HYOJEONG SON

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EDUCATION

University of Washington, Seattle *Sep. 2021 - Present*
Ph.D. in Mathematics (Advisor: Christopher Hoffman)

Washington University in St. Louis *Sep. 2019 - May 2021*
M.S. in Mathematics

Stony Brook University *Feb. 2015 - Dec. 2018*
B.S. in Mathematics, Applied Mathematics and Statistics, Minor in Computer Science

RESEARCH INTERESTS

Discrete Probability, Dynamical Systems, and Theoretical Computer Science

PUBLICATIONS

[1] Hough, R. and Son, H., *Cut-off for Sandpiles on Tiling Graphs*, Annals of Probability, 49 (2), pp. 671 - 731. [arXiv:1902.04174] (2021)

[2] Hough, R. and Son, H., *The Spectrum of the Abelian Sandpile Model*, Mathematics of Computation, 90(327), pp.441-469. [arXiv:1905.07015] (2020)

RESEARCH PROJECTS

University of Washington *Jan 2023 - Present*
Advisor: Christopher Hoffman

- Investigating supercritical and subcritical cases for activated random walk on a line.

Washington University in St. Louis *Jun 2020 - May 2021*
Advisor: Renato Feres

- Orchestrated a mini-course on the chip-firing game for advanced undergraduates, leading to a comprehensive proof of the Riemann-Roch theorem for graphs.

Stony Brook University *Sep 2017 - May 2020*
Advisor: Robert Hough

- Demonstrated for planar periodic tilings with a reflection condition that the asymptotic mixing time is equivalent for both periodic and open boundary conditions.
- Proved for the D4 lattice in dimension 4, the open boundary mixing time is determined by the 3-dimensional boundary.

Korea IT Consilience Creative Project Grant Research *Sep 2016 - Aug 2017*
Research Project: Music and Mathematics

- Engineered a specialized piano for the 10-tone scale system using Logic Pro software, complemented by an interactive Android application with a virtual piano interface.

Stony Brook University, Department of Physics *Sep 2015 - May 2016*
Advisor: Alexander Krejci

- Conceptualized and constructed an educational physics product featuring Arduino sensors to measure and log physical phenomena such as velocity and angular velocity.

AWARDS AND HONORS

[1] **Nominated for the 2024 Excellence in Teaching Award** 2024
Nominated for campus-wide recognition at the University of Washington, Seattle.

[2] **Finalist for the Math Excellence in Teaching Award** 2022
Selected as a finalist for the departmental teaching award at the University of Washington.

[3] **Birnbaum Fellowship** 2022
Granted a $2000 fellowship from the University of Washington Mathematics Department.

[4] **Summer Math Scholarship** 2018
Received a scholarship covering two semesters, awarded annually to one student in the Mathematics Department at Stony Brook University.

[5] **Undergraduate Recognition Award for Academic Excellence** 2018
Campus-wide award given for academic accomplishments that go beyond the classroom experience at Stony Brook.

[6] **Director of the IT Promotion Center Award** 2017
Award given to the top three students who presented work at the World IT show in COEX, South Korea.

[7] **Happy Together Scholarship** 2017
Recognized for committed volunteer service within the university community with an honorary scholarship.

[8] **Academic Excellence Scholarships** 2015-2017
Awarded a merit-based scholarship covering three years of tuition at Stony Brook University.

[9] **Top 10 at 2015 K-Global Startup in IoT field** 2015
Secured 6th/7th place at the IoT Korea Exhibition and 5th place at the 5th Annual International Conference on Internet of Things.

TEACHING EXPERIENCE (as TEACHING ASSISTANT)

University of Washington, Seattle

- Winter 2024: Math 394 (Probability I)
- Fall 2023: Math 125 (Calculus II)
- Spring 2023: Math 207 (Differential Equations)
- Winter 2023: Math 207 (Differential Equations)
- Fall 2022: Math 111 (Algebra)
- Summer 2022: Math 126 (Calculus III)
- Spring 2022: Math 126 (Calculus III)
- Winter 2022: Math 125 (Calculus II)
- Fall 2021: Math 125 (Calculus II)

Washington University in St. Louis

- Spring 2021: Math 217 (Differential Equations)
- Fall 2020: Math 131 (Calculus I)

Stony Brook University

- Spring 2017: AMS 310 (Probability I)
- 2015-2016: Peer tutor in the Calculus sequence, Linear Algebra, and Physics courses (I and II)