 2023 ([arXiv:2305.04965](#)) [[8 citations](#)]
9. Motwani, Bhawna; Genel, Shy; Bryan, Greg L.; **Kim, Chang-Goo** et al., *First Results from SMAUG: Insights into Star Formation Conditions from Spatially Resolved ISM Properties in TNG50*, **ApJ**, **926**, 139, 2022 ([arXiv:2006.16314](#)) [[14 citations](#)]
8. Pingel, N. M. et al. (incl. **CGK**), *GASKAP-HI pilot survey science I: ASKAP zoom observations of HI emission in the Small Magellanic Cloud*, **PASA**, **39**, 2022 ([arXiv:2111.05339](#)) [[39 citations](#)]
7. Pandya, V. et al. (incl. **CGK**), *Characterizing mass, momentum, energy, and metal outflow rates of multi-phase galactic winds in the FIRE-2 cosmological simulations*, **MNRAS**, **508**, 2979, 2021 ([arXiv:2103.06891](#)) [[146 citations](#)]
6. Pandya, V. et al. (incl. **CGK**), *First Results from SMAUG: The Need for Preventative Stellar Feedback and Improved Baryon Cycling in Semianalytic Models of Galaxy Formation*, **ApJ**, **905**, 4, 2020 ([arXiv:2006.16317](#)) [[48 citations](#)]

5. Fielding, D. B. et al. (incl. **CGK**), *First Results from SMAUG: Uncovering the Origin of the Multiphase Circumgalactic Medium with a Comparative Analysis of Idealized and Cosmological Simulations*, **ApJ**, **903**, 32, 2020 ([arXiv:2006.16316](#)) [[69 citations](#)]
4. Murray, Claire E.; Peek, J. E. G.; **Kim, Chang-Goo**, *Extracting the Cold Neutral Medium from H I Emission with Deep Learning: Implications for Galactic Foregrounds at High Latitude*, **ApJ**, **899**, 15, 2020 ([arXiv:2006.16490](#)) [[37 citations](#)]
3. Murray, C. E. et al. (incl. **CGK**), *The 21-SPONGE H I Absorption Line Survey. I. The Temperature of Galactic H I*, **ApJS**, **238**, 14, 2018 ([arXiv:1806.06065](#)) [[111 citations](#)]
2. Murray, Claire E.; Stanimirović, Snežana; **Kim, Chang-Goo**; Ostriker, Eve C. et al., *Recovering Interstellar Gas Properties with Hi Spectral Lines: A Comparison between Synthetic Spectra and 21-SPONGE*, **ApJ**, **837**, 55, 2017 ([arXiv:1612.02017](#)) [[26 citations](#)]
1. Safraneck-Shrader, Chalence; Krumholz, Mark R.; **Kim, Chang-Goo**; Ostriker, Eve C. et al., *Chemistry and radiative shielding in star-forming galactic discs*, **MNRAS**, **465**, 885, 2017 ([arXiv:1605.07618](#)) [[54 citations](#)]

## Papers Under Review

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- Park, G. et al. (incl. **CGK**), *A High-resolution Study of the Cold Neutral Medium in and around 30 Doradus*, 2025 ([arXiv:2512.09035](#)), ApJ accepted
- Stelea, I. A. et al. (incl. **CGK**), *The Local Group L-band Survey: Probing Cold Atomic Gas in IC10 with Neutral Hydrogen Absorption*, 2025 ([arXiv:2511.10602](#)), ApJ accepted
- Sarbadhicary, S. K. et al. (incl. **CGK**), *Where do stars explode in the ISM? – The distribution of dense gas around evolved massive stars in M33*, 2023 ([arXiv:2310.17694](#)) [[10 citations](#)], ApJ accepted

## Conference Proceedings/White Papers

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- Kraft, R. et al. (incl. **CGK**), *Line Emission Mapper (LEM): Probing the physics of cosmic ecosystems*, 2022 ([arXiv:2211.09827](#))
- **Kim, Chang-Goo**; Ostriker, Eve C., 2016 ([arXiv:1511.00018](#)), In P. Jablonka, P. André, and F. van der Tak, editors, *From Interstellar Clouds to Star-Forming Galaxies: Universal Processes?*, volume 315 of IAU Symposium, pages 38–41, **Feedback Regulated Turbulence, Magnetic Fields, and Star Formation Rates in Galactic Disks**.
- **Kim, Chang-Goo**; Ostriker, Eve C.; Kim, Woong-Tae, 2015 ([arXiv:1211.5161](#)), Highlights of Astronomy, 16:609–610, March 2015, **Numerical modeling of multiphase, turbulent galactic disks with star formation feedback**.

## List of Professional Presentations

### Professional presentations

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|---------|--|
| 10/2025 | <b>Contributed Talk</b> , <i>TIGRESS++ Simulations of Star-Forming Disks: Self-Consistent CR Feedback and Multiphase Outflows</i> , Korean Astronomical Society Fall Meeting, Jeju, Korea              |
| 09/2025 | <b>Invited Talk</b> , <i>Bridging Galactic and Cosmological Scales: Baryonic Modeling for Next-Generation Simulations</i> , Simons Collaboration on Learning the Universe Annual Meeting, New York, NY |

- 09/2025 **Seminar**, *TIGRESS++ Simulations of Star-Forming Disks: Self-Consistent CR Feedback and Multiphase Outflows*, Bahcall Lunch, Princeton, NJ
- 07/2025 **Contributed Talk**, *Caveats: shearing-box? or not?*, Lorentz Center workshop: Numerical Recipes in Star Formation, Leiden, The Netherlands
- 06/2024 **Invited Talk**, *Numerical modeling of the star-forming ISM: state-of-the-art and remaining challenges*, The Diffuse Gas in the Milky Way in AAS #244 Meeting-in-Meetings, Madison, WI
- 06/2024 **Invited Talk**, *Turbulence, Magnetic Fields, and Thermodynamics of the ISM in Regulating Galactic Star Formation Rates*, Turbulence in the interstellar medium in AAS #244 Meeting-in-Meetings, Madison, WI
- 04/2024 **Contributed Talk**, *Metallicity Dependence of Pressure-Regulated Feedback-Modulated Star Formation in the TIGRESS-NCR Simulation Suite*, Recipes to Regulate Star Formation at All Scales: From the Nearby Universe to the First Galaxies, Baltimore, MD
- 03/2024 **Seminar**, *Metallicity dependence of Galactic Star Formation Rates*, Bahcall Lunch, Princeton, NJ
- 02/2024 **Seminar**, *Metallicity Dependence of SFRs*, Star Formation/ISM Rendezvous, Princeton, NJ
- 12/2023 **Invited Talk**, *Numerical modeling of the Star-Forming ISM: TIGRESS-NCR*, 2023 Salpeter Workshop, Ithaca, NY
- 11/2023 **Seminar**, *Adaptive Ray Tracing*, Computational Astrophysics Group, Princeton, NJ
- 11/2023 **Seminar**, *Feedback-Driven Bubble Expansion in the Multiphase Interstellar Medium*, UCSC Geophysical and Astrophysical Fluid Dynamics Seminar, Santa Cruz, CA (remote)
- 09/2023 **Invited Talk**, *Feedback regulated star formation: The TIGRESS simulations (and related topics)*, MIST2023 : Cosmic turbulence and Magnetic fields: physics of baryonic matter across time and scales, Cargèse, France
- 08/2023 **Seminar**, *Introducing TIGRESS-NCR: current status of numerical modeling of the star-forming ISM*, Seminar, McMaster, ON, Canada
- 08/2023 **Invited Talk**, *Launching of Multiphase Galactic Outflows: Theoretical Understanding and Connection to Observations*, The Evolution of Gas in and around Galaxies, Stanley, ID
- 05/2023 **Invited Talk**, *ISM Physics: Numerical Modeling of the Star-Forming ISM with Athena and Athena++*, 2nd Athena++ Workshop, New York, NY
- 02/2023 **Invited Talk**, *Introducing TIGRESS NCR: Numerical Modeling of the Star-Forming ISM*, Disks to Disks: JSPS Collaboration Meeting, Princeton, NJ
- 12/2022 **Invited Talk**, *Multiphase ISM from the TIGRESS-NCR simulations*, Theory meets Observations: Star Formation Physics Probed in Nearby Galaxies, Heidelberg, Germany
- 11/2022 **Seminar**, *Introducing TIGRESS-NCR: current status of numerical modeling of the star-forming ISM*, Thunch, Princeton, NJ
- 11/2022 **Colloquium**, *Introducing TIGRESS-NCR: current status of numerical modeling of the star-forming ISM*, University of Wisconsin-Madison, Madison, WI
- 11/2022 **Colloquium**, *Introducing TIGRESS-NCR: current status of numerical modeling of the star-forming ISM*, Osaka University, Osaka, Japan
- 8/2022 **Colloquium**, *Numerical modeling of the star-forming ISM: SFRs, Outflows, and ISM energetics*, Korea Astronomy and Space Science Institute, Daejeon, Korea
- 8/2022 **Contributed Talk**, *How Are Galactic Star Formation Rates Regulated?*, IAU Symposium #373: Resolving the Rise and Fall of Star Formation in Galaxies, Busan, Korea
- 7/2022 **Invited Talk**, *Introducing TIGRESS-NCR: ISM energetics/phases and SFRs*, Interstellar Institute #5: With Two Eyes, Orsay, France
- 7/2022 **Contributed Talk**, *How Are Galactic Star Formation Rates Regulated?*, A Holistic View of Stellar Feedback and Galaxy Evolution, Ascona, Switzerland
- 5/2022 **Invited Talk**, *How Do Stellar Feedback Regulates Galactic Star Formation Rates and Drives Multiphase Outflows?*, CITA, Toronto, Canada

- 4/2022 **Colloquium**, *Galactic Star Formation Rates and Multiphase Outflow Driving in the Star-Forming ISM*, University of Florida, Gainesville, FL
- 10/2021 **Invited Talk**, *How Are Galactic Star Formation Rates Regulated?*, CEA-Saclay, Paris, France
- 8/2021 **Invited Talk**, *Multiphase Galactic Outflows in TIGRESS*, Baltimore Wind Workshop 2021, Baltimore, MD
- 6/2021 **Invited Talk**, *The Role of Magnetic Fields in Regulating Star Formation Rates*, Midwest Magnetic Field Meeting 2021, Madison, WI (remote)
- 4/2021 **Invited Talk**, *MHD Simulations of the ISM and Synthetic Dust Polarization Maps*, Pan-Experiment Galactic Science Group Seminar, , remote
- 8/2020 **Invited Talk**, *A Perspective on the Future of ISM Simulations in the 2030s*, Cosmology with CMB-S4, University of Chicago, remote
- 3/2020 **Colloquium**, *Self-Regulation of Star Formation Rates and Launching of Multiphase Galactic Winds*, University of Georgia, Athens, GA
- 2/2020 **Colloquium**, *Self-Regulation of Star Formation Rates and Launching of Multiphase Galactic Winds*, Waterloo, ON, Canada
- 11/2019 **Invited Review**, *Feedback Regulated Star Formation*, Cosmic turbulence and magnetic fields: physics of baryonic matter across time and scales, Carg  se, France
- 6/2019 **Contributed Talk**, *Multiphase Outflows in TIGRESS*, Feedback and its Role in Galaxy Formation, Spetses, Greece
- 3/2019 **Invited Talk**, *Fast Fourier Transform and Self Gravity*, UNLV, Las Vegas, NV
- 3/2019 **Invited Review**, *Galactic Star Formation Rates*, Linking galaxies from the Epoch of initial star-formation to today, Sydney, Australia
- 3/2019 **Colloquium**, *Introducing TIGRESS: Where Gravity and Feedback Meet the Real ISM*, University of Maryland, College Park, MD
- 2/2019 **Invited Talk**, *Multiphase ISM interacting with ICM*, CCA, New York, NY
- 2/2019 **Colloquium**, *Introducing TIGRESS: Where Gravity and Feedback Meet the Real ISM*, Australia National University, Canberra, Australia
- 10/2018 **Invited Talk**, *Synthetic Observations of TIGRESS: Dust Polarization Maps, HI 21cm Lines, and more*, The Milky Way in the age of Gaia, Orsay, France
- 9/2018 **Contributed Talk**, *Galactic Winds in TIGRESS*, THINKSHOP15, Potsdam, Germany
- 8/2018 **Colloquium**, *Star Formation Rates and Galactic Winds in TIGRESS*, Korea Astronomy and Space Science Institute, Daejeon, Korea
- 8/2018 **Colloquium**, *Star Formation Rates and Galactic Winds in TIGRESS*, Yonsei University, Seoul, Korea
- 7/2018 **Invited Talk**, *Star Formation Rates and Galactic Winds in TIGRESS*, CCA, New York, NY
- 6/2018 **Invited Talk**, *Synthetic Polarized Dust Emission from Self-Consistent MHD Simulations*, CMB Foreground Workshop at CCA, New York, NY
- 4/2018 **Invited Talk**, *Partner of Cosmic Rays: Multiphase ISM and Galactic Outflows*, MPPC Workshop, Princeton, NJ
- 3/2018 **Invited Talk**, *Star Formation and Galactic Winds in Self-Consistent Local ISM Simulations*, Computational Galaxy Formation at Ringberg Castle, Tegernsee, Germany
- 11/2017 **Invited Talk**, *Self-Consistent MHD Simulations of the Local ISM: Synthetic Polarized Dust Emission*, CMB Foreground Workshop at UCSD, San Diego, CA
- 7/2017 **Invited Talk**, *TIGRESS: Three-phase ISM in Galaxies Resolving Evolution with Star formation and Supernova feedback*, The ISM beyond 3D, Orsay, France
- 5/2017 **Colloquium**, *Supernova as a Powerful Regulator of Galactic SFRs and Winds*, Osaka University, Osaka, Japan
- 2/2017 **Colloquium**, *Galactic Star Formation Rates Regulated by Star Formation Feedback*, University of California, Santa Barbara, CA

- 2/2017 **Invited Talk**, *Supernova Driven Galactic Winds and Synthetic Observations using TIGRESS*, UCSB, Santa Barbara, CA
- 10/2016 **Colloquium**, *Self-Regulation of Star Formation Rates in Galactic Disks*, Shanghai Jiao Tong University, Shanghai, China
- 10/2016 **Colloquium**, *Supernova Driven Galactic Outflows*, Korea Astronomy and Space Science Institute, Daejeon, Korea
- 10/2016 **Invited Talk**, *How do Supernovae Regulate Star Formation and Launch Galactic Winds?*, 7th East-Asia Numerical Astrophysics Meeting, Beijing, China
- 10/2016 **Colloquium**, *Supernova Driven Galactic Outflows*, Seoul National University, Seoul, Korea
- 8/2016 **Invited Review**, *How Do Supernovae Regulate Star Formation and Launch Galactic Winds?*, *How Galaxies Form Stars*, Stockholm, Sweden
- 5/2016 **Invited Talk**, *Star Formation and Galactic Winds Regulated by Supernovae*, Computational Galaxy Formation at Ringberg Castle, Tegernsee, Germany
- 10/2015 **Contributed Talk**, *Generation and Saturation of Magnetic Fields in the ISM Regulated by Star Formation Feedback*, Magnetic Fields in the Universe V, Carg  se, France
- 8/2015 **Contributed Talk**, *Feedback Regulated Turbulence, Magnetic Fields, and SFRs in Galactic Disks*, IAU Symposium #315, Honolulu, HI
- 4/2015 **Invited Talk**, *Feedback Regulated Turbulence, Magnetic Fields, and SFRs in Galactic Disks*, IAS, Princeton, NJ
- 9/2014 **Colloquium**, *Supernova Feedback in Multiphase Galactic Disks*, Seoul National University, Seoul, Korea
- 9/2014 **Colloquium**, *Supernova Feedback in Multiphase Galactic Disks*, Korea Astronomy and Space Science Institute, Daejeon, Korea
- 9/2014 **Colloquium**, *Supernova Feedback in Multiphase Galactic Disks*, Korea Institute for Advanced Study, Seoul, Korea
- 9/2014 **Invited Talk**, *Feedback Regulated SFRs and HI 21cm Lines*, 6th East-Asia Numerical Astrophysics Meeting, Suwon, Korea
- 6/2014 **Invited Talk**, *Momentum Injection by Supernovae in the ISM*, KITP Program – Gravity’s Loyal Opposition, Santa Barbara, CA
- 4/2013 **Contributed Talk**, *Long-Term Evolution of Decaying MHD Turbulence in the Multiphase ISM*, KAS Spring Meeting, Daecheon, Korea
- 2/2013 **Invited Talk**, *Long-Term Evolution of Decaying MHD Turbulence in the Multiphase ISM*, CITA National Fellow Meeting, Toronto, Canada
- 1/2013 **Contributed Talk**, *Long-Term Evolution of Decaying MHD Turbulence in the Multiphase ISM*, AAS Meeting #221, Long Beach, CA
- 8/2012 **Invited Talk**, *Numerical Modeling of Multiphase, Turbulent Galactic Disks with Star Formation Feedback*, IAU General Assembly – SpS12, Beijing, China
- 9/2011 **Colloquium**, *Regulation of Star Formation Rates in Galactic Disks*, Yonsei University, Seoul, Korea
- 3/2011 **Colloquium**, *Thermal and Dynamical Evolution of a Gaseous Medium and Star Formation in Disk Galaxies*, National Institute for Mathematical Sciences, Daejeon, Korea