

Detecting high-energy neutrinos with RADAR

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Recently IceCube for the first time in history discovered high-energy cosmic neutrinos with energies up to several PeV, where at higher energies IceCube runs out of statistics. At even higher energies in the EeV region, even though no detection has been claimed so far, the Askaryan radio detectors start to become sensitive. We discuss the radar detection technique as a new method to detect a high-energy neutrino induced particle cascade in ice. It is shown that using this method, it is feasible to detect high-energy neutrino induced particle cascades in ice with a primary neutrino energy threshold of several PeV. Therefore, the radar detection technique provides a very promising means to cover the currently existing sensitivity gap between several PeV where IceCube runs out of statistics and several EeV where the Askaryan radio detectors become sensitive.

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