

Hyeonjae Kim

Researcher at Agency for Defense Development

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Education

Kyungpook National University (KNU) Bachelor of Science in Physics Overall GPA: 4.11/4.3 (130 credits) Major GPA: 4.19/4.3 (71 credits)	Daegu, South Korea Mar. 2020 – Feb. 2024
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Research Experiences

Agency for Defense Development (ADD) Researcher (PIs: Dr. Sin Hyuk Yim, Dr. Sangkyung Lee) Research on quantum sensing based on atomic systems <ul style="list-style-type: none">Designed and implemented an automated absorption spectroscopy system for rubidium vapor cells based on atom–light interaction modelingBuilt and optimized a zero-field (SERF) optically pumped atomic magnetometer	Daejeon, South Korea Jun. 2024 – Present
Novel Applied Nano Optics Lab Research Intern (Advisor: Prof. Junyeob Yeo) Project: Fabrication of a flexible photo–electrochemical cell using laser	Daegu, South Korea Jun. 2021 – Jun. 2022
High Energy Physics Lab (Moon Lab) Research Intern (Advisor: Prof. Chang-Sung Moon) Developed momentum reconstruction algorithms for silicon detector simulations	Daegu, South Korea Jun. 2020 – Feb. 2021

Publications

Aging test of an atomic vapor cell with Al_2O_3 wall coating on cubic glass
Applied Optics **64**, 7932-7937 (2025)
H. Kim, T. Jeong, S. H. Hong, J. B. Nam, S. Lee, Y. Lim, and S. H. Yim

Conference Presentations

Towards the development of a SERF magnetometer
Korean Physical Society (KPS) Fall Meeting (2025)
H. Kim, Y. Lim, S. Lee, S. H. Hong, S. H. Yim, T. Jeong, and J. B. Nam

Lifetime extension of rubidium vapor cells by Al_2O_3 coating
APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Meeting (2025)
H. Kim, T. Jeong, S. Lee, and S. H. Yim

Linear absorption spectroscopy in rubidium vapor cells: Applications in buffer gas measurement and lifetime estimation
Korean Physical Society (KPS) Spring Meeting (2025)
H. Kim, T. Jeong, S. Lee, J. B. Nam, S. H. Hong, and S. H. Yim

Honors and Awards

Physics Alumni Association Award and Scholarship (Outstanding Graduate) Department of Physics Alumni Association, Kyungpook National University	Feb. 2024
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2nd Prize, 2023 MiliTECH Challenge Hosted by KAIST; Awarded by the Agency for Defense Development	Dec. 2023
2nd Prize, 2022 MiliTECH Challenge Hosted by KAIST; Awarded by the Korea Military Academy (KMA)	Dec. 2022
3rd Prize of Academic Conference College of Natural Sciences, Kyungpook National University	Dec. 2021
Dean's List: 3 semesters (2021-1, 2021-2, 2022-2) College of Natural Sciences, Kyungpook National University	Nov. 2021, Apr. 2022, Apr. 2023

Grants and Scholarships

National Science and Technology Scholarship Korea Student Aid Foundation (KOSAF)	Mar. 2022 – Feb. 2024
Academic Merit Scholarship (Hyoseok Scholarship) Kyungpook National University Alumni Association	Apr. 2022
Academic Excellence Scholarship Kyungpook National University	Aug. 2020, Feb. 2021, Aug. 2021

Other Research Outputs

Buffer Gas Pressure Estimation for OPAMs Registered software (Korea Copyright Commission, C-2024-047156)	Dec. 2024
Rubidium Vapor Cell Lifetime Monitoring and Analysis Tool Registered software (Korea Copyright Commission, C-2024-054414)	Dec. 2024

Additional Experiences

Research Officer for National Defense (ROND) First Lieutenant in the Republic of Korea Air Force Selected as one of 20 research officers nationwide for STEM-based national defense research	Jun. 2024 – May. 2027
Teaching Assistant, Classical Mechanics II (PHYS212)	Sep. 2023 – Dec. 2023
Teaching Assistant, Electromagnetism II (PHYS312)	Mar. 2023 – Jun. 2023

Skills

Programming: Python, Wolfram Language (Mathematica)
Software: LabVIEW, SolidWorks