

Research Result Report

ICRR Inter-University Research Program 2022

Research Subject: Water quality monitoring for precision neutrino detectors

Principal Investigator: Patrick de Perio

Participating Researchers: Junjie Xia, Xiaoyue Li

Summary of Research Result :

A >300 L/hr Gd-compatible water purification system and large polyethylene tank has been procured by IPMU and delivered to the ICRR neutrino group basement water development lab, as shown in the photo to the right (existing dark tub can be seen on the left side). Old emulsion development equipment and fume hood were disposed of to make space for the new system, and the room(s) floors were cleaned thoroughly.



The tank has been filled with tap water, through the purification system, and continuously circulating while attended during the daytime with no leaks so far. In addition to various lab and computer equipment, a network camera was purchased with this grant and configured for remote monitoring. Automatic emergency shutdown and alarm logic is being tested, while remote shutdown is being implemented to allow continuous unattended operation for the future experiments.

An IPMU spectrophotometer has been moved into the lab and started testing its operation with large cuvettes purchased from this grant. A more sensitive water quality measuring device will be purchased via other funds to test impact of gadolinium (Gd) and Gd-compatible resins.

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