

# Hyeonjae Kim

Researcher at Agency for Defense Development

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## Education

<b>Kyungpook National University (KNU)</b> 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

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

## Publications

**Aging test of an atomic vapor cell with  $\text{Al}_2\text{O}_3$  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  $\text{Al}_2\text{O}_3$  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

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

## Grants and Scholarships

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

## Other Research Outputs

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

## Additional Experiences

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<b>Research Officer for National Defense (ROND)</b> 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
<b>Teaching Assistant, Classical Mechanics II (PHYS212)</b>	Sep. 2023 – Dec. 2023
<b>Teaching Assistant, Electromagnetism II (PHYS312)</b>	Mar. 2023 – Jun. 2023

## Skills

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