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MAGIC observation strategy of IceCube neutrino alerts

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Astrophysical neutrinos at hundreds of TeV are expected to originate in hadronic interactions, but their sources are still unknown. The chance of identifying the emitting objects can be improved by a rapid electromagnetic follow-up of neutrino events. Here, the MAGIC telescopes play a relevant role in identifying very high energy (>100 GeV) γ -ray counterparts. This is achieved by responding to different types of neutrino alerts issued by the IceCube alert system. Thanks to this program, a very high energy neutrino detected by IceCube was found to be spatially coincident with the blazar TXS 0506+056 and in time coincidence with a flare of this source. This is so far the only observation with a chance coincidence probability rejected at the 3σ level, suggesting blazars as candidate neutrino emitters.

In this talk a description of MAGIC observation strategy in response to IceCube alerts will be given, together with a discussion on past follow-up, in particular on the case of TXS 0506+056.

Collaboration name

MAGIC Collaboration

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