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Machine learning techniques to enhance water Cherenkov reconstruction

Machine learning has the potential to enhance the sensitivities of water Cherenkov detectors by improving the event reconstruction, suppressing backgrounds and reducing systematic uncertainties. These improvements will be vital in achieving the precision measurements that current and next-generation detectors are now aiming to perform.

This talk covers several areas where machine learning architectures are being explored as part of the WatCh-MaL organisation for event reconstruction in the Super-Kamiokande and Hyper-Kamiokande projects. Specific physics motivations are discussed, including applications for accelerator, atmospheric and low energy neutrino measurements, followed by an overview of the plans, progress, and challenges of ongoing efforts to use machine learning techniques in these areas.

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