Contribution ID: **58** Type: **not specified**

Optimizing the optical array geometry for TRIDENT

Friday, 15 November 2024 09:20 (5 minutes)

The observation of astrophysical neutrino sources provides smoking-gun evidence for the origin of cosmic rays. IceCube has recently reported an excess of neutrino flux from NGC 1068 with a significance of 4.2. TRIDENT is a proposed next-generation neutrino telescope located in the South China Sea. Owing to its large size, novel detector design, and location near the equator, TRIDENT will provide outstanding sensitivity to neutrino sources over the entire sky. In order to evaluate the detector's performance, we have conducted simulation studies using track-like events. Here, we present the effective area and angular resolution of TRIDENT, based on the optimization of the Penrose tilling layout where the spacing is optimized. Other array layout options such as Sunflower and Cluster, are also compared in terms of point source sensitivity using up-going track-like neutrino events.

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Session Classification: Data analysis techniques & tools