# Multi-epoch monitoring of TXS 0506+056 with MAGIC and MWL partners

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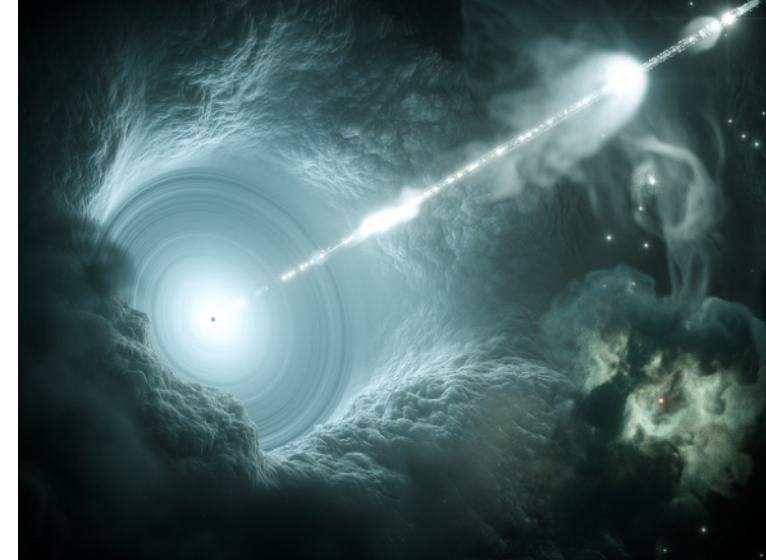
What is this contribution about? We report results from a dedicated MWL monitoring program of TXS 0506+056 carried out by MAGIC and its MWL partners in the years 2017-2021, including the long-term light curves and SED modelling in a frame of a lepto-hadronic model.

Why is it relevant/interesting? TXS 0506+056, a potential neutrino emitting blazar, has been very poorly studied prior to 2017. Long-term MWL monitoring gives us valuable insights into the underlying TXS 0506+056 emission mechanism and their temporal evolution.

What have we done? We have collected ~130h of VHE gamma-ray data with MAGIC and a large set of simultaneous MWL data. We studied the MWL variability, flux vs photon index correlations and the spectral energy distribution (including the potential neutrino emission).

What are the results? The source was in a very low emission state in VHE gamma-rays for the majority of monitored time. A VHE gamma-ray flare, similar to the one in 2017, occurred in Dec 2018. Variability on daily scales is observed in optical to X-ray bands. Radio emission peaked in the end of 2020 and then started to rapidly decay.
The source emission is dominated by leptonic processes, with hadronic components emerging in the X-ray and VHE gamma-ray band. The predicted neutrino event rates for IC are consistent with the observations.