

Research Report
ICRR Inter-University Research Program 2019

Research Subject:

Light scattering measurement in the water using the Super-Kamiokande detector

Principal Investigator:

Soo-Bong Kim

Participating Researchers:

Intae Yu (Sungkyunkwan University)

Jeong Yeol Yang (Seoul National University)

Summary of Research Result :

(1) Visits to the Super-Kamiokande site (4 times, 62 days)

[for maintenance and operation of the laser calibration system

+ for presenting results in analysis meeting and collaboration meeting]

- 2018/12/9-23 : Installation of new optical fibers

- 2019/01/12 - 02/28: Installation of top injector

- 2019/03/16 - 03/31: Maintenance of step motor

- 2019/05/10 - 26: Presentation in analysis meeting and Collaboration meeting

- 2019/07/17 - 8/14: Data-taking shift and laser system maintenance

- 2019/10/29 - 11/27: Presentation in analysis meeting and Collaboration meeting

- 2019/12/12 - 23: Presentation in Inter-University program meeting and laser
system maintenance

- 2020/04/11 - 16: Remote data taking shift

(2) Participation in online and offline meetings

- Presentation in the 2019 spring (5/23 - 25) and fall (11/14 - 16) Collaboration meetings: report (a) results of laser calibration data of SK 4 and SK 5 and (b) monitoring water quality variation at SK5 start

- Attend weekly calibration meetings (online and offline):

report (a) status of laser data-taking and their analysis, (b) water quality, and (c)

SK5 MC water parameter tuning

(3) Maintenance of laser system

- Clean laser switch box
- Prepare spare components: computer, step motor, and controller, position encoder and readout

(4) Data taking and analysis of laser calibration data

- Compare data and MC for hit timing distribution of scattered photons in order to obtain water scattering parameters
- Tune the SK5 MC water parameters
- Weekly quality check of auto-calibration data
- Development of a monitoring system for Gd loading

No.