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Proposal for a next generation astronomy neutrino telescope

In 2021, LHAASO observed a large number of Pevatrons in the Milky Way, which pointed out the direction for the sensitivity design of the next generation astronomy neutrino telescope, and it is expected to observe the precious neutrino celestial point source in the Milky Way only by designing a telescope with at least 30 times the sensitive volume of the IceCube detector. Therefore, we proposed the High-energy Underwater Neutrino Telescope project (HUNT). In order to realize this project, we innovatively put forward the scheme of an optical module based on a 20-in PMT. Relying on the Baikal-GVD experiment, we have deployed optical modules into Lake Baikal. Then, it is planned to set up a small array in the near future to observe the atmospheric neutrino signal in the South China Sea. At the same time, we built a detector simulation program based on GEANT4 and GPU parallel algorithm, and the performance expectations will be presented.

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