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MAGIC in the multi-messenger Universe: latest news from the neutrino blazar TXS 0506+056

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The evidence for multi-messenger photon and neutrino emission from the blazar TXS 0506+056 has been a major success for the astrophysical community, reached thanks to a powerful strategy of real-time follow-up of neutrino events. The effort of MAGIC and other experiments in coordinating observations to obtain contemporaneous multiwavelength (MWL) flux and spectral measurements was key for measuring the chance coincidence with the high-energy neutrino from the neutrino event IceCube-170922A and constrain theoretical models. While the strategy of follow-ups of neutrino alerts is active and enforced by many facilities, TXS 0506+056 remains the astrophysical source with the highest significance associated with a high-energy neutrino. The monitoring of TXS 0506+056 is providing new information on the time evolution of the MWL radiation from this source and a deeper understanding of the processes leading to the neutrino emission. Here we present the light curves and simultaneous spectral energy distributions from the neutrino blazar TXS 0506+056 during a 3-year monitoring with MAGIC and MWL partners. The theoretical interpretation of the results will be presented and put in context with the multi-messenger efforts of MAGIC in the past years.

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