

Minjae Kim

Undergraduate Student in Physics at KAIST

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Research Interests

Cosmology & High-Redshift Universe (Quasars, Supermassive Black Holes)
Galaxy Formation & Evolution (Circumgalactic Medium)
Computational Astrophysics (Simulation & Machine Learning, Causal Inference)

Education

2020– **B.S. in Physics, Minor in Electrical Engineering, KAIST**, Daejeon, South Korea
Present Cumulative GPA: **3.90/4.3** (Major: **3.96/4.3**)
2024 **Summer Exchange Student, UC Berkeley Summer Session**, Berkeley, USA
Summer Completed coursework in Introduction to Astrophysics.
2018– 2019 **Jeonnam Science High School, Naju, South Korea**
Early Graduation (Ranked 2nd in School)

Research Experience

Jan 2026– **Research Intern (SPHEREx team)**, Korea Astronomy and Space Science Institute
Present (KASI), Daejeon, Advisor: Dr. Bomee Lee & Dr. Woong-Seob Jeong
○ Conducting spectral analysis of Quasars with very high redshift ($z > 5$) using SPHEREx survey data.
○ Developing automated fitting pipelines to identify spectral peaks and estimate physical parameters.
Sep 2024– **Undergraduate Researcher (OBSCAL Group)**, KAIST, Daejeon, Advisor: Prof.
Present Junhan Kim
○ Project: Probing Hot gas Components of Circumgalactic Medium (CGM) Through X-ray Signatures.
○ Conducting follow-up research focusing on machine learning-based causal inference techniques.
Jun 2025– **International Visiting Student Researcher, UC Santa Cruz, CA, USA**, Advisor: Prof.
Dec 2025 Puragra Guha Thakurta
○ Project: Kinematical Analysis of M32 - A Comparative Study of Serendipitously Observed Versus Targeted Stars and Assessment of Spectral Blending.
○ Participated in the UCSC International Summer Research Program (ISRP).

Teaching & Mentoring

Sep 2025– **Undergraduate Tutor (General Physics II)**, KAIST, Daejeon
Dec 2025 Mentored KAIST freshmen, facilitating a deeper understanding of core physics concepts through weekly review sessions.
Summer **Science Internship Program (SIP) Mentor, UC Santa Cruz, CA, USA**
2025 Supervised a research group of 3 high school interns. Successfully guided one intern to present their research findings at the **247th American Astronomical Society (AAS) Meeting** (Jan 2026).

Publications & Presentations

Oct 2025 **Poster Presentation, Probing Hot gas Components of CGM Through X-ray Signatures**, Korea Physical Society (KPS) Fall Meeting
Awarded Outstanding Presentation. (Selected to present at **APRIM 2026**, Hong Kong)

Summer **Oral Presentation**, *Kinematical Analysis of M32: A Comparative Study of Serendipitously*
2025 *Observed Versus Targeted Stars*, UCSC SIP Symposium

Honors & Awards

Fall 2025 **Tech Innovator Recognition**, NASA Space Apps Challenge, Seoul (Project: *Geese Crossing*)

Fall 2025 **Excellent Award**, KAIST Undergraduate Research Program (URP)

Fall 2025 **Excellent Award**, KPS Undergraduate Physics Research Competition

Spring 2025 **Outstanding Presentation Awards**, Korea Physical Society (KPS)

Spring 2025 **Departmental Honor Scholarship & Dean's list**, Department of Physics, KAIST

2020 **KAIST Presidential Fellowship**

2020 **National Science & Technology Scholarship**

2019 **Hanseong Son JaeHan Scholarship**

Selected Coursework

Physics Quantum Mechanics I & II, Classical Electromagnetism I, Statistical Physics, Solid State Physics I, Mathematical Methods in Physics I & II

Astrophysics Astrophysics, Radio Astronomy, Introduction to Astrophysics (UC Berkeley), Computational Physics

Skills & Extracurriculars

Programming Python (pandas, numpy, astropy, matplotlib, torch), Git, L^AT_EX

Languages Korean (Native), English (TOEFL 103)

ExtracurricularMember, NUPS (Exoplanet Exploration Club) (Spring 2025– Present)

Military Service

Jan 2022– Republic of Korea Army, Honorable Discharge (Sergeant)
Jul 2023