Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **74** Type: **Oral (Non-Student) / Orale (non-étudiant(e))**

Leveraging Water-Cherenkov Experiment Experience for Drinking Water Monitoring

Tuesday 10 June 2025 15:15 (15 minutes)

The Water Monitoring System (WMS) developed at TRIUMF is a novel approach to in-situ water-quality monitoring. Initially, it was developed to track the quality of water samples from water Cherenkov neutrino detectors; the system uses several LEDs along with toggleable filters, a UV sterilizer, and a water deionizer to identify the presence and type of contaminants in a water sample. It has recently been deployed and operated to monitor the water quality of the Water Cherenkov Test Experiment (WCTE) at CERN; there, the system was used to track the initial purification of the detector's tank water, to monitor the quality of the water during its normal operation, and to track water quality decline during times when water circulation was paused. The WMS has also shown promise as a deployable water-quality monitor that can be used beyond physics applications in communities with unreliable access to clean water where fast and accurate water monitoring is imperative. Results and interpretations of the first deployment of the system for the WCTE are shown along with future applications and expected efficiencies.

Keyword-1

water cherenkov

Keyword-2

neutrino

Keyword-3

water quality

Author: SMITHERS, Benjamin Randolph (TRIUMF (CA))

Co-authors: KONAKA, Akira; TAGHAYOR, Sahar (University of Victoria (CA)); LI, Xiaoyue (TRIUMF)

Presenter: SMITHERS, Benjamin Randolph (TRIUMF (CA))

Session Classification: (DAPI) T2-1 | (DPAI) Applied Physics

Track Classification: Technical Sessions / Sessions techniques: Applied Physics and Instrumentation / Physique appliquée et de l'instrumentation (DAPI / DPAI)