

H.E.S.S. searches for TeV gamma-rays associated to high-energy neutrinos with H.E.S.S.: the case of IceCube-170922A / TXS 0506-056

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The detection of an astrophysical flux of high-energy neutrinos by IceCube is a major step forward in the search for the origin of cosmic rays, as this emission is expected to originate in hadronic interactions taking place in or near cosmic-ray accelerators. No neutrino point sources, or significant correlation with known astrophysical objects, have been identified in the IceCube data so far. The hadronic interactions responsible for the neutrino emission should also lead to the production of high-energy gamma rays. The search for neutrino sources can then be performed by studying the spatial and temporal correlations between neutrino events and very high energy (VHE, $E > 100$ GeV) gamma rays.

We report here on the search for VHE gamma-ray emission at the reconstructed position of muon neutrino events detected by IceCube with the H.E.S.S. imaging air Cherenkov telescopes (IACTs). We will summarize searches for steady gamma-ray counterparts as well as the extensive program to perform prompt IACT observations of realtime IceCube neutrino event positions. A recent highlight of this program are the H.E.S.S. observations during the broad multi-wavelength campaign that followed the detection of the neutrino event IceCube-170922A arriving from a direction consistent with the location of a flaring gamma-ray blazar TXS 0506+056 in September 2017. We'll present the H.E.S.S. observations obtained within ~4h hours of the neutrino detection as well as a complementary search for gamma-ray emission at longer timescales and put them into the multi-wavelength and multi-messenger context.

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