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GRBNeT - A Prototype Autonomous Neutrino Detector

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GRBNeT is a project aiming at the detection of ultra-high energy neutrinos, for example neutrinos originating from Gamma Ray Bursts. The goal is to design, construct and test-deploy a prototype unit of an autonomous (data/energy-wise) neutrino detector.

Being autonomous is crucial since for the detection of ultra-high energy neutrinos a very large volume of water is required. Large scale facilities such as IceCube and KM3Net are designed to be more sensitive to galactic and diffuse flux neutrinos rather than extragalactic ultra high energy neutrinos. However, their sensitivity to such neutrinos could be increased by placing around and at larger distances detectors such as the one of the GRBNeT project. This extension would increase the volume of neutrino telescopes to several cubic kilometres. In addition to that, as no cable connection to the shore is required, GRBNeT detection units cost significantly less to regular detection units and can become a cost effective extension of large scale facilities.

For the GRBNeT prototype unit ultra low power electronics have been developed. Also extended simulations are being made concerning the high energy neutrinos from GRBs and Atmospheric Muon Background.

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