

Seminarium Astrofizyczne

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(DESY)

The MAGIC Telescopes' quest for neutrino emitters

The measurement of an astrophysical flux of high-energy neutrinos by IceCube is an important step towards finding the long-sought sources of cosmic rays. Nevertheless, the long exposure neutrino sky map shows no significant indication of point sources so far. This may point to a large population of faint, steady sources or flaring objects as origins of this flux.

Since gamma-rays and neutrinos should be produced together in hadronic interactions, observations of potential neutrino emitters with Imaging Atmospheric Cherenkov Telescopes (IACTs) provide key input in constraining emission models.

The MAGIC telescopes are a stereo IACT system located at La Palma island. They are characterized by an excellent sensitivity in a broad energy range (20 GeV-100 TeV) and high repositioning speed, which allows for fast response to transient alerts. MAGIC is engaged in the neutrino source hunt since its very beginning and is the first IACT to provide the most compelling evidence for a neutrino point source. MAGIC discovered, in very-high-energy gamma-rays (VHE, >100 GeV), the flaring blazar TXS 0506+056 in coincidence with a single high-energy neutrino from IceCube.

During my talk, I will discuss the MAGIC neutrino follow-up program and the resulting TXS 0506+056 discovery. I will also present the on-going multiwavelength monitoring of TXS 0506+056, aiming to deepen our understanding of this candidate neutrino emitter.

Serdecznie zapraszam,
Agnieszka Majczyna