

UHE neutrino detection with the surface detector of the Pierre Auger Observatory

The Pierre Auger Observatory has the capability of detecting ultrahigh energy neutrinos of all flavours above 0.1 EeV. The method adopted is to search for very inclined showers produced close to the detector. The properties of such showers that start deep in the atmosphere are different at ground level from those showers initiated in the upper atmosphere by protons or nuclei. The neutrino events will have a significant electromagnetic component leading to a broad time structure of detected signals in water Cherenkov tanks in contrast to nucleonic-induced showers. In this poster we present two analysis that are being used to identify neutrino candidates under different conditions, one for “down-going” neutrinos and the other for “earth skimming” tau neutrinos. We show that the configuration of the surface detectors of the Auger Observatory has a satisfactory discrimination power against the larger background of nucleonic showers over a broad angular range. No candidates were found on data collected from 1 January 2004 to 28 February 2009. A limit on the diffuse neutrino flux is presented.

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