JONGHWI "JACK" KANG

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EDUCATION

Seoul National University *Sep. 2018 - Feb. 2025*
BSc in Physics

RESEARCH EXPERIENCE

Undergraduate Researcher, Seoul National University *Jun. 2023 - Dec. 2024*
Jonghee Yoo SNU Neutrino Physics Lab

· Presented research findings at biweekly lab meetings.
· Presented in a lab seminar the up-down asymmetry of atmospheric muon-neutrinos.
· Collaborated with undergraduate and PhD students for the Super-Kamiokande data analysis.

PROJECTS

Atmospheric Neutrino Oscillation Sensitivity Study (Bachelor's Thesis) *Jul. - Dec. 2024*
Seoul National University

· Investigated the Super-Kamiokande detector's sensitivity to neutrino oscillation parameters by analysing $\Delta\chi^2$ distributions and determining 1σ uncertainties.
· Developed a custom neutrino oscillation probability generator in Python using a recently proposed numerical solution to the three-flavour oscillation equations.
· Quantified the up-down asymmetry in atmospheric neutrino events, a key signature of oscillations.

Neutrino Mass Effect Study *Mar. - Jul. 2024*
Seoul National University

· Investigated how matter effect and MSW effect alter the neutrino oscillation probability with respect to various parameters.
· Developed visualisation tools to observe the effects of various parameters on the oscillation probability.

Monte Carlo Simulation Study *Dec. 2023. - Feb. 2024*
Seoul National University

· Practiced running Monte Carlo simulations of atmospheric neutrino interactions using the GENIE vector generator.

Super-Kamiokande Injector Stability Automated Plot Generator *Jun. - Aug. 2023*
Seoul National University

· Rewrote legacy code written for Physics Analysis Workstation to be compatible with the ROOT framework, for Super-Kamiokande's calibration system.
· Developed automated scripts to generate 'Stability of Injector' plots from calibration data, now integrated into the project server.

SKILLS

Software
Python, C++, C, ROOT, vi, NumPy, SciPy, matplotlib, Scikit-learn, Pandas, LATEX, GENIE, java, gnuplot, git, ...

Language
English, Korean, Chinese, Spanish

SERVICE

Student Staff at NuFACT 2023 *Aug. 2023*
Seoul, South Korea
· Assisted in organising the international neutrino physics conference, interacting with leading researchers.

Student Staff at IAUGA 2022 *Aug. 2022*
Busan, South Korea
· Supported sessions on astrophysics, engaging with international participants and students.