

## Hyunwoo Kwon (Will Kwon)

Ph. D student  
Division of Applied Mathematics  
Brown University  
hyunwoo\_kwon@brown.edu

### Employment

<b>Researcher</b> Sogang University	Seoul, Korea Jun. 2022 – July. 2022
<b>Full-time lecturer with the rank Lieutenant</b> Republic of Korea Air Force Academy	Cheongju, Korea Aug. 2019 – May. 2022

### Education

<b>Brown University</b> Ph. D. student in the Division of Applied Mathematics Academic Advisor : Prof. Hongjie Dong	Providence, RI, USA Aug. 2022
<b>Sogang University</b> M.S. in Mathematics Thesis Advisor : Prof. Hyunseok Kim Thesis: Dirichlet and Neumann problems for elliptic equations with singular drifts on Lipschitz domains	Seoul, Korea Feb. 2017 – Feb. 2019
<b>Sogang University</b> B.S. in Mathematics, <i>Summa Cum Laude</i>	Seoul, Korea Feb. 2013 – Feb. 2017

### Research Interests

Partial differential equations, Real variable methods in harmonic analysis

### Publication and Preprints

1. *Global existence and uniqueness of weak solutions of a Stokes-Magneto system with fractional diffusions*, with H. Kim, preprint.
2. *Elliptic equations in divergence form with drifts in  $L^2$* , *Proc. Amer. Math. Soc.* **150**(2022), no. 8, 3415–3429, [arXiv:2104.01300 \[math.AP\]](#)
3. *Existence and uniqueness of weak solution in  $W^{1,2+\varepsilon}$  for elliptic equation with drifts in weak- $L^n$  spaces*, *J. Math. Anal. Appl.* **500**(1) (2021) 125165, [arXiv:2011.07524 \[math.AP\]](#)
4. *Dirichlet and Neumann problems for elliptic equations with singular drifts on Lipschitz domains*, with H. Kim, *Trans. Amer. Math. Soc.* **375** (2022), 6537-6574, [arXiv:1811.12619 \[math.AP\]](#),

## Awards, Grants & Honours

BK Plus Scholarship, Sogang University . . . . .	2017
Albatross Fellowship (full funding support, 2 years), Sogang University . . . . .	2017
President prize for highest achievement in academic(1%), Sogang University . . . . .	2015
Dean's List of Natural Science, Sogang University for highest achievement in academic . . . . .	2014
Full Funding Scholarship(7 semesters) from Hyundai Chung Mong-Koo Foundation . . . . .	2013

## Teaching

<b>Lecturer</b>	Cheongju, Korea
Republic of Korea Air Force Academy	Sep. 2019 – May. 2022.
<ul style="list-style-type: none"> <li>– 2022-1 Calculus (2 classes), Engineering Mathematics II</li> <li>– 2021-2 Linear Algebra (Humanities, 2 classes), (Science, 1 class)</li> <li>– 2021-1 Calculus (Science, 2 classes), Engineering Mathematics I</li> <li>– 2020-2 Linear Algebra (Humanities), Engineering Mathematics I, Engineering Mathematics II</li> <li>– 2020-1 Calculus (Humanities), Engineering Mathematics I (2 classes)</li> <li>– 2019-2 Linear Algebra (Science, 3 classes), Engineering Mathematics I</li> </ul>	
<b>Coordinator of Undergraduate Seminar in Sogang Math Honors Club</b>	Seoul, Korea
Sogang University	Apr. 2017 – Aug. 2017
<ul style="list-style-type: none"> <li>– 2017-1 Introduction to Hilbert Spaces</li> </ul>	
<b>Recitation Instructor and Grader</b>	Seoul, Korea
Sogang University	Mar. 2017 – Feb. 2019
<ul style="list-style-type: none"> <li>– 2018-2 Advanced calculus II (Recitation instructor, Grading)</li> <li>– 2018-1 Advanced calculus I, Theory of complex variable I (Grading)</li> <li>– 2017-2 Advanced calculus II (Recitation instructor, Grading)</li> <li>– 2017-1 Advanced calculus I (Recitation instructor)</li> </ul>	
<b>Mathematics Tutor</b>	Seoul, Korea
Sogang University	Mar. 2016 – Dec. 2016
<ul style="list-style-type: none"> <li>– Worked as a tutor at Sogang Mathematics Learning Center</li> <li>– Helped several subjects which use mathematics</li> </ul>	

## Talks in Mathematics

<b>Elliptic equations with singular drifts on planar domains</b>	
APMA Graduate students seminar	Oct. 2022
<b>Elliptic equations with singular drifts</b>	
PDE seminar, UNIST	Jun. 2022
<b>Survey on Landau damping</b>	
PDE and Applied Analysis Seminar, POSTECH	Jun. 2022
<b>Elliptic equations in divergence form with drifts in <math>L^2</math></b>	
Contribution talks in Analysis session, 2022 Spring Meeting of KMS	Apr. 2022

<b>Elliptic equations with singular drifts on planar domains</b> Workshop for young mathematicians in Korea	Jan. 2022
$W^{1,2+\varepsilon}$ - <b>results for elliptic equations with singular drifts in weak <math>L^n</math>-spaces</b> Contribution talks in Analysis session, 2021 Spring Meeting of KMS	Apr. 2021
$W^{1,2+\varepsilon}$ - <b>results for elliptic equations with drifts in weak <math>L^n</math>-spaces</b> KIAS Analysis, PDE & Probability Seminar	Jan. 2021
<b>Elliptic equations with singular drifts on Lipschitz domains</b> HA-GMT-PDE seminar at University of Minnesota	Sep. 2020
<b>Elliptic equations with singular drifts on Lipschitz domains</b> KIAS Analysis, PDE & Probability Seminar	Dec. 2019
<b>Neumann problems for elliptic equations with singular drifts on Lipschitz domains</b> Contribution talks in Analysis session, 2019 Spring Meeting of KMS	Oct. 2019
<b>Elliptic equations with singular drifts on Lipschitz domains</b> IBS-CGP Seminar	Jan. 2019
$L^2$ - <b>boundedness of the Cauchy integral operator on Lipschitz curves</b> KIAS Analysis&PDE Learning seminar	Oct. 2018
<b>Dirichlet problems for elliptic equations with singular drifts in Lipschitz domains</b> Contribution talks in Analysis session, 2018 Joint Meeting of KMS and DMV	Oct. 2018
<b>Dirichlet problems for elliptic equations with singular drifts in Lipschitz domains</b> Graduate student seminar, Yonsei University	Sep. 2018
<b>The resolution of Hilbert's 19th problem</b> Graduate student seminar, Sogang University	Sep. 2018
<b>Elliptic equations with singular drifts on Lipschitz domains</b> Workshop for students in Analysis and PDE	Jul. 2018

## Work Experience

<b>L<sup>A</sup>T<sub>E</sub>X Technician</b> Freelancer	Seoul, Korea Mar. 2014 – Feb. 2019
<ul style="list-style-type: none"> <li>– Made several books with Kyungmoon Publisher and the others</li> <li>– Technical Editor for Publication of ICM 2014 Seoul, Korea</li> </ul>	

## Academic Services

<b>Organizer of workshop</b> Workshop for young mathematicians in Korea Co-organized with D.-Y. Ko (Rutgers Univ.) and B. Sohn (SNU) : <a href="#">homepage</a>	Cheongju, Korea Jan. 2022
<b>Organizer of workshop</b> Workshop for students in Analysis and PDE Co-organized with H. Kim (Sogang Univ.), Y.-R. Lee (Sogang Univ.) and S. W. Ryoo (SNU) : <a href="#">homepage</a>	Seoul, Korea Jul. 2018
<b>Founder and Organizer of Undergraduate Mathematics Seminar</b> United Mathematics club in Korea : <a href="#">Stupid Mathematics Seminar</a>	Seoul, Korea Feb. 2014 – Feb. 2016

## Conference and Workshop Attended (will attend)

- Intensive lectures on the Cauchy problems for quasilinear PDEs by Prof. Sung-Jin Oh, Online via Zoom, Jul. 26, 2021 – Jul. 30, 2021.
- Yonsei Ewha Sogang Seminar on Analysis & PDEs, Online via Zoom, Jan. 20, 2021.
- Workshop on Harmonic Analysis Techniques for PDEs, JBNU, Jeonju, Korea, Feb. 13, 2019 – Feb. 14, 2019.
- The 3rd meeting of Young PDE researchers in PDEs, KIAS, Seoul, Korea, Dec. 13, 2018 – Dec. 14, 2018.
- Workshop for students in Analysis and PDE(as a organizer and speaker), Sogang Univ., Seoul, Korea, Jul. 12, 2018 – Jul. 13, 2018.
- Dynamics of partial differential equations, KAIST, Daejeon, Jun. 27, 2018 – Jun. 29, 2018.
- 2018 Korea PDE School #8, NIMS, Daejeon, Jan. 29, 2018 – Feb. 02, 2018.
- Minicourse: General relativity in spherical symmetry, KIAS, Apr. 07, 2017 – Apr. 28, 2017.
- Lecture Series on various topics in PDEs, KIAS, Seoul, Korea, Feb. 13, 2017 – Feb. 17, 2017 / Feb. 20, 2017 – Feb. 24, 2017.
- 2017 Korea PDE School #7, NIMS, Daejeon, Jan. 16, 2017 – Jan. 20, 2017.
- 2016 CMC Foundations for Mathematical Challenge: Solitons in the Korteweg-de Vries equations, inverse scattering approaches, KIAS, Seoul, Korea, Aug. 22, 2016 – Aug. 26, 2016.
- IBS-CGP Mathematics Festival 2016, IBS Center for Geometry and Physics, Pohang, Jul. 18, 2016 – Jul. 22, 2016.
- 7th Workshop on PDEs of Mathematical Physics, UNIST, Ulsan, Jan. 14, 2016 – Jan. 16, 2016.

*Updated: October 23, 2022*