
Research Interests

Time-domain Astronomy, Multi-Messenger Astronomy, Supernovae, Tidal Disruption Events, Nuclear Transients, Massive Data Analysis, Machine Learning, Radiation Hydrodynamics Simulation

Research Experience and Employment

- 2025.11 – Present **Postdoctoral Research Fellow**, *Columbia Astrophysics Lab, Columbia University, USA*
- 2025.11 – Present **Guest Researcher**, *Center for Computational Astrophysics, Flatiron Institute, USA*
◦ Host: Kishalay De
- 2025.04 – 2025.10 **Postdoctoral Researcher**, *Department of Astronomy, Kyoto University, Japan*
- 2024.03 – 2024.06 **Visiting Scholar**, *Department of Physics, Columbia University, USA*
◦ Host: Brian Metzger
- 2022.04 – 2025.03 **JSPS Research Fellow (DC1)**, *Department of Astronomy, Kyoto University, Japan*

Education

- 2022.04 – 2025.03 **Ph.D. in Astronomy**, *Department of Astronomy, Kyoto University, Japan*
◦ Thesis: *Diversity of Explosive Transients: Classical Supernovae to New Populations*
◦ Supervisor: Keiichi Maeda
- 2020.04 – 2022.03 **M.Sc. in Astronomy**, *Department of Astronomy, Kyoto University, Japan*
◦ Thesis: *Light-curve Modeling for Rapid-Evolving Transients*
◦ Supervisor: Keiichi Maeda
- 2016.04 – 2020.03 **B.Sc. in Astronomy**, *Faculty of Science, Kyoto University, Japan*

Awards and Fellowships

- 2025 – 2027 Overseas Research Fellowships of the JSPS for Young Scientists
- 2025 – 2028 [Declined] Research Fellowships of the JSPS for Young Scientists - Postdocs; PD
- 2022 – 2025 Research Fellowships of the JSPS for Young Scientists - Doctoral Course; DC1

Grants and Funding (PI)

- 2026 NASA Grant for 2026B Keck Principal Investigator Data Award (14,750 USD)
- 2026 NASA Grant for 2026A Keck Principal Investigator Data Award (12,250 USD)
- 2025 – 2027 JSPS Allowance for JSPS Overseas Fellows (16,000,000 JPY)
- 2025 – 2028 [Declined] JSPS Grant for JSPS Fellows - PD (5,460,000 JPY)
- 2023 JSPS Overseas Challenge Program for Young Researchers (1,400,000 JPY)
- 2023 Hayakawa Satio Fund awarded by the Astronomical Society of Japan (216,220 JPY)
- 2022 DoGS Overseas Travel Support awarded by Kyoto University (400,000 JPY)
- 2022 – 2024 JSPS Grant for JSPS Fellows -DC1 (3,400,000 JPY)

Telescope Observing Time (PI)

1. Keck/LRIS, 26A-N150, 1 nights
2. Keck/LRIS, 26A-N194, 3 nights
3. Subaru/FOCAS, S25B-091, 2 nights
4. Subaru/FOCAS, S25A-068, 2 nights

5. Subaru/FOCAS, S24A-062, 2 nights
6. Subaru/FOCAS, S23B-025, 1 night
7. Subaru/FOCAS, S23A-052, 2 nights

Selected Talks

International Conference

- 2025.08 One Hundred Years of Supernova Science, *Sweden*
- 2024.09 Tidal Disruption Events and Nuclear Transients: Entering the Data-Rich Era, *Greece*
- 2024.08 XXXII IAU General Assembly 2024, *South Africa*
- 2024.02 Transients Down Under, *Australia*
- 2023.11 2nd Finalnd-Japan Bilateral meeting on extragalactic transients, *Finland* (Invited)
+4 International Contributed Talks, +17 Domestic (Japan) Contributed Talks

Seminars Flatiron Institute (NY/USA), University of Turku (*Finland*), Columbia University (NY/USA), University of Tsukuba, Tohoku University, University of Tokyo [Hongo], University of Tokyo [Komaba]

Teaching and Professional Service

Teaching

- 2025.08 Lecturer, 'The landscape of astronomical transients', *Flatiron Institute*
- 2025.02 Lecturer, 'Multi-Messenger Astronomy Workshop', *University of Tokyo*
- 2024.08 Lecturer, 'ELCAS 2024', *Kyoto University*
- 2020 – 2023 Teaching Assistant, 'Theoretical Astronomy', 'Electromagnetics', *Kyoto University*

Service

- 2024 – Present Referee of Astrophysical Journal (ApJ), Astronomy & Astrophysics (A&A)
- 2026.11 International Conference SOC, 'Next Decade of Supernova Science', *Kyoto, Japan*
- 2022.08 Chief Secretary, 'The 52nd Summer School on Astronomy and Astrophysics', *Online*

Outreach

- 2024.11 Visiting Lecture at Salesian International School Setagaya, *Tokyo, Japan*
- 2023.12 Visiting Lecture at Akashi High School, *Hyogo, Japan*
- 2023.11 Visiting Lecture at Tomioka-nishi High School, *Tokushima, Japan*
- 2022.12 Visiting Lecture at Kawase High & Junior-high School, *Shiga, Japan*
- 2022.11 Lecture for High School Students at Kyoto University, *Kyoto, Japan*

Skills and Qualifications

Language Japanese (Native), English (Fluent)

Programming Fortran, C, Python, R

License Teaching License for Japanese High School (Subject: Science)

Publication list

Refereed Articles (First Author)

- [6] **Uno, K.**, Maeda, K., Nagao, T., Leloudas, G., Charalampopoulos, P., Mattila, S., Aoki, K., Taguchi, K., Kawabata, M., Moldon, J., Pérez-Torres, M., Pursiainen, M., and Reynolds, T.
Spectropolarimetry of a Nuclear Transient AT2023clx: Revealing the Geometrical Alignment between the Transient Outflow and the Nuclear Dusty Region
2025, The Astrophysical Journal Letters, 986, L23,
[doi:10.3847/2041-8213/add71b](https://doi.org/10.3847/2041-8213/add71b)
- [5] **Uno, K.**, and Maeda, K.
Light-curve modelling for the initial rising phase of rapidly evolving transients powered by continuous outflow
2023, Monthly Notices of the Royal Astronomical Society, 521, 4598–4604,
[doi:10.1093/mnras/stad840](https://doi.org/10.1093/mnras/stad840)
- [4] **Uno, K.**, Nagao, T., Maeda, K., Kuncarayakti, H., Tanaka, M., Kawabata, K. S., Nakaoka, T., Kawabata, M., Yamanaka, M., Aoki, K., Isogai, K., Ogawa, M., Tajitsu, A., and Imazawa, R.
SN 2020uem: a Possible Thermonuclear Explosion within a Dense Circumstellar Medium (II). The Properties of the CSM from Polarimetry and Light-curve Modeling
2023, The Astrophysical Journal, 944, 204,
[doi:10.3847/1538-4357/acb5eb](https://doi.org/10.3847/1538-4357/acb5eb)
- [3] **Uno, K.**, Maeda, K., Nagao, T., Nakaoka, T., Motohara, K., Tajitsu, A., Konishi, M., Koyama, S., Takahashi, H., Tanaka, M., Kuncarayakti, H., Kawabata, M., Yamanaka, M., Aoki, K., Isogai, K., Taguchi, K., Ogawa, M., Kawabata, K. S., Yoshii, Y., Miyata, T., and Imazawa, R.
SN 2020uem: a Possible Thermonuclear Explosion within a Dense Circumstellar Medium. I. The Nature of Type IIn/Ia-CSM SNe from Photometry and Spectroscopy
2023, The Astrophysical Journal, 944, 203,
[doi:10.3847/1538-4357/acb5ec](https://doi.org/10.3847/1538-4357/acb5ec)
- [2] **Uno, K.**, and Maeda, K.
Application of The Wind-driven Model to a Sample of Tidal Disruption Events
2020, The Astrophysical Journal Letters, 905, L5,
[doi:10.3847/2041-8213/abca32](https://doi.org/10.3847/2041-8213/abca32)
- [1] **Uno, K.**, and Maeda, K.
A Wind-driven Model: Application to Peculiar Transients AT2018cow and iPTF14hls
2020, The Astrophysical Journal, 897, 156,
[doi:10.3847/1538-4357/ab9632](https://doi.org/10.3847/1538-4357/ab9632)

Refereed Articles (Co-Author)

- [co-8] Maeda, K., Kuncarayakti, H., ..., **Uno, K.**, ... *et al.*
Peculiar SN Ic 2022esa: An explosion of a massive Wolf-Rayet star in a binary as a precursor to a BH-BH binary?
2026, Publications of the Astronomical Society of Japan, 78, L1–L7,
[doi:10.1093/pasj/psaf140](https://doi.org/10.1093/pasj/psaf140)
- [co-7] Blanchard, P. K., Berger, E., ..., **Uno, K.**, ... *et al.*
James Webb Space Telescope Observations of the Nearby and Precisely Localized FRB 20250316A: A Potential Near-IR Counterpart and Implications for the Progenitors of Fast Radio Bursts
2025, The Astrophysical Journal Letters, 989, L49,
[doi:10.3847/2041-8213/adf29f](https://doi.org/10.3847/2041-8213/adf29f)
- [co-6] Nagao, T., Maeda, K., ..., **Uno, K.**, ... *et al.*
Evidence for bipolar explosions in Type IIP supernovae
2024, Astronomy and Astrophysics, 687, L17,
[doi:10.1051/0004-6361/202450191](https://doi.org/10.1051/0004-6361/202450191)

- [co-5] Murai, Y., Tanaka, M., ..., **Uno, K.**, ... *et al.*
Intermediate-luminosity Type IIP SN 2021gmj: a low-energy explosion with signatures of circumstellar material
2024, Monthly Notices of the Royal Astronomical Society, 528, 4209–4227,
[doi:10.1093/mnras/stae170](https://doi.org/10.1093/mnras/stae170)
- [co-4] Gangopadhyay, A., Maeda, K., ..., **Uno, K.**, ... *et al.*
Bridging between Type IIb and Ib Supernovae: SN IIb 2022cro with a Very Thin Hydrogen Envelope
2023, The Astrophysical Journal, 957, 100,
[doi:10.3847/1538-4357/acfa94](https://doi.org/10.3847/1538-4357/acfa94)
- [co-3] Nagao, T., Kuncarayakti, H., ..., **Uno, K.**, ... *et al.*
Photometry and spectroscopy of the Type Icn supernova 2021ckj. The diverse properties of the ejecta and circumstellar matter of Type Icn supernovae
2023, Astronomy and Astrophysics, 673, A27,
[doi:10.1051/0004-6361/202346084](https://doi.org/10.1051/0004-6361/202346084)
- [co-2] Jiang, J.-a., Yasuda, N., ..., **Uno, K.**, ... *et al.*
MUSSES2020J: The Earliest Discovery of a Fast Blue Ultraluminous Transient at Redshift 1.063
2022, The Astrophysical Journal Letters, 933, L36,
[doi:10.3847/2041-8213/ac7390](https://doi.org/10.3847/2041-8213/ac7390)
- [co-1] Jiang, J.-a., Maeda, K., ..., **Uno, K.**, ... *et al.*
Discovery of the Fastest Early Optical Emission from Overluminous SN Ia 2020hvf: A Thermonuclear Explosion within a Dense Circumstellar Environment
2021, The Astrophysical Journal Letters, 923, L8,
[doi:10.3847/2041-8213/ac375f](https://doi.org/10.3847/2041-8213/ac375f)