

Riku Kuze

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Research interest

High-energy Astrophysics

Multi-messenger Astrophysics

Black-hole Astrophysics

Education

Tohoku University, Ph.D Science, Astronomy Apr. 2022 – Mar. 2025

Title: Multi-wavelength emission modeling of jets and accretion flows of black holes

Supervisor: Prof. Kenji Toma and Asst. Prof. Shigeo Kimura

Tohoku University, Master of Science in Astronomy Apr. 2020 – Mar. 2022

Tohoku University, Bachelor of Science in Astronomy and Geophysics Apr. 2016 – Mar. 2020

Positions

Yukawa Research Fellow/Senior Research Fellow, Apr. 2025 – Now
Yukawa Institute for Theoretical Physics, Kyoto University

Graduate Student, Astronomical Institute, Tohoku University Apr. 2020 – Mar. 2025

Publications

Galactic Isolated Stellar-Mass Black Holes with the Magnetospheric Spark Gap as Possible GeV-TeV Gamma-ray Unidentified Sources Feb. 2025

Koki Kin, *Riku Kuze*, Shigeo S. Kimura

10.3847/1538-4357/adcb3d

Multi-messenger Emission by Magnetically Arrested Disks and Relativistic Jets of Black Hole X-ray Binaries Jan. 2025

Riku Kuze, Shigeo S. Kimura, Ke Fang

10.3847/1538-4357/adcc1b

Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Nearby Radio Galaxies: Application to M87 Nov. 2024

Riku Kuze, Shigeo S. Kimura, Kenji Toma

10.3847/1538-4357/ad88f4

High-energy Gamma Rays from Magnetically Arrested Disks in Nearby Radio Galaxies Aug. 2022

Riku Kuze, Shigeo S. Kimura, Kenji Toma

10.3847/1538-4357/ac7ec1

Fellowship/Grant

Pioneering Research Support Project for Ph.D Students Apr. 2022 - Mar. 2025
(Tohoku University: 2,160,000 JPY)

Japan Society for the Promotion of Science (JSPS):
Overseas Challenge Program for Young Researchers,
University of Wisconsin-Madison, Host Researcher: Ke Fang (1,400,000 JPY)

Mar. 2024 - Jun. 2024

Pioneering Research Support: Additional Research Grants "Type A"
(Travel Expenses for Presentation) (Tohoku University: 400,000 JPY)

Aug. 2024

Professional Organization

The Astronomical Society of Japan

Group of Theoretical Astronomers and Astrophysicists in Japan (Rironkon)

Academic Activities

Secretary General of the Young Astronomy and Astrophysics Committee of Japan

Sep. 2022 - Sep. 2023

Member of the Career Support Committee of the Astronomical Society of Japan

Jun. 2023 - Jun. 2025

Teaching Activities

High school teacher's license (Physics)

Mar. 2020 -

SLA at Tohoku University of "Moshiten"

Dec. 2019

HP: Moshiten

Teaching Assistant of the Mechanics Exercises I

Apr. 2020 - Aug. 2020

Teaching Assistant of the Astronomical Seminar

Oct. 2021 - Feb. 2022

Teaching Assistant of the Astrophysics Exercises II

Apr. 2022 - Aug. 2022

Teaching Assistant of the Astronomical Seminar

Oct. 2022 - Feb. 2023

Research Assistant

Jul. 2023 - Sep. 2023

Research Assistant

Dec. 2023 - Feb. 2024

Seminars

"Multi-wavelength Emission model of jets and accretion flows of radio galaxies",
Riku Kuze, OUTAP Colloquium, Osaka University, F608

Jul. 2025

"Multi-wavelength Emission model of jets and accretion flows of black holes",
Riku Kuze, YITP Seminar, Yukawa Institute for Theoretical Physics, Kyoto University,
K206

Feb. 2025

"Multi-wavelength Emission from Jets of Nearby Radio Galaxies", **Riku Kuze**,
NPAC(Nuclear/Particle/Astro/Cosmo) Forums, University of Wisconsin-Madison,
5280 Chamberlin Hall

Apr. 2024

International Conference

"Multi-wavelength Emission from Jets and A Magnetically Arrested Disk of Cygnus
X-1",
Riku Kuze, Shigeo Kimura, Ke Fang,
TeV Particle Astrophysics 2024, University of Chicago

Aug. 2024

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio
Galaxies",
Riku Kuze, Shigeo Kimura, Kenji Toma,
TeV Particle Astrophysics 2023, Napoli, Italy

Sep. 2023

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio
Galaxies",
Riku Kuze, Shigeo Kimura, Kenji Toma,

Jul. 2023

38th International Cosmic Ray Conference (ICRC2023), Nagoya University

"High-energy gamma-rays from magnetically arrested disks in nearby radio galaxies",

Aug. 2022

Riku Kuze, Shigeo Kimura, Kenji Toma,

TeV Particles Astrophysics(TeVPA2022), Queen's University/Canada

Domestic Conference

"Emissions of gamma rays, neutrinos and cosmic rays from jets and magnetically arrested disks of black hole X-ray binaries in the quiescent and hard states",

Mar. 2025

Riku Kuze, Shigeo Kimura, Ke Fang,

Spring Meeting of The Astronomical Society of Japan 2025, Mito City Hall

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks of Black-hole X-ray Binaries",

Mar. 2025

Riku Kuze, Shigeo Kimura, Ke Fang,

Black Hole Jet, Accretion Disk, and Disk Wind Workshop 2025, Nagoya City University

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks of Black-hole X-ray Binaries",

Dec. 2024

Riku Kuze, Shigeo Kimura, Ke Fang,

37th Rironkon Symposium, National Astronomical Observatory of Japan

"Multi-wavelength Emission from Jets and A Magnetically Arrested Disk: Application to Cygnus X-1",

Oct. 2024

Riku Kuze, Shigeo Kimura, Ke Fang,

High-energy Astrophysics Group Meeting 2024, Tohoku University

"Multi-wavelength Emission from Jets and A Magnetically Arrested Disk: Application to Cygnus X-1",

Sep. 2024

Riku Kuze, Shigeo Kimura, Ke Fang,

Autumn Meeting of The Astronomical Society of Japan 2024, Kansei Gakuin University

"Multi-wavelength Emission from Jets and A Magnetically Arrested Disk of Cygnus X-1",

Aug. 2024

Riku Kuze, Shigeo Kimura, Ke Fang,

Multi-messenger Summer School 2024, Shinshu University

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies",

Dec. 2023

Riku Kuze, Shigeo Kimura, Kenji Toma,

Multi-Messenger Conference 2023, Gero, Japan

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies",

Nov. 2023

Riku Kuze, Shigeo Kimura, Kenji Toma,

High-energy Astrophysics Group Meeting 2023, University of Tokyo

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies: Effects of particle acceleration",

Sep. 2023

Riku Kuze, Shigeo Kimura, Kenji Toma,

Autumn Meeting of The Astronomical Society of Japan 2023, Karuizawa, Japan

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies",

Aug. 2023

Riku Kuze, Shigeo Kimura, Kenji Toma,

Multi-messenger Summer School 2023, Karuizawa, Japan

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies",

Mar. 2023

Riku Kuze , Shigeo Kimura, Kenji Toma, Spring Meeting of The Astronomical Society of Japan 2023, Rikkyo University	
"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies", Riku Kuze , Shigeo Kimura, Kenji Toma, Black Hole Jet, Accretion Disk, and Disk Wind Workshop 2023, Tohoku University	Mar. 2023
"High-energy gamma-ray radiation model: Effect of electron heating rate", Riku Kuze , Shigeo Kimura, Kenji Toma, High-energy Astrophysics Group Meeting 2022, Hiroshima University	Nov. 2022
"Gamma-ray emission model of magnetically arrested disks: Effect of electron heating rate", Riku Kuze , Shigeo Kimura, Kenji Toma, Autumn Meeting of The Astronomical Society of Japan 2022, Niigata University	Sep. 2022
"Gamma-ray emission model of magnetically arrested disks: comparison with observational data of nearby radio galaxies", Riku Kuze , Shigeo Kimura, Kenji Toma, Spring Meeting of The Astronomical Society of Japan 2022, Online	Mar. 2022
"An efficient mechanism for extracting rotational energy using the interaction between the pulsar magnetic field and the accretion disk", Riku Kuze 50th Summer School for Young Astronomers, Online	Aug. 2020

Posters

"Multi-wavelength Emission from Jets and Magnetically Arrested Disks in Radio Galaxies", Riku Kuze , Shigeo Kimura, Kenji Toma, 36th Rironkon Symposium, Hirosaki University	Dec. 2023
"High-energy gamma-ray radiation model: Effect of electron heating rate", Riku Kuze , Shigeo Kimura, Kenji Toma, 35th Rironkon Symposium, Fukushima, Japan	Dec. 2022
"High-energy gamma-rays from magnetically arrested disks in nearby radio galaxies", Riku Kuze , Shigeo Kimura, Kenji Toma, Gamma2022, Online	Jul. 2022
"Gamma-ray emission model of magnetically arrested disks: comparison with observational data of nearby radio galaxies", Riku Kuze , Shigeo Kimura, Kenji Toma, Black Hole Jet, Accretion Disk, and Disk Wind Workshop 2022, Online	Jan. 2022
"Applicable range of the gamma-ray emission model from magnetically arrested disks", Riku Kuze , Shigeo Kimura, Kenji Toma, 34th Rironkon Symposium, Online	Dec. 2021
"Applicable range of the gamma-ray emission model from magnetically arrested disks", Riku Kuze , Shigeo Kimura, Kenji Toma, High-energy Astrophysics Group Meeting 2021, Online	Nov. 2021
"High-energy gamma rays from magnetically arrested disks", Riku Kuze , Shigeo Kimura, Kenji Toma, Joint Online Symposium of Graduate Schools of Science and Life Sciences 2021, Online	Feb. 2021