

CURRICULUM VITAE

LAST UPDATE: 23 SEPTEMBER 2024

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CURRENT POSITION

G-LAMP Postdoctoral Research Fellow (Employment) Dec 2023 – Present
Seoul National University, South Korea
Institute for Data Innovation in Science (G-LAMP Program) / Department of Physics & Astronomy (Astronomy)
Research Fellow (Honorary) Jan 2024 – Present
Sydney Institute for Astronomy, School of Physics, The University of Sydney, Australia

RESEARCH INTERESTS

Environmentally-driven galaxy evolution over cosmic time — Neutral hydrogen (H I) gas in galaxies — H I 21-cm absorption and emission lines — Large radio surveys and data processing — Interferometric imaging — Data quality assessment — Atmospheric ducting — Automatic line search and source extractor

EDUCATION

Ph.D. in Astronomy, Yonsei University, South Korea Aug 2019
Thesis: The Impact of Large-scale Environments on Galaxy Evolution: Insights from the Neutral Hydrogen Gas in Galaxies Inside and Outside of the Virgo Cluster
Thesis committee: Prof. Aeree Chung (Yonsei; Supervisor), Dr. O. Ivy Wong (CSIRO), Prof. Sukyoung K. Yi (Yonsei), Prof. Myungkook James Jee (Yonsei), Prof. Ho Seong Hwang (SNU)
M.S. in Astronomy, Yonsei University, South Korea Feb 2013
Thesis: Diagnostics to Probe Environmental Effects on Late-type Galaxies in the Virgo Cluster
Thesis committee: Prof. Aeree Chung (Yonsei; Supervisor), Prof. Yong-Ik Byun (Yonsei), Prof. Soo-Chang Rey (GNU)
B.S. in Astronomy, Physics (double major), Yonsei University, South Korea Feb 2011

ACADEMIC POSITIONS AND RESEARCH EXPERIENCE

Postdoctoral research fellow, IDIS, Seoul National University Dec 2023 – Present
- Research: Studying environmentally-driven galaxy evolution using H I and multi-wavelength data
- Supervisor: Prof. Ho Seong Hwang, Prof. Jubee Sohn (Astronomy, supported by G-LAMP program)
Project Scientist, ASKAP–FLASH Survey Science Team Oct 2021 – Present
- Research: Observing H I 21-cm absorption, Data validation for ASKAP Commissioning and Full Survey
- Affiliation: Research Fellow (Honorary affiliate, Jan 2024 – Present), The University of Sydney
Postdoctoral research associate, SifA, The University of Sydney Sep 2019 – Dec 2023
- Research: FLASH wide-field survey to detect H I 21-cm absorption lines toward $0.4 < z < 1.0$
- Supervisor: Prof. Elaine Sadler (Sydney Institute for Astronomy, Supported by ASTRO 3D program)
Endeavour research fellow at ICRAR/UWA Aug 2016 – Mar 2017
- Research visit: International Centre for Radio Astronomy Research/The University of Western Australia
- Grant: Awarded Australian Government Endeavour Research Fellowship, Host: Dr. O. Ivy Wong (CSIRO)
Research assistant, Yonsei University Mar 2011 – Feb 2013 (M.S.) / Mar 2013 – Aug 2019 (Ph.D.)
- Research: Studying H I emission of galaxies in various density environments from void to clusters
Advanced schools, observer trainings, radio telescope visits:
- ATCA/Parkes/LBA training (2016, 2020, 2022, 2023), Pawsey supercomputing training (2019), NRAO imaging school (2014), Telescope visits (ATCA, JVLA, GMRT, NRO, FAST, KVN, Parkes, MeerKAT, TRA0: 2012 – 2024)

OBSERVING EXPERIENCE AND SUCCESSFUL PROPOSALS

Observing bands: H I absorption ($0.4 < z < 1.0$) and emission ($0 < z < 0.2$) lines (~ 700 to 1400 MHz), CO(1–0) emission lines ($z \sim 0.2$, ~ 95 GHz), C, L, K, Q, W, D-band VLBI (~ 4.3 to 129 GHz)

- **ASKAP:** Australian SKA Pathfinder (200+1200 hrs, Project Scientist of AS109/AS209, 2019 – 2028)
- **KVN:** Korean VLBI Network (90 hours, Principal Investigator of 2022A_0286)
- **ATCA:** Australia Telescope Compact Array (11.5 hours, PI of CX473 + Duty astronomer)
- **WSRT:** Westerbork Synthesis Radio Telescope, 72-m configuration (96 hours, PI of R14A011)
- **JVLA:** Karl G. Jansky Very Large Array, D-configuration (7.5 hours, PI of 14A-304)
- **GMRT:** Giant Metrewave Radio Telescope (20 hours, PI of 25_034)
- **Co-I projects:** VLBA (24A-059), LBA (V631), e-MERLIN (CY12212), MeerKAT (MKT-22047, MKT-20135), GMRT (43_078, 43_076, 40_096, 40_092, 36_002), ATCA (C3515, C3392), NRO-45m (CG121032, CG112025)

TEACHING

SSP research supervisor at the University of Sydney: Physics Special Studies Program – Astro (PHYS2921; Semester 1 2023) - Daniel Jian (USyd)

Course lecturer/unit coordinator at the University of Sydney: Data Science in Astronomy: Algorithms (OLET1618; Semester 1, Semester 2 2020)

Teaching Assistant at Yonsei University; Astrophysics II (Fall 2012), Radio astronomy (Spring 2012), Understanding of Space (Fall 2011, Spring 2011)

SUPERVISING/STUDENT MENTORING EXPERIENCE

Undergraduate research project supervising: Soyeong Kim (Kyung Hee Univ.), 2024 – Present

CSIRO summer student program co-supervising: Lan Tran (UNSW), 2021 – 2022 Summer (Aus)

FLASH team's PhD student project mentoring: Renzhi Su (SHAO, now Zhejiang Lab), Simon Weng (USyd), Emily Kerrison (USyd), 2019 – Present

ORAL PRESENTATIONS (SELECTED, LAST 5 YEARS)

Lectures/Colloquia/Invited Talks:

- **KHU Astro Colloquium, Kyung Hee University,** Yongin, South Korea, Sep 2024 (upcoming, in-person)
- **Radio Summer School & Telescope User's Meeting, KASI,** South Korea, Aug 2024 (lecturer, in-person)
- **SNU Astro Colloquium, Seoul National University,** Seoul, South Korea, Mar 2024 (in-person)
- **ATNF Colloquium, CSIRO-Marsfield,** Sydney, Australia, Sep 2023 (in-person)
- **2023 ACAMAR workshop: Gas in galaxies,** Perth, Australia, July 2023 (invited, in-person)
- **ATNF Co-learnium, CSIRO-Marsfield,** Sydney, Australia, Jan 2021 (remote)

Contributed Talks:

- **IAU General Assembly 2024 S392 & FM5,** Cape Town, South Africa, Aug 2024 (in-person)
- **Meeting of the Korean Astronomical Society,** Yeosu, South Korea, Apr 2024 (SKA special session, in-person)
- **2024 Winter SKA-Korea workshop,** Busan, South Korea, Feb 2024 (in-person)
- **Survey Science Group workshop 2024,** Jeongseon, South Korea, Jan 2024 (in-person)
- **The evolution of gas in and around galaxies workshop,** Stanley, USA, July 2023 (in-person)
- **Astronomical Society of Australia - ASM,** Australia, July 2023/July 2021 (in-person/remote)
- **IAU General Assembly 2022 Division J & S373,** Busan, South Korea, Aug 2022 (in-person/e-talk)
- **SIfA Morning Tea talk, University of Sydney,** Sydney, Australia, Mar 2022/June 2021/July 2020 (remote)
- **ASTRO 3D Science Meeting (2022/2021),** Australia, June 2022/Sep 2021 (in-person/remote)
- **East-Asia SKA workshop,** Japan, May 2021 (remote)
- **Meeting of the American Astronomical Society (236/233rd),** USA, June 2020/Jan 2019 (remote/in-person)

GRANTS, AWARDS, AND SCHOLARSHIPS

G-LAMP Fellowship: NRF grant of Korea funded by the Ministry of Education, 2023 – Present
IAU Travel Grant: XXXII IAU General Assembly (Cape Town, South Africa), 2024
Award–Slogan Contest: 2024 Summer Signboard Slogan Contest, Shinhan Card, 2024
Award–Slogan Contest: KAS 60th Anniversary Slogan Contest, Korean Astronomical Society, 2024
WISSET Research Travel Grant: Korea Foundation for Woman in Science/Engineer/Technology, 2018
Award–Student Poster Competition: “Yonsei Astro Poster Jamboree”, Yonsei University, 2017
Award–Endeavour Research Fellowship: Australian Government, 2016 – 2017
BK21/BK21 Plus Scholarship: National Research Foundation of Korea, 2011 – 2012, 2013 – 2016
Teaching/Research Assistantship: Yonsei University, 2011 – 2012
Undergrad Scholarships from Yonsei University: Honors (2010), Truth Scholarship (University Designated; 2009 – 2010), Yonsei Internal/External Scholarship (2009)

SERVICE AND OUTREACH (SELECTED)

Professional:

- **Journal reviewer:** Monthly Notices of the Royal Astronomical Society
- **ATNF TAC:** Australia Telescope National Radio Facility Time Assignment Committee, 2023 – Present
- **Session chair:** "SNU ARC 3rd H. S. Yun Astronomy Workshop", 2024
- **Science organizer:** SOC for “2024 SKA-Korea Summer Science Meeting”, 2024
- **Session chair:** “ACAMAR workshop: Gas in galaxies”, 2023
- **Session chair and student talk judge:** “2023 Astronomical Society of Australia - ASM”, 2023
- **Local organizer:** Co-organizer of weekly SIFA Morning Tea, University of Sydney, 2022
- **Session chair:** “IAU General Assembly: Division J Galaxies and Cosmology”, 2022
- **Science organizer & Session chair:** SOC/Session chair for “2021 ASTRO 3D Science Meeting”, 2021
- **Local organizer:** University of Sydney node coordinator for ASTRO 3D NSW Monthly Meeting, 2021
- **Duty Astronomer:** ATCA duty astronomer, Oct 2020
- **Local organizer:** LOC for “SKA in Seoul on H I Science” conference, 2015

Mentoring/Outreach/Volunteering:

- **Career exploration activities for students:** Woosung High School Students, 2024
- **Mentoring for juniors:** Korea Woman in Science/Engineer/Technology (WISSET), 2018 – 2019
- **Global mentoring for career development:** WISSET and General Electrics, 2018
- **Volunteering (translation/editing):** Africa-Asia Destitute Relief Foundation (ADRF), 2015
- **Public outreach:** Yonsei astronomy public outreach activities (“Byul-a-rum”), 2008 – 2009
- **Volunteering (teaching):** Chungam community child center, 2007 – 2008

PROGRAMMING SKILLS

Languages: Python, HTML, Fortran, LaTeX, IDL (basic), Matlab (basic), C (basic)

Radio observational data processing/analysis tool experiences: **CASA** (for JVLA/ASKAP/e-MERLIN data), **AIPS** (GMRT/KVN/JVLA), **MIRIAD** (WSRT/ATCA), **Karma** (GMRT/JVLA/WSRT), **GIPSY** (JVLA/GMRT), **SoFiA** (MeerKAT), **FLASHfinder** (ASKAP/MeerKAT), **CARTA** (ASKAP)

Other astronomical data analysis tools: IRAF, SAOImageDS9, TOPCAT, DisPerSE, Fv

COLLABORATIONS/MEMBERSHIPS (ALPHABETICAL ORDER)

ASKAP–FLASH (First Large Absorption Survey in H I) • **ASKAP spectral line WG** (ASKAP spectral line and data validation working group) • **ASTRO 3D** (The ARC Centre of Excellence for All Sky Astrophysics in 3 Dimensions – Alumni) • **BUDHIES** (Blind Ultra Deep H I Environmental Survey) • **SKAO H I SWG** (SKAO H I Science Working Group - H I science) • **SKA-KOREA WG** (SKA-KOREA Science Working Group - H I science) • **VERTICO** (Virgo Environment Traced In CO) • **VIVA** (VLA Imaging of Virgo in Atomic gas) • **ASA** (Astronomical Society of Australia) • **IAU** (International Astronomical Union Junior Member) • **KAS** (Korean Astronomy Society) • **WISSET** (Korea Foundation for Woman in Science/Engineer/Technology)