

The Fifth Gravi-Gamma-Nu workshop



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Sensitivity of the Cherenkov Telescope Array Observatory to the gamma-ray emission from neutrino sources detected by IceCube

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Gamma-ray observations of astrophysical neutrino sources are fundamentally important for understanding the underlying neutrino production mechanisms. We investigate the Cherenkov Telescope Array Observatory (CTAO) prospects for detecting the very-high-energy (VHE) gamma-ray counterparts to neutrino-emitting extragalactic sources. The performance of CTAO under different configurations (including the so-called “Alpha” and “Omega” configurations) is computed based on neutrino and gamma-ray simulations of steady sources and of flaring blazars, assuming that the neutrino events are detected with the IceCube neutrino telescope. The detection probability for CTAO is calculated for both the North and South sites, taking into account visibility constraints. We find that, under optimal observing conditions, within 30 minutes of observation, CTAO could detect the VHE gamma-ray emission associated with at least 3 neutrino events per year. We investigate the detectability of the blazars given either 1 or 5 hours CTAO observation windows.

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