

Searching for VHE gamma-ray emission associated with IceCube neutrino alerts using FACT, H.E.S.S., MAGIC, and VERITAS

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The real-time follow-up of high energy events from neutrino observatories is a promising approach to identify their astrophysical origin. So far, it has provided compelling evidence for a neutrino counterpart: the flaring gamma-ray blazar TXS 0506+056 observed in coincidence with the high-energy neutrino IC170922A detected by IceCube. The detection of very-high-energy (VHE, $E > 100$ GeV) gamma rays from this source supported the association and constrained the modeling of the blazar emission at the time of the IceCube event. The four imaging atmospheric Cherenkov telescope experiments (IACTs) - FACT, H.E.S.S., MAGIC, and VERITAS - operate an active follow-up program of target-of-opportunity observations of neutrino alerts sent by IceCube. This program has two main components: the follow-up of single high-energy neutrino candidate events of potential astrophysical origin, such as IC170922A, and the observation of known gamma-ray sources around which IceCube has identified a cluster of candidate neutrino events. IceCube recently upgraded this second gamma-ray follow-up (GFU) component in collaboration with the IACT groups. We present results from the IACT follow-up program of IceCube neutrino alerts and a description of the upgraded GFU system.

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Subcategory

Experimental Results

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