

Hanse Kim

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Education

Gwangju Institute of Science and Technology

BSc, Physics and Photonic Sciences Major, Mathematics Minor

- TGPA : 3.69/4.0, Major GPA : 3.83/4.0 (24/06/02)
- Total Percentage : 96.5

Spring 2019 - Current

Gwangju, South Korea

University of California, Berkeley

Exchange Program via Study Abroad Program

Spring 2024

Berkeley, US

Research Experience

Holographic Correlation Functions

March 2023 - December 2023

- Calculate holographic correlation functions using AdS/CFT with Mathematica
- Supervised by Prof. Chanyong Park

First-last Passage Correspondences

September 2023 – December 2023

- Investigate first-last passage in diffusion problems
- Parallel programming and GPU acceleration with PyTorch
- Supervised by Prof. Chiok Hwang

Inverse Spectral Problems via Neural Networks

August 2024 – December 2024

- Develop neural network models for solving inverse Schrödinger spectral problems
- Physically informed neural network methods
- Supervised by Prof. Keun-Yeong Kim

Teaching Experience

Calculus TA

Spring 2023

Complex Analysis TA

Autumn 2023

Publications (Published)

Kim, Hanse, Jitendra Pal, and Chanyong Park. "Holographic description for correlation functions." *Physical Review D* 109.12 (2024): 126019.

Publications (Submitted)

Park, Chanyong, **Hanse Kim**, and Kyungchan Cho. "Time evolution of two-point function in expanding universes." *arXiv preprint arXiv:2405.15168* (2024).

Relevant Coursework and Academic Activity

Physics

- Advanced Mechanics, Advanced Quantum Physics (QFT I)

Mathematics and Computer Science

- Introduction to Differential Topology, von Neumann Algebras, Schrödinger Operators
- Machine Learning and Deep Learning

Functional Analysis Directed Reading

March 2023 - June 2023

- Monthly presentations based on Brezis - Functional Analysis
- Supervised by Prof. Jaegil Kim

Quantum Field Theory II Audit

January 2024 - May 2024

- Paper reading presentation on Renormalisation and the Batalin-Vilkovisky formalism

GIST Summer Internship

July 2024

- ML construction of holographic geometry; replication of papers 1, 2, 3, 4
- ML construction of MOND interpolating function
- Supervised by Prof. Keun-Yeong Kim

IonQ Mentoring Program

September 2024 - October 2024

- Develop framework for optimisation of Trotterised circuits

Scholarships

Merit Scholarship : 19' Spring, 20' Spring, Autumn

National Science & Technology Scholarship : 23' Spring, Autumn

Specialized Skills

Programming Languages: Python (pandas, PyTorch), Mathematica

General Software: Latex (Bibtex), Github

English Proficiency: TOEFL 116/120, TOEIC 990/990

Other Interests

Orchestra: GIST Orchestra Clarinet (2019-2024), Organiser (2023)