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3-year low-state at very high energies of the blazar 1ES1959+650: the broadband SED analysis

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The Spectral Energy Distribution (SED) of blazars consists of two components. The low-energy emission, extending from radio to X-rays, is interpreted as synchrotron radiation from accelerated electrons, while the high-energy radiation, which can reach TeV energies, is produced via inverse Compton scattering of the electrons by lower-frequency photons. The latter can come either from the synchrotron radiation produced by the same population of electrons (Synchrotron Self Compton - SSC - scenario) or from an external photon field. These are called leptonic models. According to hadronic models instead, cosmic ray protons in the jet interact with an (internal or external to the jet) photon field to produce the high-energy peak in the blazar SED.

The investigation of blazar SED plays then a crucial role to determine which of the theoretical models can explain the observed SED and infer the parameters that drive the microphysics of the system. The SED modeling over time allows us to also study the processes during different states of the source. In this context, multi-wavelength long-term monitoring programs of blazars are key to successfully adress the basic, fundamental question of the production and emission mechanisms at work around these sources. The blazar 1ES1959+650 represents an ideal laboratory to perform that. It is bright in all the bands of the electromagnetic spectrum and is located at low redshift (z = 0.047) allowing its detection at TeV wavelengths. In addition, some flaring activities from this source have been reported in the past. A long-term multiwavelength (MWL) monitoring of 1ES1959+650 is currently ongoing under the coordination of the MAGIC collaboration. During the last few years, the source is experiencing its lowest state ever reached, mainly at very high energies. This contribution will illustrate the study of the SED, during the last three years of observations of the source. An SSC interpretation of the data will be presented.

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