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Large zenith angle observation of the PeVatron candidate SNR G106.3+2.7 with the LST-1 and the MAGIC telescopes

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The quest for PeVatrons, sources of galactic cosmic rays accelerated up to PeV energies, has lived exciting developments in the last years, thanks to the many gamma-ray sources detected by ground array experiments at energies above 100 TeV. Among these, the supernova remnant SNR G106.3+2.7 appears to be one of the most promising hadronic PeVatron candidates, for which the ultra-high energy emission (UHE, E > 100 TeV) can be hardly explained with a simple leptonic emission scenario. The interest in this source has been recently validated by the first LHAASO catalogue, which confirms the presence of a highly significant source above 100 TeV inside the radio contour of SNR G106.3+2.7.

Imaging Atmospheric Cherenkov Telescopes (IACTs) are ideal instruments to investigate the nature of the most energetic sources of gamma-rays in the Universe thanks to their optimal angular and energy resolution compared to UHE detectors. Using the LST-1, the Large-Sized Telescope prototype of the Cherenkov Telescope Array Observatory, with its two neighbours IACTs of the MAGIC experiment, we have been observing the SNR G106.3+2.7 at Large Zenith Angles (LZA), which allows us to explore the 1-50 TeV region of the energy spectrum.

Such observations raise challenges for data reconstruction and analysis, due to the strong dependence on the zenith angle of the image properties for LZA observations. In this contribution, we will present the first combined analysis of all the data obtained with each instrument during the current observation campaign, including a preliminary study of the energy-dependent morphology of the source in gamma-rays.

Primary author: EMERY, Gabriel (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France)

Co-authors: Dr ARCARO, Cornelia (INFN Sezione di Padova and Università degli Studi di Padova, Via Marzolo 8, 35131 Padova, Italy); Dr BAKTASH, Ali (Universität Hamburg, Institut für Experimentalphysik, Luruper Chaussee 149, 22761 Hamburg, Germany); Ms CARRASCO, Marie-Sophie (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France); Dr CASSOL, Franca (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France); Dr COSTANTINI, Heide (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France); Dr CRISTOFARI, Pierre (Observatoire de Paris, PSL Research University, 61 avenue de l'Observatoire, Paris, France); Dr MANGANARO, Marina (University of Rijeka, Department of Physics, Radmile Matejcic 2, 51000 Rijeka, Croatia); Ms PIHET, Marine (INFN Sezione di Padova and Università degli Studi di Padova, Via Marzolo 8, 35131 Padova, Italy); Dr SAITO, Takayuki (Institute for Cosmic Ray Research, University of Tokyo, 5-1-5, Kashiwa-no-ha, Kashiwa, Chiba 277-8582, Japan)

Presenter: EMERY, Gabriel (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France)

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