

Multi-messenger interpretation of the neutrinos from TXS 0506+056

We discuss possible interpretations of the neutrinos observed from the AGN blazar TXS0506+056 in the multi-messenger and multi-wavelength context, including both the 2014-15 and 2017 neutrino flares. While the neutrino observed in September 2017 has to describe contemporary data in e.g. the X-ray and VHE gamma-ray ranges, data at the 2014-15 excess are much sparser. We demonstrate that in both cases the simplest possible one-zone AGN blazar models face challenges. While the 2017 flare can be well interpreted by considering more sophisticated source geometries, the 2014-15 flare is much harder to describe with conventional models. One challenge is the energy injected into the electromagnetic cascade coming together with the neutrino production, which cannot be reconciled with the 13 observed neutrino events. We also speculate if a common interpretation of both flares is feasible.

Primary authors: Dr FEDYNITCH, Anatoli (DESY); POHL, Martin (DESY); Dr GAO, Shan (DESY); Dr WINTER, Walter (DESY); Mr RODRIGUES, Xavier (DESY)

Presenters: Dr GAO, Shan (DESY); Mr RODRIGUES, Xavier (DESY)