DAE HEUN KOH

101, Jangmi-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

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EDUCATION

Stanford University   *September 2018 - September 2025*
Ph.D. in Physics
Expected Conferral: September 2025
Dissertation Defense Passed: June 2025
Thesis Advisor: Hirohisa Tanaka
Dissertation: *Electron Neutrino Selection with Deep Neural Networks for the ICARUS Experiment*

University of Chicago   *September 2014 - June 2018*
Graduated with general honors in June 2018
B.A. in Physics (with honors)
B.S. in Applied Mathematics

HONORS AND AWARDS

Dean's List
2014-2015, 2015-2016, 2016-2017, 2017-2018

EFI Undergraduate Summer Research Stipend
$ 2500 Enrico Fermi Institute Undergraduate Research Stipend   *Summer 2017*

John Haeseler Lewis Prize
For Outstanding Graduating Seniors in Physics   *Spring 2018*

EFI Nathan Sugarman Award
For Excellence in Undergraduate Physics Student Research   *Spring 2018*

Phi Beta Kappa
Elected Senior Year   *Spring 2018*

PUBLICATIONS

1. D. Koh, A. Mishra, & K. Terao (2023). Deep neural network uncertainty quantification for LArTPC reconstruction. Journal of Instrumentation, 18(12), P12013.

2. Drielsma, F., Lin, Q., Soux, P., Domin, L., Itay, R., Koh, D., Nelson, B., Terao, K., Tsang, K., & Usher, T. (2021). Clustering of electromagnetic showers and particle interactions with graph neural networks in liquid argon time projection chambers. Phys. Rev. D, 104, 072004.

3. Dominé, L., Soux, P., Drielsma, F., Koh, D., Itay, R., Lin, Q., Terao, K., Tsang, K., & Usher, T. (2021). Point proposal network for reconstructing 3D particle endpoints with subpixel precision in liquid argon time projection chambers. Phys. Rev. D, 104, 032004.

4. D. H. Koh et al., Scalable, Proposal-free Instance Segmentation Network for 3D Pixel Clustering and Particle Trajectory Reconstruction in Liquid Argon Time Projection Chambers, arXiv preprint [physics.ins-det], 7 2020.

5. Francois Drielsma, Kazuhiro Terao, Laura Dominé, Dae Heun Koh, *Scalable, End-to-End, Deep-Learning-Based Data Reconstruction Chain for Particle Imaging Detectors*, Machine Learning and the Physical Sciences Workshop, Conference on Neural Information Processing Systems 2020.

RESEARCH

Electron Neutrino Selection with SPINE for the ICARUS Experiment   2023–2025
SLAC National Accelerator Laboratory

Developed electron neutrino selection algorithm for the ICARUS experiment using SPINE.

Uncertainty Quantification for Deep Learning Based Physics Reconstruction for ICARUS T600   2021–2023
SLAC National Accelerator Laboratory

Developing uncertainty quantification models for deep learning based physics reconstruction.

Deep Learning Based Reconstruction for LArTPC Data   2018–2025
SLAC National Accelerator Laboratory

· Core developer of Scalable Particle Identification with Neural Embeddings (SPINE), a deep learning algorithm for liquid argon time projection chamber data.

ICARUS T600 Signal Processing   2019–2023
SLAC National Accelerator Laboratory

· Algorithm development (C++) for ICARUS T600 wireplane waveform signal processing and denoising.

CONFERENCE TALKS AND POSTER PRESENTATIONS

Neutrino Physics and Machine Learning (NPML) 2024 (Talk)
ETH Zurich, 2024

Neutrino 2024 (Poster)
University of Milano–Bicocca, the University of Milan, INFN, 2024

ICARUS Machine Learning Workshop 2023 (Talk)
Colorado State University, 2023

Neutrino Physics and Machine Learning (NPML) 2023 (Talk)
Tufts University, 2023

Neutrino Physics and Machine Learning (NPML) 2020 (Talk)
SLAC, 2020

MISCELLANEOUS

Software Experience	Python, C++, PyTorch
Languages	English (Fluent), Korean (Fluent), Japanese (Conversational)
Github	https://github.com/dkoh0207