

KYUNG GUK MIN, Ph.D.

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Associate Professor

Department of Astronomy and Space Science

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EDUCATION

Sep., 2008–May, 2013

Ph.D. in Applied Physics (Space Physics)

New Jersey Institute of Technology, New Jersey NJ, USA

Dissertation: Min, “**A statistical study of plasmawaves and energetic particles in the outer magnetosphere**”.

Committee: Andrew J. Gerrard, Jeongwoo Lee (co-chairs), Jay R. Johnson, Dale E. Gary, and Martin Schaden.

2000–2004

Chungnam National University, Daejeon, South Korea

Department of Astronomy and Space Science

Bachelor of Science (B.S.) in Astronomy and Space Science

EMPLOYMENT

Sep., 2024–present

Chungnam National University, Daejeon, South Korea

Department of Astronomy and Space Science

Associate Professor

Sep., 2019–Aug., 2024

Chungnam National University, Daejeon, South Korea

Department of Astronomy and Space Science

Assistant Professor

Dec., 2018–Aug., 2019

Korea Astronomy and Space Science Institute, Daejeon, South Korea

Space Science Group

Senior Research Scientist

Feb., 2018–Nov., 2018

Space Science Institute, Boulder CO, USA

Affiliate Research Scientist

May, 2016–July, 2018

The Johns Hopkins University Applied Physics Laboratory, Laurel MD, USA

Postdoctoral Fellow

July, 2013–April, 2016

Auburn University, Auburn AL, USA

Postdoctoral Fellow

Supervisor: Kaijun Liu

GRANTS, FELLOWSHIPS, AND PRIZES

Grants (third-party)

- 2025–2026 ISEE International Joint Research Program.
Categorizing Banded Chorus Waves Using Arase Data (PI).
- 2020–2023 National Research Foundation of Korea (NRF) (Grant No. 2020R1C1C1009996).
Excitation and Propagation of Fast Magnetosonic Waves in the Magnetosphere and Their Role in Radiation Belt Electron Scattering (PI).
- 2020–2021 ISEE International Joint Research Program.
Understanding the Generation Process of Fast Magnetosonic Waves by Combining ERG Observations and PIC Simulations (PI).
- 2016–2018 NSF/GEM (Geospace Environment Modeling) Program (Grant No. AGS-1602388).
Collaborative Research: GEM Investigation of the Excitation and Propagation of Fast Magnetosonic Waves and Their Effect on Radiation Belt Electrons (PI).
- 2016–2018 NASA Heliophysics Supporting Research Program (Grant No. NNX16AM98G).
Investigating Proton Bernstein Instabilities in Space Plasmas (PI).

Grants (on-campus)

- 2024 Chungnam National University Internal Research Program.
On the Generation of Banded Chorus Waves in the Inner Magnetosphere (PI).
- 2021 Chungnam National University Internal Research Program.
On the Energization of Thermal Ions Driven by Fast Magnetosonic Waves in the Inner Magnetosphere (PI).

- 2020 Chungnam National University Internal Research Program.
Investigation of Oxygen Ion Cyclotron Harmonic Waves Using Multi-dimensional Hybrid PIC Simulations (PI).
- 2019 New Hire Research Support Program (Chungnam National University).
Generation of Fast Magnetosonic Waves in Realistic Magnetospheric Configurations Using Particle-in-cell Simulations (PI).

Awards and Recognitions

- 2022 두진 우주과학자상 awarded by 한국우주과학회.
- 2021 제31회 과학기술우수논문상 awarded by 한국과학기술단체총연합회.
Paper Title: **Min and Liu, "Linear Instability and Saturation Characteristics of Magnetosonic Waves along the Magnetic Field Line".**
- 2019 **Editors' Citation for Excellence in Refereeing** (Geophysical Research Letters), American Geophysical Union.
- 2015 **NASA Van Allen Probes Mission Group Achievement Award**, NASA Headquarter.

TEACHING AND ADVISING

Teaching

CHUNGNAM NATIONAL UNIVERSITY

- 2024 (fall), 2025 (spring)
2444-500*: Seminar in Earth Environmental & Space Convergence Sciences
(grad-level 3/3/0)
- 2025 (spring) **2209-5035: Space Physics 1** (grad-level 3/3/0)
Textbook: *Fundamentals of Plasma Physics* by JA Bittencourt
(DOI: <https://doi.org/10.1007/978-1-4757-4030-1>)
- 2020-2025 (spring)
1154-2002: Mathematics for Astronomy 1 and Exercise (undergrad 3/2/2)
Textbook: *Mathematical Methods in the Physical Sciences* by Mary L. Boas
Lecture Note: <https://cnu-teaching.gitlab.io/math-1>
- 2020-2021, 2023-2025 (spring)
1153-2010: Electromagnetism 1 (undergrad 3/3/0)
Textbook: *Introduction to Electrodynamics* by David J. Griffiths
Lecture Note: <https://cnu-teaching.gitlab.io/em-1>
- 2020-2024 (fall)
1154-2005: Mathematics for Astronomy 2 and Exercise (undergrad 3/2/2)
Textbook: *Mathematical Methods in the Physical Sciences* by Mary L. Boas
Lecture Note: <https://cnu-teaching.gitlab.io/math-2>

2020, 2023–2024 (fall)

1154–3023: Electromagnetism 2 (undergrad 3/3/0)

Textbook: *Introduction to Electrodynamics* by David J. Griffiths

Lecture Note: <https://cnu-teaching.gitlab.io/em-2>

2021–2024 (spring)

1153–2001: Modern Physics (undergrad 3/3/0)

Textbook: *Concepts of Modern Physics* by Arthur Beiser

Lecture Note: <https://cnu-teaching.gitlab.io/modern-physics>

2022 (fall)

1154–3007: Numerical Analysis and Practice (undergrad 3/2/2)

Lecture Note: <https://cnu-teaching.gitlab.io/numerical-analysis>

2021 (fall), 2023 (spring)

2209–5034: Plasma Physics (grad-level 3/3/0)

Textbook: *Basic Space Plasma Physics* by Baumjohann and Treumann

(DOI: <https://doi.org/10.1142/p015>)

2022 (fall)

2207–5002: Advanced Data Analysis for Space and Geology (grad-level 3/3/0)

2022 (spring)

2209–5044: Planetary Magnetospheres (grad-level 3/3/0)

2020 (fall)

2209–5012: Computational Methods in Astronomy 2 (grad-level 3/3/0)

Textbook: *Spectral Methods in MATLAB* by Nick Trefethen

(DOI: <https://doi.org/10.1137/1.9780898719598>)

2020 (spring)

2209–5036: Space Physics 2 (grad-level 3/3/0)

Textbook: *Fundamentals of Plasma Physics* by JA Bittencourt

(DOI: <https://doi.org/10.1007/978-1-4757-4030-1>)

2019–2021 (fall)

1154–3012: Space Science and Practice (undergrad 3/2/2)

Textbook: 태양-지구계 우주환경 by 안병호 (ISBN: 9788958325956)

2019 (fall)

1154–4016: Astronomy Seminar 2 (undergrad 3/3/0)

2019 (fall)

2209–5035: Space Physics 1 (grad-level 3/3/0)

Textbook: *Fundamentals of Plasma Physics* by JA Bittencourt

(DOI: <https://doi.org/10.1007/978-1-4757-4030-1>)

Advising and Supervision

CHUNGNAM NATIONAL UNIVERSITY

2024 –

Minwook Kang

Master student.

2024 (summer)–present

Chae-Jeong Hong

Undergrad student in Astronomy and Space Science.

2024–present

Seokmin Song

Ph.D. program in Astronomy and Space Science.

2023–2024	Minwook Kang Undergrad student in Astronomy and Space Science.
Sep., 2024–Feb., 2025	Kunja Lasany Arfin Master program in Astronomy and Space Science.
2023–2024	Yongho Lee M.S. in Astronomy and Space Science. (Now in the graduate program at Utah University)
2020–2023	Ly Thi Kim Cuc Ph.D. program in Astronomy and Space Science (course work finished).
2020–2022	Jimin Hong M.S. in Astronomy and Space Science.
2019–2021	Jiwoo Kim M.S. in Astronomy and Space Science.

Teaching Assistantships

NEW JERSEY INSTITUTE OF TECHNOLOGY

2008–2012 Grading homework, proctoring exams, and running lab sessions.

RESEARCH

Research Interest and Expertise

- Understanding plasma waves and wave-particle interactions in the Earth’s magnetosphere and their effects on ring current and radiation belts.
- Satellite data analysis of plasma waves and energetic ion/electron distributions.
- Kinetic instabilities and particle-in-cell simulations of waves and wave propagation in dipole-like Earth’s magnetic field.

Additional Research Experience

2011 **Research Assistant**, New Jersey Institute of Technology.
Van Allen Probes’ RBSPICE Data Analysis.
Supervisor: Jeongwoo Lee and Louis Lanzerotti.

Open-Source Code/Library

git repos GitLab: <https://gitlab.com/kyungguk>
 GitHub: <https://github.com/kyungguk1>
 Codeberg: <https://codeberg.org/kyungguk>
 Space Plasma: https://gitlab.com/space_plasma
 CNU Teaching: <https://gitlab.com/cnu-teaching>

DispersionSolver

Kinetic Plasma Dispersion Solver in a homogeneous, magnetized plasma with a uniform background magnetic field.

https://gitlab.com/space_plasma/DispersionSolver

mirror-pic_1d

One-dimensional particle-in-cell code in mirror magnetic field geometry.

https://gitlab.com/space_plasma/mirror-pic_1d

toy-pic_1d **A toy project for one-dimensional particle-in-cell code** in uniform magnetic field geometry.

https://gitlab.com/space_plasma/toy-pic_1d

PICInDriftShell

2-D particle-in-cell code on drift-shell surface in dipole geometry.

<https://gitlab.com/kyungguk/PICInDriftShell>

NASACDF

A simple Mathematica plugin for reading NASA CDF data files.

https://gitlab.com/space_plasma/NASACDF

HDF5Kit

HDF5Kit is a thin layer on top of the hdf5 C library, abstracting a subset of frequently used APIs with C++.

https://gitlab.com/space_plasma/lib/HDF5Kit

ParallelKit

ParallelKit provides an abstraction layer for intra- and inter-process data parallelism for high-performance numerical computations.

https://gitlab.com/space_plasma/lib/ParallelKit

Skills

language Korean (native), English (intermediate)

programming

C, C++, Objective-C, Fortran90, IDL, Matlab, Mathematica, Python, PHP, L^AT_EX, Parallel programming using the C++ concurrency library, OpenMP, and MPI.

SERVICE

Peer Review

2025 **Member of the Korean Astronomical Society**
Solar-Space Environment Section.

2018–present **Member of the Korean Space Science Society**
Solar-Space Environment Section.

2009–present **Member of the American Geophysical Union**
Magnetospheric Physics Section.

- 2013–present **Reviewer** (journals)
[Journal of Geophysical Research \(Space Physics\)](#), [Geophysical Research Letters](#), [Space Weather](#), [AGU Monograph Series](#), [Physics of Plasmas](#), [Journal of the Korean Physical Society](#), [Journal of Astronomy and Space Sciences](#).
- 2014–present **Reviewer** (proposals)
 NASA Heliophysics Guest Investigator Program (2014), NASA Postdoctoral Program (2014, 2015), Czech Science Foundation (2014).
- 2023 **Reviewer** (preceedings)
 The 15th Asia Pacific Physics Conference.

Departmental Service and Committees

- 2024 (fall)– Rotating Chair
 Department of Astronomy and Space Science,
 Chungnam Natural University.
- 2021, 2023, 2024
 수시 입학사정관 (College Admission Committee)
 College of Natural Science, Chungnam Natural University.
- 2020–2023 기획발전위원회
 College of Natural Science, Chungnam Natural University.

Organization of Workshops and Working Groups

- 2024 Session on [Asia Oceania Geosciences Society \(AOGS\)](#) Meeting
ST15: Nonlinear Processes Related to Plasma Waves and Wave-particle Interactions in Terrestrial and Planetary Magnetospheres.
Main Convener, with Alexander Drozdov (University of California, Los Angeles), Longzhi Gan (Boston University), Miroslav Hanzelka (GFZ German Research Centre for Geosciences), and Kaijun Liu (Southern University of Science and Technology).

PUBLICATIONS

[Google Scholar Profile](#)

[NASA ADS Library](#)

PHD THESIS

Min: A statistical study of plasmawaves and energetic particles in the outer magnetosphere 2013PhDT.....583M

Kyungguk Min. "A statistical study of plasmawaves and energetic particles in the outer magnetosphere". PhD thesis. New Jersey Institute of Technology, Jan. 2013. URL: <https://digitalcommons.njit.edu/dissertations/375/>.

JOURNAL ARTICLES

Min: Quantifying the role of electron plateau distribution on the chorus gap formation using one-dimension PIC simulations 2025AdSpR..75.2403M

Kyungguk Min. "Quantifying the role of electron plateau distribution on the chorus gap formation using one-dimension PIC simulations". In: *Advances in Space Research* 75.2 (Jan. 2025), pp. 2403–2424. DOI: [10.1016/j.asr.2024.10.002](https://doi.org/10.1016/j.asr.2024.10.002).

K.-H. Kim et al.: Observation and Numerical Simulation of Cold Ions Energized by EMIC Waves 2024JGRA..12932361K

K.-H. Kim et al. "Observation and Numerical Simulation of Cold Ions Energized by EMIC Waves". In: *Journal of Geophysical Research (Space Physics)* 129.5, e2023JA032361 (May 2024), e2023JA032361. DOI: [10.1029/2023JA032361](https://doi.org/10.1029/2023JA032361).

Min: Linear Theory Analysis and One-Dimensional Hybrid Simulations of High-Frequency EMIC Waves in a Dipole Magnetic Field 2024JGRA..12932387M

Kyungguk Min. "Linear Theory Analysis and One-Dimensional Hybrid Simulations of High-Frequency EMIC Waves in a Dipole Magnetic Field". In: *Journal of Geophysical Research (Space Physics)* 129.3, e2023JA032387 (Mar. 2024), e2023JA032387. DOI: [10.1029/2023JA032387](https://doi.org/10.1029/2023JA032387).

Min et al.: On the Energy Coupling From Magnetosonic Waves to High-Frequency Electromagnetic Ion Cyclotron Waves: Statistical Analysis 2024JGRA..12932114M

Kyungguk Min and Qianli Ma. "On the Energy Coupling From Magnetosonic Waves to High-Frequency Electromagnetic Ion Cyclotron Waves: Statistical Analysis". In: *Journal of Geophysical Research (Space Physics)* 129.1, e2023JA032114 (Jan. 2024), e2023JA032114. DOI: [10.1029/2023JA032114](https://doi.org/10.1029/2023JA032114).

Yao et al.: Evaluation of Particle Scattering by Oxygen Ion Cyclotron Harmonic Waves in the Inner Magnetosphere 2024GeoRL...5108261Y

Fei Yao et al. "Evaluation of Particle Scattering by Oxygen Ion Cyclotron Harmonic Waves in the Inner Magnetosphere". In: *Geophys. Res. Lett.* 51.6, e2024GL108261 (Mar. 2024), e2024GL108261. DOI: [10.1029/2024GL108261](https://doi.org/10.1029/2024GL108261).

Jun et al.: Statistical Study of EMIC Waves and Related Proton Distributions Observed by the Arase Satellite 2023JGRA..12831131J

C. -W. Jun et al. "Statistical Study of EMIC Waves and Related Proton Distributions Observed by the Arase Satellite". In: *Journal of Geophysical Research (Space Physics)* 128.6, e2022JA031131 (June 2023), e2022JA031131. DOI: [10.1029/2022JA031131](https://doi.org/10.1029/2022JA031131).

Kwon et al.: Energization of Cold Protons and Helium Ions by EMIC Waves in the Inner Magnetosphere: Hybrid Simulations 2023JGRA..12831240K

Jong-Woo Kwon et al. "Energization of Cold Protons and Helium Ions by EMIC Waves in the Inner Magnetosphere: Hybrid Simulations". In: *Journal of Geophysical Research (Space Physics)* 128.5, e2022JA031240 (May 2023), e2022JA031240. DOI: [10.1029/2022JA031240](https://doi.org/10.1029/2022JA031240).

Min: Banded chorus generation by an electron shell distribution in an inhomogeneous magnetic field: 1D PIC simulations 2023PhPl...30a2904M

Kyungguk Min. "Banded chorus generation by an electron shell distribution in an inhomogeneous magnetic field: 1D PIC simulations". In: *Physics of Plasmas* 30.1, 012904 (Jan. 2023), p. 012904. DOI: [10.1063/5.0127471](https://doi.org/10.1063/5.0127471).

Min: Detailed analysis of banded chorus gap formation by an electron shell distribution 2023PhPl...30h2902M

Kyungguk Min. "Detailed analysis of banded chorus gap formation by an electron shell distribution". In: *Physics of Plasmas* 30.8, 082902 (Aug. 2023), p. 082902. DOI: [10.1063/5.0151855](https://doi.org/10.1063/5.0151855).

Richard E. Denton et al.: Models for magnetospheric mass density and average ion mass including radial dependence 2022FrASS...949684D

Richard E. Denton et al. "Models for magnetospheric mass density and average ion mass including radial dependence". In: *Frontiers in Astronomy and Space Sciences* 9, 394 (Dec. 2022), p. 394. DOI: [10.3389/fspas.2022.1049684](https://doi.org/10.3389/fspas.2022.1049684).

Min et al.: Unusual high frequency EMIC waves: Detailed analysis of EMIC wave excitation and energy coupling between EMIC and magnetosonic waves

2022AdSpR..69...35M

Kyungguk Min, Jiwoo Kim, et al. "Unusual high frequency EMIC waves: Detailed analysis of EMIC wave excitation and energy coupling between EMIC and magnetosonic waves". In: *Advances in Space Research* 69.1 (Jan. 2022), pp. 35–47. DOI: [10.1016/j.asr.2021.07.039](https://doi.org/10.1016/j.asr.2021.07.039).

Song et al.: Analysis of the Tsyganenko Magnetic Field Model Accuracy during Geomagnetic Storm Times Using the GOES Data

2022JASS...39..159S

Seok-Min Song and Kyungguk Min. "Analysis of the Tsyganenko Magnetic Field Model Accuracy during Geomagnetic Storm Times Using the GOES Data". In: *Journal of Astronomy and Space Sciences* 39.4 (Dec. 2022), pp. 159–167. DOI: [10.5140/JASS.2022.39.4.159](https://doi.org/10.5140/JASS.2022.39.4.159).

Y. Wang et al.: Van Allen Probes Observations of Oxygen Ion Cyclotron Harmonic Waves: Statistical Study

2022GeoRL..4996825W

Yan Wang et al. "Van Allen Probes Observations of Oxygen Ion Cyclotron Harmonic Waves: Statistical Study". In: *Geophys. Res. Lett.* 49.4, e96825 (Feb. 2022), e96825. DOI: [10.1029/2021GL096825](https://doi.org/10.1029/2021GL096825).

Min et al.: Quasilinear Diffusion of Protons by Equatorial Magnetosonic Waves at Quasi-Perpendicular Propagation: Comparison With the Test-Particle Approach

2021JGRA..12629767M

Kyungguk Min and Kaijun Liu. "Quasilinear Diffusion of Protons by Equatorial Magnetosonic Waves at Quasi-Perpendicular Propagation: Comparison With the Test-Particle Approach". In: *Journal of Geophysical Research (Space Physics)* 126.12, e29767 (Dec. 2021), e29767. DOI: [10.1029/2021JA029767](https://doi.org/10.1029/2021JA029767).

Park et al.: 국내 우주환경 자료 보유 현황: 자기권국내 우주환경 자료 보유 현황: 자기권 Terrestrial Magnetospheric Observations and Models in Korea

2021JSTAp...1..178P

Kyung Sun Park and Kyungguk Min. "국내 우주환경 자료 보유 현황: 자기권국내 우주환경 자료 보유 현황: 자기권 Terrestrial Magnetospheric Observations and Models in Korea". In: *Journal of Strain Analysis and Engineering Design* 1.2 (Aug. 2021), pp. 178–198. DOI: [10.52912/jsta.2021.1.2.178](https://doi.org/10.52912/jsta.2021.1.2.178).

W. Y. Li et al.: Electron Bernstein waves driven by electron crescents near the electron diffusion region

2020NatCo..11..141L

W. Y. Li et al. "Electron Bernstein waves driven by electron crescents near the electron diffusion region". In: *Nature Communications* 11, 141 (Jan. 2020), p. 141. DOI: [10.1038/s41467-019-13920-w](https://doi.org/10.1038/s41467-019-13920-w).

Liu et al.: Excitation of Oxygen Ion Cyclotron Harmonic Waves in the Inner Magnetosphere: Hybrid Simulations 2020GeoRL..4790575L

Kaijun Liu et al. “Excitation of Oxygen Ion Cyclotron Harmonic Waves in the Inner Magnetosphere: Hybrid Simulations”. In: *Geophys. Res. Lett.* 47.20, e90575 (Oct. 2020), e90575. DOI: [10.1029/2020GL090575](https://doi.org/10.1029/2020GL090575).

Min et al.: Linear Instability and Saturation Characteristics of Magnetosonic Waves along the Magnetic Field Line 2020JASS...37...85M

Kyungguk Min and Kaijun Liu. “Linear Instability and Saturation Characteristics of Magnetosonic Waves along the Magnetic Field Line”. In: *Journal of Astronomy and Space Sciences* 37.2 (June 2020), pp. 85–94. DOI: [10.5140/JASS.2020.37.2.85](https://doi.org/10.5140/JASS.2020.37.2.85).

Min et al.: Two-Dimensional Hybrid Particle-in-Cell Simulations of Magnetosonic Waves in the Dipole Magnetic Field: On a Constant L-Shell 2020JGRA..12528414M

Kyungguk Min, Kaijun Liu, Richard E. Denton, František Němec, et al. “Two-Dimensional Hybrid Particle-in-Cell Simulations of Magnetosonic Waves in the Dipole Magnetic Field: On a Constant L-Shell”. In: *Journal of Geophysical Research (Space Physics)* 125.10, e28414 (Oct. 2020), e28414. DOI: [10.1029/2020JA028414](https://doi.org/10.1029/2020JA028414).

Mousavi et al.: Mirror Instability Driven by Pickup Ions in the Outer Heliosheath 2020ApJ...901..167M

Ameneh Mousavi, Kaijun Liu, and Kyungguk Min. “Mirror Instability Driven by Pickup Ions in the Outer Heliosheath”. In: *The Astrophysical Journal* 901.2, 167 (Oct. 2020), p. 167. DOI: [10.3847/1538-4357/abb1a1](https://doi.org/10.3847/1538-4357/abb1a1).

R. E. Denton et al.: Pitch Angle Scattering of Sub-MeV Relativistic Electrons by Electromagnetic Ion Cyclotron Waves 2019JGRA..124.5610D

R. E. Denton, L. Ofman, et al. “Pitch Angle Scattering of Sub-MeV Relativistic Electrons by Electromagnetic Ion Cyclotron Waves”. In: *Journal of Geophysical Research (Space Physics)* 124.7 (July 2019), pp. 5610–5626. DOI: [10.1029/2018JA026384](https://doi.org/10.1029/2018JA026384).

Min et al.: Equatorial Propagation of the Magnetosonic Mode Across the Plasmapause: 2-D PIC Simulations 2019JGRA..124.4424M

Kyungguk Min, František Němec, et al. “Equatorial Propagation of the Magnetosonic Mode Across the Plasmapause: 2-D PIC Simulations”. In: *Journal of Geophysical Research (Space Physics)* 124.6 (June 2019), pp. 4424–4444. DOI: [10.1029/2019JA026567](https://doi.org/10.1029/2019JA026567).

Boardsen et al.: Determining the Wave Vector Direction of Equatorial Fast Magnetosonic Waves
2018GeoRL..45.7951B

Scott A. Boardsen et al. "Determining the Wave Vector Direction of Equatorial Fast Magnetosonic Waves". In: *Geophys. Res. Lett.* 45.16 (Aug. 2018), pp. 7951–7959. DOI: [10.1029/2018GL078695](https://doi.org/10.1029/2018GL078695).

Gamayunov et al.: Generation of EMIC Waves Observed by Van Allen Probes at Low L Shells
2018JGRA..123.8533G

Konstantin V. Gamayunov et al. "Generation of EMIC Waves Observed by Van Allen Probes at Low L Shells". In: *Journal of Geophysical Research (Space Physics)* 123.10 (Oct. 2018), pp. 8533–8556. DOI: [10.1029/2018JA025629](https://doi.org/10.1029/2018JA025629).

Min et al.: Equatorial Evolution of the Fast Magnetosonic Mode in the Source Region: Observation-Simulation Comparison of the Preferential Propagation Direction
2018JGRA..123.9532M

Kyungguk Min, Scott A. Boardsen, et al. "Equatorial Evolution of the Fast Magnetosonic Mode in the Source Region: Observation-Simulation Comparison of the Preferential Propagation Direction". In: *Journal of Geophysical Research (Space Physics)* 123.11 (Nov. 2018), pp. 9532–9544. DOI: [10.1029/2018JA026037](https://doi.org/10.1029/2018JA026037).

Min et al.: Contributions of Mirror and Ion Bernstein Instabilities to the Scattering of Pickup Ions in the Outer Heliosheath
2018ApJ...852...39M

Kyungguk Min and Kaijun Liu. "Contributions of Mirror and Ion Bernstein Instabilities to the Scattering of Pickup Ions in the Outer Heliosheath". In: *The Astrophysical Journal* 852.1, 39 (Jan. 2018), p. 39. DOI: [10.3847/1538-4357/aaa0d4](https://doi.org/10.3847/1538-4357/aaa0d4).

Min et al.: Particle-in-Cell Simulations of the Fast Magnetosonic Mode in a Dipole Magnetic Field: 1-D Along the Radial Direction
2018JGRA..123.7424M

Kyungguk Min, Kaijun Liu, Richard E. Denton, and Scott A. Boardsen. "Particle-in-Cell Simulations of the Fast Magnetosonic Mode in a Dipole Magnetic Field: 1-D Along the Radial Direction". In: *Journal of Geophysical Research (Space Physics)* 123.9 (Sept. 2018), pp. 7424–7440. DOI: [10.1029/2018JA025666](https://doi.org/10.1029/2018JA025666).

Min et al.: Fast Magnetosonic Waves Observed by Van Allen Probes: Testing Local Wave Excitation Mechanism
2018JGRA..123..497M

Kyungguk Min, Kaijun Liu, Xueyi Wang, et al. "Fast Magnetosonic Waves Observed by Van Allen Probes: Testing Local Wave Excitation Mechanism". In: *Journal of Geophysical Research (Space Physics)* 123.1 (Jan. 2018), pp. 497–512. DOI: [10.1002/2017JA024867](https://doi.org/10.1002/2017JA024867).

Takahashi et al.: Van Allen Probes Observations of Second Harmonic Poloidal Standing Alfvén Waves 2018JGRA..123..611T

Kazue Takahashi, Satoshi Oimatsu, et al. "Van Allen Probes Observations of Second Harmonic Poloidal Standing Alfvén Waves". In: *Journal of Geophysical Research (Space Physics)* 123.1 (Jan. 2018), pp. 611–637. DOI: [10.1002/2017JA024869](https://doi.org/10.1002/2017JA024869).

Gao et al.: Gyrokinetic electron and fully kinetic ion simulations of fast magnetosonic waves in the magnetosphere 2017PhPl...24f2901G

Xiaotian Gao et al. "Gyrokinetic electron and fully kinetic ion simulations of fast magnetosonic waves in the magnetosphere". In: *Physics of Plasmas* 24.6, 062901 (June 2017), p. 062901. DOI: [10.1063/1.4985303](https://doi.org/10.1063/1.4985303).

Min et al.: Ion Bernstein instability as a possible source for oxygen ion cyclotron harmonic waves 2017JGRA..122.5449M

Kyungguk Min, Richard E. Denton, et al. "Ion Bernstein instability as a possible source for oxygen ion cyclotron harmonic waves". In: *Journal of Geophysical Research (Space Physics)* 122.5 (May 2017), pp. 5449–5465. DOI: [10.1002/2017JA023979](https://doi.org/10.1002/2017JA023979).

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TALKS AND PRESENTATIONS

Conferences and Workshops

INVITED TALKS

- 2025 Kyungguk Min. "Chorus waves in Earth's magnetosphere". In: Special session *Heliosphere: Basics and Frontiers* at 60th Korean Astronomical Society Spring Meeting, April 9–11, 2025, Gyeongju Hwabaek International Convention Center, Korea.
- 2022 Kyungguk Min. "The effect of parallel electron plateau on the banded chorus spectral gap formation". In: *15th Asia Pacific Physics Conference (APPC)*, August 21–26, 2022, Virtual.
- 2020 Kyungguk Min and Kaijun Liu. "SG-I6: Particle-in-cell simulations of magnetosonic waves in the Earth's magnetic field". In: *4rd Asia-Pacific e-Conference on Plasma Physics (AAPPS-DPP2020)*, October 26–31, 2020, Virtual.
- 2019 Kyungguk Min and Kaijun Liu. "Potential Role of Mirror and Ion Bernstein Instabilities on Scattering of Pickup Ions in the Outer Heliosheath". In: *3rd Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2019)*, November 4–8, 2019, Crowne Plaza Hefei, Hefei, Anhui, China.
- 2015 Kyungguk Min. "UBK coordinates, particle tracing and L^* calculation". In: *Inner Magnetosphere Coupling (IMC) III*, 2015, LA CA, USA.
- 2014 Kyungguk Min, Jeongwoo Lee, K. Keika, and Wen Li "Specifying EMIC Wave Properties Based on THEMIS Data". In: *NSF-GEM Summer Workshop*, June 2014, Snowmass CO, USA.

CONTRIBUTED ORAL

- 2024 Kyungguk Min. "Can a Parallel Electron Plateau Distribution Generate Chorus Band Gap? Parametric Analysis Using 1D PIC Simulations". In: *11th VER-SIM Workshop*, September 30–October 4, 2024, Breckenridge, Colorado, USA.
- 2024 Kyungguk Min. "Hybrid simulation study of high-frequency H-band EMIC waves in the Earth's magnetosphere". In: *15th International Symposium for Space Simulations (ISSS-15)*, August 1–9, 2024, Max Planck Institute for Plasma Physics (IPP), Garching, Germany.

- 2024 Kyungguk Min and Qianli Ma. “Energy Coupling from Magnetosonic Waves to High-Frequency Electromagnetic Ion Cyclotron Waves: Statistical Analysis”. In: *USNC-URSI National Radio Science Meeting (NRSM)*, January 9–13, 2024, Boulder CO, USA.
- 2022 Kyungguk Min. “PIC simulations of banded chorus generation due to parallel electron plateau”. In: *10th VERSIM Workshop*, November 07–11, 2022, Sodankylä, Finland.
- 2022 Kyungguk Min. “PIC simulations of banded chorus generation due to parallel electron plateau”. In: *NSF-GEM Summer Workshop*, June 20–24, 2022, Hawaii, USA.
- 2020 Kyungguk Min. “PIC Simulations of Magnetosonic Wave in the Dipole Magnetic Field: Equatorial Wave Confinement”. In: *ERG Science and Space Weather Workshop*, January 13–15, 2020, NCU, Taiwan.
- 2017 Kyungguk Min, R. E. Denton, Kaijun Liu, S. P. Gary, and H. E. Spence. “A Possible Source for Oxygen Ion Cyclotron Harmonic Waves”. In: *NSF-GEM Summer Workshop*, 2017, Norfolk VA, USA.
- 2016 Kyungguk Min, K. Takahashi, A. Y. Ukhorskiy, J. W. Manweiler, H. E. Spence, H. J. Singer, S. J. Claudepierre, B. A. Larsen, A. R. Soto-Chavez, and R. J. Cohen. “Second harmonic poloidal waves and energetic proton response: Van Allen Probes observation”. In: *AGU Fall Meeting*, 2016, San Francisco, CA.
- 2015 Kyungguk Min, Kaijun Liu, and S. P. Gary. “Linear growth and nonlinear saturation of proton ring-driven instabilities in the inner magnetosphere: Linear theory and PIC simulations”. In: *AGU Fall Meeting*, 2015, San Francisco CA, USA.
- 2013 Kyungguk Min, J. Bortnik, R. E. Denton, K. Takahashi, H. J. Singer, V. Angelopoulos, and K. H. Glassmeier. “Equatorial mass density distribution during two solar cycle minima — Magneto-seismology”. In: *NSF-GEM Summer Workshop*, June 16–21, 2013, Snowmass CO, USA.
- 2012 Kyungguk Min, J. Bortnik, and Jeongwoo Lee. “A Novel Technique for Rapid L^* Calculation”. In: *NSF-GEM Summer Workshop*, June 17–22, 2012, Snowmass CO, USA.

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- 2024 Kyungguk Min. “High-frequency Emic Waves: a Comprehensive Analysis of Instability Threshold and Nonlinear Evolution”. In: *21st AOGS Meeting*, June 23–28, 2024, Alpensia Convention Center, Pyeongchang, Korea.
- 2023 Kyungguk Min. “Phase Space Density Hole/Hill Formation by Whistler-mode Chorus in a Multi-component Plasma”. In: *35th URSI General Assembly and Scientific Symposium (URSI-GASS 2023)*, August 19–26, 2023, Sapporo, Japan.

- 2023 Kyungguk Min. "Simultaneous observations of high-frequency EMIC waves, magnetosonic waves, and anisotropic low-energy protons: Does correlation mean causation?". In: *NSF-GEM Summer Workshop*, June 11–16, 2023, San Diego CA, USA.
- 2023 Kyungguk Min. "ST21-A001 Phase Space Density Hole/hill Formation by Whistler-mode Chorus in a Multi-component Plasma". In: *20th AOGS Meeting*, July 30–August 04, 2023, Singapore.
- 2022 Kyungguk Min. "ST07-A006 The Role of Parallel Electron Plateau on the Banded Chorus Generation: 1d Pic Simulations". In: *19th AOGS Meeting*, August 01–05, 2022, Virtual.
- 2022 Kyungguk Min. "Testing the role of parallel electron plateau structure in the chorus gap using 1D PIC simulations". In: *44th COSPAR Scientific Assembly*, July 16–24, 2022, Athens, Greece.
- 2021 Kyungguk Min, Qianli Ma, and Kaijun Liu. "Unusual high frequency EMIC waves: Testing EMIC wave excitation and energy coupling from magnetosonic waves". In: *AGU Fall Meeting*, December 13–17, 2021, Virtual.
- 2021 Kyungguk Min and Kaijun Liu. "Proton scattering by magnetosonic waves at perpendicular propagation: Comparison between QL theory and TP calculation". In: *NSF-GEM Summer Workshop*, July 26–30, 2021, Virtual.
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- 2020 Kyungguk Min, Kaijun Liu, R. E. Denton, S. A. Boardsen, and F. Němec. "P1-16: Is Near-Equatorial Free Energy Source Necessary to Generate Latitudinally Limited Equatorial Noise?". In: *9th VERSIM Workshop*, November 16–20, 2020, Virtual.
- 2019 Kyungguk Min, Kaijun Liu, R. E. Denton, and S. A. Boardsen. "Preferential Propagation of Equatorial Noise in Earth's Inner Magnetosphere: Event Study & PIC Simulations". In: *KHU Workshop on "Wave and Particle Dynamics in Magnetospheric and Heliospheric Plasmas: Advanced Theory and Simulations"*, May 2019, Kyung Hee University, Yongin-si, Korea.
- 2019 Kyungguk Min and Kaijun Liu. "Potential Role of Mirror and Ion Bernstein Instabilities on Scattering of Pickup Ions in the Outer Heliosheath". In: *International ISEE symposium on "Recent progress in heliospheric physics by direct measurements of unexplored space plasmas"*, February 25–28, 2019, Nagoya University, Nagoya, Japan.
- 2019 Kyungguk Min, Kaijun Liu, R. E. Denton, S. A. Boardsen, and F. Němec. "Particle-in-cell simulations of fast magnetosonic waves on a drift shell surface in the dipole magnetic field". In: *AGU Fall Meeting*, 2019, San Francisco CA, USA.

- 2017 Kyungguk Min, Kaijun Liu and S. P. Gary. "Potential Role of the Mirror and Ion Bernstein Instabilities on the Pickup Ion Dynamics in the Outer Heliosheath". In: *AGU Fall Meeting*, 2017, New Orleans LA, USA.
- 2016 Kyungguk Min and Kaijun Liu. "Fast Magnetosonic Wave Growth Rate Pattern Driven by Proton Ring/Shell Distributions". In: *NSF-GEM Summer Workshop*, 2016, Santa Fe NM, USA.
- 2015 Kyungguk Min and Kaijun Liu. "Regime Transition of Proton Bernstein Instability Driven by Proton Shell Distribution". In: *NSF-GEM Summer Workshop*, June 2015, Snowmass CO, USA.
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- 2014 Kyungguk Min, Kaijun Liu, H. Spence, G. D. Reeves, H. O. Funsten, B. Larsen, C. A. Kletzing, G. B. Hospodarsky, W. S. Kurth, R. E. Denton, J. R. Wygant, J. W. Bonnell, A. W. Breneman, and J.-M. Jahn. "Examining EMIC wave spectral properties using in situ measurements of multi-ion species and hybrid simulations". In: *AGU Fall Meeting*, 2014, San Francisco CA, USA.
- 2014 Kyungguk Min, Lunjin Chen, Kaijun Liu, H. E. Spence, G. D. Reeves, H. O. Funsten, B. A. Larsen, C. A. Kletzing, G. B. Hospodarsky, and W. S. Kurth. "Fast Magnetosonic Waves Observed by the Van Allen Probes". In: *NSF-GEM Summer Workshop*, June 2014, Snowmass CO, USA.
- 2013 Kyungguk Min, J. Bortnik, D. Turner, K. Keika, Wen Li, L. J. Lanzerotti, D. G. Mitchell, C. A. Kletzing, and W. S. Kurth. "Energetic electron response to March 1 storm: Coordinated observations between Van Allen Probes and THEMIS missions". In: *AGU Fall Meeting*, 2013, San Francisco CA, USA.
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- 2012 Kyungguk Min, Jeongwoo Lee, K. Keika, and Wen Li. "Properties of EMIC waves measured by the THEMIS mission". In: *Space Weather Workshop*, 2012, Boulder CO, USA.
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- 2011 Kyungguk Min, Jeongwoo Lee, K. Keika, and Wen Li. "Global distribution of EMIC waves derived from THEMIS observations". In: *Geospace Environment Modeling (GEM) Meeting*, June 2011, Santa Fe NM, USA.
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trons". In: *10th International Conference of Substorm (ICS10)*, March 2010, San Luis Obispo CA, USA.

2009 Kyungguk Min, K. Keika, and Jeongwoo Lee. "A Three Dimensional Test Particle Simulation for the Electron Injections associated with the 23 March 2007 Substorm". In: *American Geophysical Union (AGU) Fall Meeting*, December 2009, San Francisco CA, USA.