

Dr. Rieko Momose

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EDUCATION

Ph.D., Graduate School of Science, The University of Tokyo (2009 - 2012)

Concentrations: Astronomy

Dissertation: *Environmental effect of star formation activities among nearby disk galaxies*

Dissertation Advisor: Prof. Sachiko Okumura

M.S., Graduate School of Science, The University of Tokyo (2007 - 2009)

Concentrations: Astronomy

Thesis: *Higher resolution study of star formation activity over bars and spiral structures in NGC 4303*

Thesis Advisor: Prof. Sachiko Okumura

B.S., Faculty of Education, Tokyo Gakugei University (2003 - 2007)

RESEARCH INTERESTS

Investigations to galaxy formation and evolution in terms of the cycling of gas inside and outside of galaxies.

APPOINTMENTS

JSPS Overseas Research Fellowships (RRA), Carnegie Observatories

(April 2022 - Present)

- ◆ Observational study of galaxies and the CGM/IGM
- ◆ Observational study of metal absorbing systems and their nature

Project Researcher, Kavli IPMU, The University of Tokyo

(August 2021 - March 2022)

- ◆ Observational study of galaxies and the IGM
- ◆ Observational study of galaxies and the large-scale structure

JSPS Fellow (RPD), The University of Tokyo (April 2018 - July 2021)

- ◆ Observational study of diffuse Ly α halos around galaxies
- ◆ Observational and theoretical studies of galaxies and the IGM

APPOINTMENTS CONTINUED

MOST Assistant Research fellow, National Tsing Hua University, Taiwan

(November 2015 - March 2018)

- ◆ Observational study of diffuse Ly α halos around galaxies
- ◆ Mentoring students of short-term internships

Research Experts, National Astronomical Observatory of Japan

(April 2015 - October 2015)

- ◆ Technical support for general users of the Hyper Suprime-Cam on Subaru telescope

Project Researcher, Institute for Cosmic Ray Research, The University of Tokyo

(April 2014 - March 2015)

- ◆ Observational study of the end of reionization

ICRR Fellow, Institute for Cosmic Ray Research, The University of Tokyo

(April 2012 - March 2014)

- ◆ Observational study of the end of reionization
- ◆ Observational study of diffuse Ly α halos around galaxies

Research Assistant, Graduate School of Science, The University of Tokyo

(April 2009 - March 2012)

- ◆ Observational study of star formation activities in nearby late-type galaxies

✳ Maternity and child care leave over May 2016 - March 2018 and
August 2020 - November 2020

AWARDED

ACADEMIC

- ◆ Poster Award, The 40th Summer School on Astronomy and Astrophysics of Young Astronomers in Japan, Aichi, August 2010
"Star formation efficiency in the barred spiral galaxy NGC 4303"

TELESCOPE

- ◆ 2 nights on Subaru telescope, S17A-136
"Large-scale intensity mapping of Lyman-alpha emission around 7 QSOs at $z=2.2$ "
- ◆ 3.6 hours on CFHT, 16BT003
"Large-scale intensity mapping of Lyman-alpha emission around 7 QSOs at $z=2.2$ "
- ◆ 48 hours on Nobeyama 45 m single dish telescope, CG141028
"Pilot CO Follow-up of the MaNGA Survey"
- ◆ 4.3 hours on ALMA, 2012.1.00602.S
"Shedding light on the completion of reionization by ALMA [CII] observations"

- ◆ 29 hours on Mopra, M422
“¹²CO(J=1-0) mapping of one of the nearest Luminous Infrared barred spiral Galaxy NGC 1365”
- ◆ 30 hours on Nobeyama 45 m single dish telescope, 081023
“¹²CO(J=1-0) mapping of one of the nearest Luminous Infrared barred spiral Galaxy NGC 1365”
- ◆ 20 hours on Nobeyama 45 m single dish telescope, 078014
“What makes the difference of star formation activity in bar, arm, nucleus?”
- ◆ Many CO observations including Nobeyama 45 m single dish telescope, ASTE, CARMA, ALMA, JCMT, CSO, IRAM 30m, Subaru telescope

GRANTS

RESEARCH FUNDS

* PI

- *Unveiling the physical parameters and galaxy environments around high-z dwarf galaxies traced by a emission and absorption*, JSPS RRA Fellow, ~ 11.8k US\$ (12.6M JPY), April 2022 — Current
- *Young Researchers’s Exchange Program between Japan and Switzerland 2020* JSPS, ~8k US\$ (7.5k CFH) * Canceled due to the pandemic
- *Unveiling gas cycling in terms of galaxy evolution traced by Ly α halos*, JSPS RPD Fellow, JP18J40088, ~ 150k US\$ (17M JPY), April 2018 — July 2021
- *Full Amount of Airfare for Observations in Chile*, Foundation for Promotion as Astronomy, ~2k US\$ (233k JPY), November 2019
- *Galaxy Formation and Evolution Traced by Diffuse Lyman-alpha Emission around Star-forming Galaxies*, MOST Fellow, 104-2112-M-007-021-MY3, ~140k US\$ (4.3M NTD), November 2015 — March 2018
- *Half Amount of Travel Expense for the International Conference in Germany*, ASJ, The 79th Hayakawa Saito Foundation, ~870 US\$ (97k JPY), July 2012
- *Full Amount of Travel Expense for the International Conference and Summer School in the U.K.*, ASJ, The 70th Hayakawa Saito Foundation, ~1.9k US\$ (210k JPY), July 2010
- *Full Amount of Airfare for the International Conference and Summer School in the U.K.*, Foundation for Promotion as Astronomy, ~1.7k US\$ (183k JPY), August 2010

* Co-I

- *Full understanding of galaxy overdense regions in the distant universe* (PI: Prof. N. Kashikawa), KAKENHI 21H04490, ~30k US\$ (30M JPY)
- *The Expense for organizing the Conference* (PI: Dr. R. Lau), Foundation for Promotion as Astronomy, ~3.6k US\$ (397k JPY)

Publication List

Refereed publications:

- (1) *SILVERRUSH. XI. Intensity Mapping for Ly α Emission Extending over 100-1000 comoving kpc around $z \sim 2-7$ LAEs with Subaru HSC-SSP and CHORUS Data*
Kikuchihara, S., et al. (another 16 co-authors including **Momose, R.**), 2022, ApJ, accepted
- (2) *A systematic search for galaxy protocluster cores at the transition epoch of their star formation activity*
Ando, M., et al. (another 5 co-authors including **Momose, R.**), 2022, MNRAS accepted
- (3) *CHORUS. IV. Mapping the Spatially Inhomogeneous Cosmic Reionization with Subaru HSC*
Yoshioka, T., et al. (another 13 co-authors including **Momose, R.**), 2022, ApJ, 927, 32, pp.16
- (4) *SILVERRUSH. XI. Constraints on the Ly α Luminosity Function and Cosmic Reionization at $z = 7.3$ with Subaru/Hyper Suprime-Cam*
Goto, H., et al. (another 8 co-authors including **Momose, R.**), 2021, ApJ, 923, 229, pp.13
- (5) *SILVERRUSH. IX. Ly α Intensity Mapping with Star-forming Galaxies at $z = 5.7$ and 6.6: A Possible Detection of Extended Ly α Emission at ≥ 100 Comoving Kiloparsecs around and beyond the Virial-radius Scale of Galaxy Dark Matter Halos*
Kakuma, R., et al. (another 13 co-authors including **Momose, R.**), 2021, ApJ, 916, 22, pp.9
- (6) *Probing Feedback via IGM tomography and the Ly α Forest with Subaru PFS, TMT/ELT, and JWST*
Nagamine, K., et al. (another 10 co-authors including **Momose, R.**), 2021, ApJ, 914, 66, pp.20
- (7) *Subaru Hyper Suprime-Cam excavates colossal over- and under-dense structures over 360 deg² out to $z = 1$*
Shimakawa, R., et al. (another 10 co-authors including **Momose, R.**), 2021, MNRAS, 503, 3, pp.3896-3912
- (8) *Catch me if you can: Biased distribution of Ly α -emitting galaxies according to the viewing direction*
Momose, R., Shimasaku, K., Nagamine, K., Shimizu, I., Kashikawa, N., Ando, M., Kusakabe, H., 2021, ApJL, 912, L24, pp.8

- (9) *Connection Between Galaxies and HI in the Circumgalactic and Intergalactic Media: Variation According to Galaxy Stellar Mass and Star-formation Activity*
Momose, R., Shimizu, I., Nagamine, K., Shimasaku, K., Kashikawa, N., Kusakabe, H., 2021, 911, 98, pp.16
- (10) *SILVERRUSH X: Machine Learning Selection of 9, 318 LAEs at $z = 2.2, 3.3, 4.9, 5.7, 6.6,$ and 7.0 from the HSC SSP and CHORUS Survey Data*
Ono, Y., et al. (another 27 co-authors including **Momose, R.**), 2021, ApJ, 911, 78, pp.20
- (11) *Environmental Dependence of Galactic Properties Traced by Ly α Forest Absorption: Diversity among Galaxy Populations*
Momose, R., Shimasaku, K., Kashikawa, N., Nagamine, K., Shimizu, I., Nakajima, K., Terao, Y., Kusakabe, H., Ando, M., Motohara, K., Spitler, L., 2021, ApJ, 909, 117, pp.21
- (12) *Subaru/HSC deep optical imaging of infrared sources in the AKARI North Ecliptic Pole-Wide field*
Oi, N., Goto, T., Matsuhara, H., Utsumi, Y., **Momose, R.**, et al., 2021, MNRAS, 500, 4, pp.5024-5042
- (13) *Identification of AKARI infrared sources by the Deep HSC Optical Survey: construction of a new band-merged catalogue in the North Ecliptic Pole Wide field*
Kim, S.-J., et al. (another 23 co-authors including **Momose, R.**), 2020, MNRAS, 500, 3, pp. 4078-4094
- (14) *CHORUS. I. Cosmic HydrOgen Reionization Unveiled with Subaru: Overview*
Inoue A. K., et al. (another 30 co-authors including **Momose, R.**), 2020, PASJ, 72, 6, id.101, pp.17
- (15) *Subaru High-z Exploration of Low-luminosity Quasars (SHELLQs). XI. Proximity Zone Analysis for Faint Quasar Spectra at $z \sim 6$*
Ishimoto R., et al. (another 16 co-authors including **Momose, R.**), 2020, ApJ, 903, 60, pp.11
- (16) *A systematic search for galaxy proto-cluster cores at $z \sim 2$*
Ando, M., Shimasaku, K., **Momose, R.**, 2020, MNRAS, 496, 3, pp.3169-3181

- (17) *Search for Optically Dark Infrared Galaxies without Counterparts of Subaru Hyper Suprime-Cam in the AKARI North Ecliptic Pole Wide Survey Field*
Toba, Y., et al. (another 27 co-authors including **Momose, R.**), 2020, ApJ, 899, 35
- (18) *SIGNALS: I. Survey description*
Rousseau-Nepton, L. et al. (another 63 co-authors including **Momose, R.**), 2019, MNRAS, 489, 5530, p.5530-5546
- (19) *A young galaxy cluster in the old Universe*
Hashimoto, T., Goto, T., **Momose, R.**, Ho, C.-C., Makiya, R., Chiang, C.-Y., Kim, S.-J., 2019, MNRAS, 489, 2014, p.2014-2029
- (20) *Possible evolution of the circum-galactic medium around QSOs with QSO age and cosmic time revealed by Ly α haloes*
Momose, R., Goto, T., Utsumi, Y., Hashimoto, T., Chiang, C.-Y., Kim, S.-J., Kashikawa, N., Shimasaku, K., Miyazaki, S., 2019, MNRAS, 488, 120, p.120-134
- (21) *Ly α view around a $z = 2.84$ hyperluminous QSO at a node of the cosmic web*
Kikuta, S., Matsuda, Y., Cen, R., Steidel, C. C., Yagi, M., Hayashino, T., Imanishi, M., Komiyama, Y., **Momose, R.**, Saito, T., 2019, PASJ, 71, id.L2
- (22) *The dominant origin of diffuse Ly α halos around Ly α emitters explored by spectral energy distribution fitting and clustering analysis*
Kusakabe, H., Shimasaku, K., **Momose, R.** et al., 2019, PASJ, 71, id.55
- (23) *Infrared luminosity functions based on 18 mid-infrared bands: revealing cosmic star formation history with AKARI and Hyper Suprime-Cam*
Goto, T., Oi, N., Utsumi, Y., **Momose, R.** et al., 2019, PASJ, 71, id.30
- (24) *Surface density: a new parameter in the fundamental metallicity relation of star-forming galaxies*
Hashimoto, T., Goto, T., & **Momose, R.**, 2018, MNRAS, 475, 4424, p.4424-4433
- (25) *A 16 deg 2 survey of emission-line galaxies at $z < 1.5$ in HSC-SSP PDR1*
Hayashi, M., Tanaka, M., Shimakawa, R., Furusawa, H., **Momose, R.**, et al., 2018, PASJ, 70, SP1, id.S17

- (26) *SILVERRUSH. III. Deep Optical and Near-Infrared Spectroscopy for Ly α and UV-Nebular Lines of Bright Ly α Emitters at $z = 6-7$*
Shibuya, T., et al. (another 24 co-authors including **Momose, R.**), 2018, PASJ, 70, SP1, id.S15
- (27) *SILVERRUSH. II. First Catalogs and Properties of $\sim 2,000$ Ly α Emitters and Blobs at $z \sim 6-7$ Identified over the $14-21 \text{ deg}^2$ Sky*
Shibuya, T., et al. (another 21 co-authors including **Momose, R.**), 2018, PASJ, 70, SP1, id.S14
- (28) *First Data Release of the Hyper Suprime-Cam Subaru Strategic Program*
Aihara, H., et al (another 107 co-authors including **Momose, R.**), 2018, PASJ, 70, SP1, id.S8
- (29) *The Hyper Suprime-Cam SSP Survey: Overview and Survey Design*
Aihara, H., et al (another 142 co-authors including **Momose, R.**), 2018, PASJ, 70, SP1, id.S4
- (30) *Small-scale Intensity Mapping: Extended Ly α , H α , and Continuum Emission as a Probe of Halo Star Formation in High-redshift Galaxies*
Mas-Ribas, R., Dijkstra, M., Hennawi, J. F., Trenti, M., **Momose, R.**, & Ouchi, M., 2017, ApJ, 841, 19, pp.19-31
- (31) *Statistical Properties of Diffuse Ly α Halos around Star-forming Galaxies at $z \sim 2$*
Momose, R., Ouchi, M., Nakajima, K., Ono, Y., Shibuya, T., Shimasaku, K., Yuma, S., Mori, M., & Umemura, M., 2016, MNRAS, 457, 2318, p.2318-2330
- (32) *ALMA Census of Faint 1.2 mm Sources Down to $\sim 0.02 \text{ mJy}$: Extragalactic Background Light and Dust-poor, High- z Galaxies*
Fujimoto, S., Ouchi, M., Ono, Y., Shibuya, T., Ishigaki, M., Nagai, H., **Momose, R.**, 2016, ApJS, 222, 1, pp.1-28
- (33) *Sensitivity for 21 cm bispectrum from Epoch of Reionization*
Yoshiura, S., Shimabukuro, H., Takahashi, K., **Momose, R.**, Nakanishi, H., Imai, H., 2015, MNRAS, 451, 266, p.266-274

- (34) *On the Diffuse Ly α Halo Around Ly α Emitting Galaxies*
Lake, E. A., Zheng, Z., Cen, R., Sadoun, R., **Momose, R.**, & Ouchi, M., 2015, ApJ, 806, 46, pp.46-55
- (35) *Accelerated Evolution of Lyman-alpha Luminosity Function at $z > 7$ Revealed by the Subaru Ultra-Deep Survey for Lyman-alpha Emitters at $z = 7.3$*
Konno, A., (another 10 co-authors including **Momose, R.**), 2014, ApJ, 797, 16, pp.16-30
- (36) *Faint Submillimeter Galaxies Revealed by Multifield Deep ALMA Observations: Number Counts, Spatial Clustering, and Dark Submillimeter Emitters*
Ono, Y., Ouchi, M., Kurono, Y., **Momose, R.**, 2014, ApJ, 795, 5, pp.5-21
- (37) *Diffuse Lyman-alpha Halos around Galaxies at $z=2.2-6.6$: Implications for Galaxy Formation and Cosmic Reionization*
Momose, R., Ouchi, M., Nakajima, K., Ono, Y., Shibuya, T., Shimasaku, K., Yuma, S., Mori, M., & Umemura, M., 2014, MNRAS, 442, 110, p.110-120
- (38) *First Systematic Search for Oxygen-Line Blobs at High Redshift: Uncovering AGN Feedback and Star-Formation Quenching*
Yuma, S., (another 10 co-authors including **Momose, R.**), 2013, ApJ, 779, 53, pp. 53-64
- (39) *An Intensely Star-Forming Galaxy at $z\sim 7$ with Low Dust and Metal Content Revealed by Deep ALMA and HST Observations*
Ouchi, M., Ellis, R., Ono, Y., Nakanishi, K., Kohno, K., **Momose, R.**, et al., 2013, ApJ, 778, 102, pp.102-113
- (40) *Resolved Giant Molecular Clouds in Nearby Spiral Galaxies. I. Insights from the CANON CO(1-0) Survey*
Donovan Meyer, J., Koda, J., **Momose, R.**, et al., 2013, ApJ, 772, 107, pp.107-122
- (41) *Star Formation on Subkiloparsec Scale Triggered by Non-linear Processes in Nearby Spiral Galaxies*
Momose, R., Koda, J., Kennicutt, R. C., Jr., Egusa, F., Calzetti, D., Liu, G., Donovan Meyer, J., Okumura, S. K., Scoville, N. Z., Sawada, T., Kuno, N., 2013, ApJL, 772, id.L13

- (42) *A Water Maser and NH₃ Survey of GLIMPSE Extended Green Objects*,
Cyganowski, C. J., Koda, J., Rosolowsky, E., Towers, S., Donovan Meyer, J.,
Egusa, F., **Momose, R.**, Robitaille, T. P., 2013, ApJ, 764, 61, pp.61-90
- (43) *Physical Conditions in Molecular Clouds in the Arm and Interarm Regions of M51*,
Koda, J., (another 12 co-authors including **Momose, R.**), 2012, ApJ, 761, 41,
pp. 41-51
- (44) *Resolved Measurements of X_{CO} in NGC 6946*,
Donovan Meyer, J., Koda, J., **Momose, R.**, et al., 2012, ApJ, 744, 42, pp.42-52
- (45) *The Super-linear Slope of the Spatially Resolved Star Formation Law in NGC 3521
and NGC 5194 (M51a)*,
Liu, G., Koda, J., Calzetti, D., Fukuhara, M., **Momose, R.**, 2011, ApJ, 735, 63,
pp. 63-78
- (46) *Star Formation Efficiency in the Barred Spiral Galaxy NGC 4303*,
Momose, R., Okumura, S. K., Koda, J., & Sawada, T., 2010, ApJ, 721, 383,
pp.383-394

Non-refereed publications:

- (47) *A systematic search for proto-cluster cores at a transition epoch of star formation activity*,
Ando, M., Shimasaku, K., **Momose, R.**, Shimakawa, R., Sawicki, M., Ito, K., &
Lin, Y.-T., 2021, Proceedings of the “Galaxy Cluster Formation II (GCF 2021) -
Virtual Workshop”
- (48) *Cosmic star formation history revealed by AKARI and Hyper Suprime-Cam*,
Goto, T., Oi, N., Kilerci Ecer, E., **Momose, R.**, Huang, T.-C., Utsumi, Y., Matsuhara,
H., Toba, Y., Ohshima, Y., Takagi, T., Wada, T., Malkan, M., Nakagawa, T., Kim, S.
J., & the AKARI NEP team, 2017, Proceedings of the “The Cosmic Wheel and the
Legacy of the AKARI archive: from galaxies and stars to planets and life”
- (49) *Surface density: a new parameter in the fundamental metallicity relation of star-
forming galaxies*,
Hashimoto, T., Goto, T., & **Momose, R.**, 2017, Proceedings of the “The Cosmic
Wheel and the Legacy of the AKARI archive: from galaxies and stars to planets
and life”

(50) *North Ecliptic Pole multi-wavelength survey : new optical data with Hyper Suprime-Cam and near-future prospects with eROSITA,*

Oi, N., Matsuhara, H., Goto, T., Utsumi, Y., **Momose, R.**, Huang, T-C., Toba, Y., Im, M., Lee, H. K., O Kim, S. J., Miyaji, T., Krumpel, M., Murata, K., Ohyama, Y., Serjeant, S., Pearson, C., Nakagawa, T., Wada, T., Takagi, T., Matsuura, S., Shogaki, A., & NEP team, 2017, Proceedings of the “The Cosmic Wheel and the Legacy of the AKARI archive: from galaxies and stars to planets and life”

(51) *The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*

Momose, R., Koda, J., Kennicutt, R. C., Jr., Egusa, F., Okumura, S. K., Calzetti, D., Liu, G., Meyer, J. D., Scoville, N. Z., Sawada, T., & Kuno, N., 2012, IAUS, 292, 335

(52) *FAZZ, a FITS Cube/Image Browsing and Analyzing Tool in IDL,*

Ikeda, N., Kitamura, Y., Yoshida, A., Tatei, H., Onodera, S., & **Momose, R.**, 2010, ASPC, 434, 297

International Conferences:

- (1) **Momose, R.**, et al. “*The Diversity of IGM-galaxy connection among galaxies at redshift $z = 2-3$* ”, Cosmic Cartography 2022: Exploring the Cosmic Web and Large-Scale Structure, Online, March, 2022 (Oral)
- (2) **Momose, R.**, et al. “*Environmental Dependence of Galactic Populations Traced by Ly α Forest Tomography*”, PFS Collaboration Meeting 2021, Online, March, 2021 (Poster)
- (3) **Momose, R.**, et al. “*The diversity of IGM-galaxy connection at redshift $z=2-3$* ”, Galaxy Evolution Workshop 2020, Online, February, 2021 (Oral)
- (4) **Momose, R.**, et al. “*Systemic investigations for mock observed Lyman-alpha halos*”, European Astronomical Society Annual Meeting, Online, June, 2020 (Poster)
- (5) **Momose, R.**, et al. “*What can we learn about the IGM-galaxy connection from 3D tomography map?*”, Subaru Telescope 20th Anniversary Conference, Hawaii, U.S., November, 2019 (Oral)
- (6) **Momose, R.**, et al. “*Lyman alpha halos around quasars at $z > 6$* ”, NEP Meeting 2019, Hsinchu, Taiwan, June, 2019 (Oral: Invited)
- (7) **Momose, R.**, et al. “*Lyman alpha halos around quasars at $z > 6$* ”, Extremely Big Eyes on the Early Universe, Chiba, Japan, March, 2019 (Oral)
- (8) **Momose, R.**, et al. “*Statistical properties of diffuse Ly α haloes around star-forming galaxies at $z \sim 2$* ”, Tokyo Spring Cosmic Lyman-Alpha Workshop (Sakura CLAW), Tokyo, Japan, March, 2018 (Oral)
- (9) **Momose, R.**, Koda, J., Kennicutt, R. C., Jr., Egusa, F., Okumura, S. K., Calzetti, D., Liu, G., Donovan Meyer, J., Scoville, N. Z., Sawada, T., & Kuno, N., “*Star Formation Activities Among Structures in Nearby Disc Galaxies*”, The Impact of Galactic Structure on Star Formation, Sapporo, February, 2014 (Oral)
- (10) **Momose, R.**, Ouchi, M., Nakajima, K., Ono, Y., Shimasaku, K., & S. Yuma., “*Evolution of Diffuse Ly α Halos Around Star-forming Galaxies at $z=2-7$* ”, Lyman Alpha as an Astrophysical Tool, Stockholm, September, 2013 (Oral)

- (11) **Momose, R.**, Koda, J., Kennicutt, R. C., Jr., Egusa, F., Okumura, S. K., Calzetti, D., Liu, G., Donovan Meyer, J., Scoville, N. Z., Sawada, T., & Kuno, N., “*Superlinear Slope of the Resolved Kennicutt-Schmidt Law in Nearby Galaxies*”, IAU Symposium 292, Beijing, August, 2012 (Poster)
- (12) **Momose, R.**, Koda, J., Kennicutt, R. C., Jr., Egusa, F., Okumura, S. K., Calzetti, D., Liu, G., Donovan Meyer, J., Scoville, N. Z., Sawada, T., & Kuno, N., “*The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*”, Galactic Scale Star Formation, Heidelberg, Germany, July, 2012 (Poster)
- (13) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*Star Formation Efficiency in the Barred Spiral Galaxy*”, Molecules in Galaxies, Oxford, the United Kingdom, July, 2010 (Oral)
- (14) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*High resolution study of star formation activity in NGC 4303*” Millimeter and Submillimeter Astronomy at High Angular Resolution, Taipei, Taiwan, June, 2009 (Poster)

Domestic Conferences (Japan):

- (15) **Momose, R.**, et al. “*The diversity of IGM-galaxy connection at redshift $z = 2-3$* ”, Astronomical Society of Japan (ASJ) Annual Meeting, Online, September, 2021 (Oral)
- (16) **Momose, R.**, et al. “*The diversity of IGM-galaxy connection at redshift $z=2-3$* ”, Galaxy-IGM workshop 2021, Online, August, 2021 (Oral)
- (17) **Momose, R.**, et al. “*IGM-galaxy connections around AGNs*”, Astronomical Society of Japan (ASJ) Annual Meeting, Online, September, 2020 (Oral)
- (18) **Momose, R.**, et al. “*Review for observational study of the IGM*”, Workshop for Galaxy and the IGM Workshop 2020, Online, August, 2020 (Oral: Invited)
- (19) **Momose, R.**, et al. “*Diffuse Ly α halos around galaxies at $z > 6$* ”, Workshop for IFU instruments 2019, Tokyo, Japan, October, 2019 (Oral)
- (20) **Momose, R.**, et al. “*Ly α Halos around quasars at $z > 6$* ”, Astronomical Society of Japan (ASJ) Annual Meeting, Kumamoto, Japan, September, 2019 (Oral)

- (21) **Momose, R.**, et al. “*What can we learn about the IGM-galaxy connection from a 3D tomography map?*”, SKA-Japan Symposium 2019, Tokyo, Japan, September, 2019 (Oral)
- (22) **Momose, R.**, et al. “*The evolution of the circum-galactic medium around QSOs with QSO age and cosmic time revealed by Ly α halos*”, Subaru Users Meeting FY2018, Tokyo, Japan, January, 2019 (Oral)
- (23) **Momose, R.**, et al. “*Intensity Mapping around QSOs*”, Workshop for Intensity Mapping 2018, Tokyo, Japan, July, 2018 (Oral: Invited)
- (24) **Momose, R.**, et al. “*Diffuse Ly α Halos around High-z Star-Forming Galaxies*”, Astronomical Society of Japan (ASJ) Annual Meeting, Kobe, Japan, September, 2015 (Oral)
- (25) **Momose, R.**, et al. “*Mapping Nearby Galaxies at APO (MaNGA)*”, JCMT Workshop, Tokyo, Japan, September, 2014 (Poster)
- (26) **Momose, R.**, et al. “*Evolution of Lyman-alpha Emitters Traced by Lyman-alpha Halos*”, Workshop of Galaxy Evolution 2014, Tokyo, Japan, June, 2014 (Oral)
- (27) **Momose, R.**, et al. “*Evolution of Diffuse Ly α Halos around Star-Forming Galaxies*”, Observation Cosmology Workshop 2013, Tokyo, Japan, December, 2013 (Oral)
- (28) **Momose, R.**, et al. “*Evolution of Diffuse Ly α Halos around Star-Forming Galaxies at $z = 2-7$* ”, High-z galaxies and Cosmic Reionization Workshop, Hyogo, Japan, November, 2013 (Oral)
- (29) **Momose, R.**, et al. “*Star Formation On Sub-kpc Scale Triggered By Non-linear Processes In Nearby Spiral Galaxies*”, Meeting of the Program for Younger Researcher Overseas Visits, Chiba, Japan, April, 2013 (Oral)
- (30) **Momose, R.**, Okumura, S. K., Koda, J., Kennicutt, R. C., Jr, Donovan Meyer, J., Calzetti, D., Liu, G., & Egusa, F., “*Star formation activities among galactic structures*”, Astronomical Society of Japan (ASJ) Annual Meeting, Oita, Japan, September, 2012 (Poster)

- (31) **Momose, R.**, “*The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*”, Mini-Workshop for “Kinematics, ISM and Star Formation in Galaxies”, Tokyo, Japan, August, 2012 (Oral)
- (32) **Momose, R.**, Okumura, S. K., Koda, J., Kennicutt, R. C., Jr., Donovan Meyer, J., Calzetti, D., Liu, G., & Egusa, F., “*Superlinear slope of the resolved Kennicutt-Schmidt law*”, ASJ Annual Meeting, Kyoto, Japan, March, 2012 (Oral)
- (33) **Momose, R.**, Koda, J., Kennicutt, R. C., Jr., Donovan Meyer, J., Egusa, F., Kurono, Y., & Okumura, S. K., “*Combining method for mosaic observation with CARMA and NRO45m telescope*”, GCOE Research Assistant Camp, Shizuoka, Japan, February, 2011 (Poster)
- (34) **Momose, R.**, Koda, J., Kennicutt, R. C., Jr., Donovan Meyer, J., Egusa, F., Kurono, Y., & Okumura, S. K., “*Combining method for mosaic observation with CARMA and NRO45m telescope*”, ALMA User’s Meeting, Tokyo, Japan, January, 2011 (Poster)
- (35) **Momose, R.**, “*Proposal for NGC 1365*”, Nobeyama Radio Observatory (NRO) Workshop: Nearby Galaxies, Tokyo, Japan, September, 2010 (Oral)
- (36) **Momose, R.**, “*Star formation efficiency in the Barred Spiral Galaxy NGC 4303*”, Summer School for Young Astronomers, Aichi, Japan, August, 2010 (Poster)
- (37) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*High resolution study of star formation activity in NGC 4303*”, ALMA User’s Meeting, Tokyo, Japan, December, 2009 (Poster)
- (38) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*Star formation and gas kinematics in NGC 4303*”, NRO Workshop: Studies of Nearby Galaxies by High Resolution Observations of sub-mm/mm Wavelength and Latest Theoretical Model, Kagoshima, Japan, November, 2009 (Oral)
- (39) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*Star formation activities in the barred spiral galaxy, NGC 4303 - II -*”, ASJ Annual Meeting, Yamaguchi, Japan, September, 2009 (Poster)
- (40) **Momose, R.**, “*Capabilities of observations to high-z objects using NRO 45 m telescope*”, NRO User’s Meeting, Nagano, Japan, July, 2009 (Oral)

- (41) **Momose, R.**, Okumura, S. K., Muraoka, K., Tosaki, T., & Kohno, K., “*12CO(J=1-0) observation of nearby LIRG NGC 1365*”, NRO User’s Meeting, Nagano, Japan, July, 2009 (Poster)
- (42) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*Star formation activities in the barred spiral galaxy, NGC 4303 - I -*”, ASJ Annual Meeting, Okayama, Japan, September, 2008 (Oral)
- (43) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*Comparison of star formation activities in NGC 4303*”, NRO User’s Meeting, Nagano, Japan, July, 2008 (Poster)

Domestic Conferences (the United States):

- (44) **Momose, R.**, Okumura, S. K., Koda, J., & Sawada, T., “*High resolution study of star formation activity in NGC 4303*”, Tri-State Astronomy Conference, New York, the United States, October, 2009 (Poster)

Domestic Conferences (the Republic of China):

- (45) **Momose, R.**, et al. “*Diffuse Ly α Halos around High-redshift Star-Forming Galaxies*”, Annual Meeting of the Physical Society of the Republic of China, Kaohsiung, the Republic of China, January, 2016 (Oral)

Public Talk:

- (1) **Momose, R.**, “*The growth of galaxies*”, Utalk | The University of Tokyo, Online, August, 2021
- (2) **Momose, R.**, “*What is a hide-and-seek of galaxies?*”, Tenpla online seminar, Online, June, 2021
- (3) **Momose, R.**, “*Studying the galaxy evolution*”, A Seminar of Astronomy, Minato Science Museum, Tokyo, March, 2021
- (4) **Momose, R.**, “*Lets’s trip in the Universe!*”, ABI-STA special class, Tokyo, June, 2015
- (5) **Momose, R.**, Science Agora TA, Tokyo, November, 2014
- (6) **Momose, R.**, “*Talks about Gas around Galaxies*”, Hongo Uchjyuku, Tokyo, June, 2014

- (7) **Momose, R.**, “*Galaxies in the Universe*”, Spring Science Program For Female High-school Students, Chiba, March, 2014
- (8) **Momose, R.**, “*How to study “star formation” in galaxies*”, Marunouchi Uchjyuku, Tokyo, September, 2012
- (9) **Momose, R.**, “*Astronomy Astronomer*”, Science Fair, Ibaraki, August, 2007
- (10) Many lectures as an interpreter of NAOJ Mitaka stargazing (May 2003—March 2012)
I had also been in the position of president of organizing staff of NAOJ Mitaka stargazing during September 2008 to August 2009

Classes (teaching experiences):

- (1) “*Galaxy Formation and Evolution*”, Special Lecture, Japan Women's University, October, 2020
- (2) “*The latest study for galaxies: Various views to study galaxy evolution*”, Yokohama branch of Asahi Culture School, December, 2019
- (3) TA of Observational experiments of NMA for undergrad students, Nobeyama Radio Observatory, February, 2010

Seminars:

- (1) “*The diversity of IGM-galaxy connection among galaxies at $z=2-3$* ”, Tohoku University, November, 2021
- (2) “*The diversity of IGM-galaxy connection among galaxies at $z=2-3$* ”, University of Tokyo, July, 2021
- (3) “*The diversity of IGM-galaxy connection among galaxies at $z=2-3$* ”, Tsukuba University, June, 2021
- (4) “*Environmental dependence of galactic properties traced by Ly α forest absorption*”, Yunnan University, December, 2020
- (5) “*Environmental dependence of galactic properties traced by Ly α forest absorption*”, Tsinghua University, April, 2020

- (6) "*Environmental dependence of galactic properties traced by Ly α forest absorption*", Kavli IPMU University of Tokyo, March, 2020
- (7) "*Environmental dependence of galactic properties traced by Ly α forest absorption*", Edinburgh University, January, 2020
- (8) "*Environmental dependence of galactic properties traced by Ly α forest absorption*", Geneva Observatory, January, 2020
- (9) "*Evolution of galaxies traced by Ly α halos*", UC Santa Cruz, May, 2019
- (10) "*Evolution of galaxies traced by Ly α halos*", IoA University of Tokyo, February, 2019
- (11) "*Evolution of galaxies traced by Ly α halos*", Shinshu University, November, 2018
- (12) "*Diffuse Ly α halos around high- z star-forming galaxies*", DoA University of Tokyo, June, 2018
- (13) "*Diffuse Ly α halos around high- z star-forming galaxies I*", IoA National Tsing Hua University Taiwan, April, 2016
- (14) "*Shed light on galaxy evolution and cosmic reionization traced by Ly α halos*", Ehime University, October, 2015
- (15) "*Shed light on galaxy evolution and cosmic reionization traced by Ly α halos*", Tohoku University, February, 2015
- (16) "*Shed light on galaxy evolution and cosmic reionization traced by Ly α halos*", Rikkyo University, September, 2014
- (17) "*Observational approaching for shed light on cosmic reionization*", Kumamoto University, July, 2014
- (18) "*Observational approaching for shed light on galaxy evolution*", Kumamoto University, July, 2014
- (19) "*Evolution of Diffuse Ly α halos around Star-forming Galaxies at $z = 2-7$* ", Kavli IPMU University of Tokyo, March, 2014

(20) "*The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*", Institute for Theoretical Astrophysics University of Heidelberg, August, 2012

(21) "*The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*", Institute of Cosmic Ray Research University of Tokyo, June, 2012