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Detection of a flaring blazar coincident with an IceCube high-energy neutrino

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On September 22, 2017, the IceCube Neutrino Observatory has observed for the first time ever an extremely high-energy neutrino IceCube-170922 in spatial and temporal coincidence with a gamma-ray flaring blazar, TXS 0506+056, observed with the Large Area Telescope on board the Fermi Gamma-ray Space Telescope. Following the original IceCube alert, the source has been observed by several telescopes in a broad wavelength band. Most notably the LAT has reported an increase of the source's gamma-ray flux by a factor of ~6 compared to its average state. Emission of very high-energy gamma rays was then observed by MAGIC. Triggered by these detections, archival IceCube events, as well as multi-messenger data have been analyzed in order to better understand the physics and the time-evolution of the object. In this talk we report on the combined result from all analyses, establishing if the correlation with TXS 0506+056 is a chance coincidence or indication of a neutrino source.

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