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Machine Learning In IceCube: A Graphical Approach

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The IceCube Detector is a neutrino telescope designed to study the cosmos from deep within the ice sheet of the south pole. A cubic kilometre of ice is used to detect the Cherenkov radiation from charged decay products of neutrinos. With thousands of triggered events every second, sophisticated methods are needed to process the data. Our use of Graphical Neural Networks provides an alternative reconstruction method to the reliable, but slow, current regime.

We present new analyses of stopped muons contained inside the detector, estimating the inelasticity of neutrino/anti-neutrino decays as well as using GNNs for noise cleaning in the forthcoming IceCube upgrade detector.

Field of study

Computational Physics

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