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Energy reconstruction of high energy muon and neutrino events in KM3NeT

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KM3NeT will be a European deep-sea infrastructure of neutrino telescopes covering a volume of several cubic kilometers at the Mediterranean Sea aiming to search for high energy neutrinos from galactic and extragalactic sources. This analysis focuses on muon neutrinos and muons coming from charged-current interactions. In large water Cherenkov detectors the reconstructed muon is used to approximate the neutrino direction and energy, thus providing information on the astrophysical neutrino source. Muon energy estimation is also critical for the differentiation of neutrinos originating from astrophysical sources from neutrinos generated in the atmosphere which constitute the detector irreducible background. We describe a method to determine the muon and neutrino energy employing a Neural Network. An energy resolution of approximately 0.27 has been achieved for muons at the TeV range.

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