

## Gamma-rays and neutrinos from TXS 0506+056: interpretation of the 2018/2019 MAGIC and MWL monitoring campaign

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A powerful tool to investigate the sources of cosmic-rays is multi-messenger astronomy. If cosmic rays are accelerated in relativistic jets of active galactic nuclei, they interact with low-energy photon fields producing photons and neutrinos that can be used to infer the properties of the hadronic accelerator. On 09/22/2017, IceCube and the gamma-ray instruments Fermi-LAT and MAGIC observed the first evidence (at the 3 sigma level) of co-production of photons and neutrinos from the AGN TXS 0506+056. For the first time, theoretical models of hadronic emission from AGNs could be tested on both gamma-rays and neutrinos. Following this event, the MAGIC collaboration set up a gamma-ray monitoring of the source during the 2018-2019 observing season, accompanied by multi-wavelength observations, resulting in a new MAGIC detection and producing new quasi-simultaneous spectral energy distributions of the source. In this contribution we present the theoretical interpretation of the 2018-2019 observations of TXS 0506+056, comparing the results from this new data-set with the one from September 2017, and we discuss their implications on cosmic-ray accelerations in AGN, and on the physics of relativistic jets from super-massive black holes.

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