

Hyeonjae Kim

Research Officers for National Defense at Agency for Defense Development

Email: hyeonjae.amo@gmail.com | hyeonjae@add.re.kr

Website: <https://hyeonjaephys.github.io>

Research Interests

AMO Physics, Quantum Sensing, Quantum Information

Education

Kyungpook National University (KNU), Daegu, Republic of Korea

Mar. 2020 – Feb. 2024

Bachelor of Science in Physics

Overall GPA: 4.11/4.3 (130 credits) | Major GPA: 4.19/4.3 (71 credits)

Research Experiences

Agency for Defense Development, Daejeon, Republic of Korea

Jun. 2024 – Present

Research Officers for National Defense (ROND)

Research on Atom-Based Quantum Sensors at 3rd R&D Institute

Novel Applied Nano Optics Lab, Daegu, Republic of Korea

Jun. 2021 – Jun. 2022

Research Intern (Advisor: Prof. Junyeob Yeo)

Research on photo-electrochemical cells using optics

High Energy Physics Lab (Moon Lab), Daegu, Republic of Korea

Jun. 2020 – Feb. 2021

Research Intern (Advisor: Prof. Chang-Sung Moon)

Research on Algorithm Development for Silicon Detectors

Publications

Aging test of 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

Conferences

Towards the SERF regime in an atomic 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

Demonstration of atom spin gyroscope operating with high bandwidth over 100 Hz

APS Division of Atomic, Molecular and Optical Physics (DAMOP) Meeting (2025)

S. H. Yim, S. Lee, T. Jeong, J. B. Nam, D. Kim, S. H. Hong, and H. Kim

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) Awarded by the chair of the Physics Alumni Association, Kyungpook National University	<i>Feb. 2024</i>
Agency for Defense Development Director General's Award 2nd prize at the MiliTECH Challenge hosted by the KAIST	<i>Dec. 2023</i>
Korea Military Academy President's Award 2nd prize at the MiliTECH Challenge hosted by the KAIST	<i>Dec. 2022</i>
3rd prize of Academic Conference Awarded by the College of Natural Sciences, Kyungpook National University	<i>Dec. 2021</i>
Dean's list: 3 semesters (2021-1, 2021-2, 2022-2) Awarded by the College of Natural Sciences, Kyungpook National University	<i>Nov. 2021, Apr. 2022, Apr. 2023</i>

Grants and Scholarships

National Science and Technology Scholarship Awarded by the Korea Student Aid Foundation (KOSAF)	<i>Mar. 2022 – Feb. 2024</i>
Academic Encouragement Scholarship (Hyoseok Scholarship) Awarded by the Kyungpook National University Alumni Association Outstanding students selected from each college (Representative of the College of the Natural Sciences)	<i>Apr. 2022</i>
Merit-based Scholarship Awarded by Kyungpook National University Full tuition waiver for outstanding academic achievement	<i>Aug. 2020, Feb. 2021, Aug. 2021</i>

Teaching Experiences

Undergraduate Tutoring in Classical Mechanics² (PHYS212) Courses Teaching Assistant Lectures for 2 hours once a week during the Fall 2023 semester	<i>Sep. 2023 – Dec. 2023</i>
Undergraduate Tutoring in Electromagnetism² (PHYS312) Courses Teaching Assistant Lectures for 2 hours once a week during the Spring 2023 semester	<i>Mar. 2023 – Jun. 2023</i>

Patents and Software

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

Other Experiences

First Lieutenant at Republic of Korea Air Force Research Officers for National Defense (Physics, 2/year), counterpart of Israel Talpiot	<i>Jun. 2024 – May. 2027</i>
Tutoring for International Undergraduate Freshmen Mentored for 2 hours per week on general academic life and basic calculus Selected as an excellent tutor	<i>Feb. 2022 – May. 2022</i>

Skills

Python, LabVIEW, Wolfram Language (Mathematica)