

## Research Result Report

### ICRR Inter-University Research Program 2023

Research Subject: Light scattering measurement in the water using the Super-Kamiokande detector.	
Principal Investigator: Prof. Jonghee Yoo (Seoul National University)	
Participating Researchers: JeongYeol Yang (Seoul National University) Seunghyun Jeong (Seoul National University) Byeongsu Yang (Seoul National Univsity)	
Summary of Research Result :  <p>The Korean Super-K group analyzed the data obtained using the automated laser system and provide water transparency varying in time during the SK7 period. The performance and measured results are reported during the Super-Kamiokande calibration group and collaboration meetings. We participated in the data-taking efforts of the Super-Kamiokande. Seunghyun Jeong, a graduate student in our group, performed data analysis for his PhD thesis work and participate in the proton-decay (NDK) working group. He also monitored the water transparencies using the laser lights. Our research professor (B.Yang) is in charge of the laser calibration system, and he is also be responsible for the TQ-map calibration system. Jeongyeol Yang have performed data analysis for the SK solar neutrino time variation. He analized 22-years of solar data and obtained a precision measurement of annual solar modulation of neutrinos. He also carried out periodicity measurement and concluded no significant indication of solar neutrino modulation above 5% of amplitude. The results has been recently published at Physical Review Letters 132, 241803 (2024).</p>	
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