

# Song, Moojune | 송무준 | 宋武俊

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## EDUCATION

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- Feb. 2019 - **KAIST** **Daejeon, Korea**  
Present *Master's and Ph. D. integrated course in Physics*
  - **Advisor:** prof. Kab-Jin Kim
  - **Affiliation:** Ultrafast spin dynamics laboratory
  - **Research field:** Spintronics
  - **Honors:** National Science and Engineering Scholarship
- Feb. 2014 - **KAIST** **Daejeon, Korea**  
Feb. 2019 *Bachelors of Science (double major: Physics, Electrical Engineering)*
  - **Honors:** National Science and Engineering Scholarship

## RESEARCH INTERESTS

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- Spin dynamics in magnetic materials
  - ✓ Spin wave transmission measurement and its electrical control
  - ✓ Skyrmion, domain wall motion measurement using MOKE microscopy
  - ✓ Micromagnetic simulation (MUMAX<sup>3</sup>)
- Spintronic computing device applications
  - ✓ Logic device based on spin wave, skyrmion
  - ✓ Neuromorphic device application of spintronics

## PUBLICATIONS

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2. *Applied Physics Express* **13**, 063002 (2020)  
“Guiding of dynamic skyrmions using chiral magnetic domain wall”  
Moojune Song, Kyoung-Woong Moon, Seungmo Yang, Chanyong Hwang, Kab-Jin Kim
1. *Physical Review Applied* **11**, 024027 (2019)  
“Omnidirectional spin wave array antenna”  
Moojune Song, Kyoung-Woong Moon, Chanyong Hwang, Kab-Jin Kim

## PATENTS

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2. “Logic device using Skyrmion”, K. -J. Kim and M. Song, KR Patent Application, 10-2020-0060519 (2020)

1. "Skyrmion guiding device and its manufacturing method", K. -J. Kim and M. Song, KR Patent Application, 10-2020-0040921 (2020)

## **PRESENTATIONS**

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6. Oral presentation, *SNU - KAIST - POSTECH Young Physicist Workshop*, Daejeon, Korea (2020. 2. 3)
5. Poster presentation, *International Symposium on Magnetism and Magnetic Materials 2019*, Korean Magnetism Society, Jeju, Korea (2019. 11. 20)
4. Poster presentation, *Korean Physical Society Fall Meeting*, Gwangju, Korea (2019. 10. 23)
3. Poster presentation, *International School on Spintronics and Korea-Japan Spintronics Workshop*, Nagoya, Japan (2019. 1. 21)
2. Poster presentation, *International Symposium on Magnetism and Magnetic Materials 2018*, Korean Magnetism Society, Busan, Korea (2018. 11. 21)
1. Poster presentation, *Korean Physical Society Fall Meeting*, Changwon, Korea (2018. 10. 24)

## **AWARDS & HONORS**

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- Mar. 2020 "Excellent Teaching Assistant Award", Department of Physics, KAIST
- Nov. 2020 "Best Poster Presentation Award", *International Symposium on Magnetism and Magnetic Materials 2019*, Korean Magnetism Society
- Sep. 2019 "Excellent Teaching Assistant Award", Department of Physics, KAIST
- Feb. 2019 "Excellent Award", KAIST-URP (Undergraduate Research Program), KAIST
- Nov. 2018 "Outstanding Presentation Award", *Korean Physical Society Fall Meeting 2018*, KPS

## **RESEARCH EXPERIENCES**

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- Mar. 2018 - **KAIST, Ultrafast Spin Dynamics Laboratory** **Daejeon, Korea**  
Feb. 2019 *Undergraduate Research Student*  
(Advisor: *prof. Kab-Jin Kim, Department of Physics*)
- Skyrmion, spin wave dynamics with OOMMF simulations
  - Supported by KAIST-URP (Undergraduate Research Program)
- Dec. 2017 - **Tokyo Institute of Technology, Surface Science Laboratory** **Yokohama, Japan**  
Feb. 2018 *Visiting Research Student*  
(Advisor: *prof. Masahiko Hara, Applied Chemistry Department*)
- Surface plasmon optics on metallic nanostructure (research title: Birefringent effects of TiO<sub>2</sub> Rutile substrate on plasmon resonance of metallic nanostructure)
- Jun. 2016 - **KAIST, 3-Dimensional Micro-Nano Structure Laboratory** **Daejeon, Korea**  
Aug. 2016 *Undergraduate Research Student*  
(Advisor: *prof. Jun-Bo Yoon, School of Electrical Engineering*)
- Developing Surface Enhanced Raman Spectroscopy (SERS) device using FDTD simulations

## **EXTRACURRICULAR ACTIVITIES & LEADERSHIP ROLES**

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Dec. 2017 - Feb. 2018	<b>Tokyo Tech Judo Club</b> <i>Team Member</i>	<b>Tokyo, Japan</b>
Dec. 2017 - Feb. 2018	<b>Tokyo Institute of Technology</b> <i>Research-Oriented Exchange Student</i> <ul style="list-style-type: none"><li>■ <b>Department:</b> Applied Chemistry, School of Materials and Chemical Technology</li><li>■ <b>Honors:</b> Japan Student Service Organization Scholarship</li></ul>	<b>Tokyo, Japan</b>
April. 2017 - Aug. 2017	<b>KIT Judo Club</b> <i>Team Member</i>	<b>Karlsruhe, Germany</b>
Mar. 2017 - Aug. 2017	<b>Karlsruhe Institute of Technology (KIT)</b> <i>Exchange Student</i> <ul style="list-style-type: none"><li>■ <b>Department:</b> Department of Electrical Engineering and Information Technology</li><li>■ <b>Honors:</b> KAIST International Study Scholarship</li></ul>	<b>Karlsruhe, Germany</b>
Mar. 2016 - Feb. 2019	<b>KAIST Tennis Club “Stroke”</b> <i>Team Member, Training Leader’s Group</i>	<b>Daejeon, Korea</b>
Mar. 2014 - Present	<b>KAIST Judo Club “Polar Bears”</b> <i>President, Team Captain</i> <ul style="list-style-type: none"><li>■ 1st place on team game, Daejeon city Judo competition</li><li>■ 1st place on individual game, Seoul city Seodaemun-gu competition</li></ul>	<b>Daejeon, Korea</b>

## **SKILLS & INTERESTES**

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<b>Languages</b>	<b>English</b> (proficient) <b>Japanese</b> (fluent daily and research conversation, JLPT N1) <b>German</b> (daily conversation, A2 level) <b>Korean</b> (native) <b>C</b> <b>Python</b>
<b>Software</b>	<b>MUMAX<sup>3</sup></b> (currently using for research, 1 year) <b>OOMMF</b> (1 and half year used for research)
<b>Interests</b>	Judo (black belt, 1 <sup>st</sup> Dan certificated), Brazilian Jiu-Jitsu (BJJ), Tennis, Golf