

Searching for the sources of high-energy astrophysical neutrinos with VERITAS

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VERITAS, an array of atmospheric-Cherenkov telescopes sensitive to gamma rays in the very-high-energy range (VHE, $E > 100$ GeV), carries out an extensive multimessenger program focused on the search for electromagnetic counterparts to high-energy neutrinos and gravitational waves. As both neutrinos and gamma rays are expected to be produced in hadronic interactions near cosmic ray accelerators, the detection of a gamma-ray source in temporal and spatial coincidence with the arrival of astrophysical neutrinos could reveal cosmic ray sources and provide insights into their properties.

The first evidence for the detection of a high-energy astrophysical neutrino source was based on the observation of the high-energy neutrino event IC170922A by IceCube in coincidence with an extended gamma-ray flare of the blazar TXS 0506+056 detected by Fermi-LAT. The detection of this source in VHE gamma rays by MAGIC, and later by VERITAS, provides an opportunity to study potential hadronic emission scenarios combining observations over the entire electromagnetic spectrum. This talk will introduce the VERITAS multimessenger program with a focus on the search for neutrino counterparts and present recent results from the study of TXS 0506+056.

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Session Classification: Exploring Connections: Neutrinos and Gamma Rays

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