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(U*) POS-J80 – Automated Feature Detection and Camera R&D for Photogrammetry in Super-K and Future Water Cherenkov Neutrino Detectors

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To allow for precision measurements of neutrino interactions in water Cherenkov neutrino detectors, reducing the position uncertainty on the photomultiplier tubes (PMTs) and calibration sources is necessary. This can be achieved with the photogrammetry technique. Detected PMTs in images of the detectors can be used to reconstruct a 3D model of their positions. This photogrammetry technique is being applied in the current Super-Kamiokande (Super-K) detector, and there are plans for its application in the next generation of water Cherenkov detectors, Hyper-K and its intermediate water Cherenkov detector (IWCD).

This talk discusses detection and identification of PMT features from a drone photographic survey of the Super-K detector, and camera calibration and R&D for a built-in photogrammetry camera system in the upcoming IWCD and Hyper-K detectors.

Author: SEKATCHEV, Michael (TRIUMF)

Presenter: SEKATCHEV, Michael (TRIUMF)

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