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Historical Low-State of the Blazar 1ES 1959+650 at Very High Energies

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The Spectral Energy Distribution (SED) of blazars consists of two components. The low-energy bump is interpreted as synchrotron radiation emitted by accelerated electrons while the high-energy one is produced via inverse Compton scattering of the electrons by low-energy photons. In the leptonic interpretation, the latter photon field can be provided either by the synchrotron radiation of the same accelerated electrons (in the so-called Synchrotron Self-Compton scenario, SSC) or by an external photon field.
Alternatively, hadronic models interpret the high-energy emission as produced by processes involving protons accelerated in the relativistic jet of the source.
Investigating the SED of blazars is crucial for determining which theoretical models better describe the physics of the system. In this context, multi-wavelength (MWL) long-term monitoring observations of blazars is essential to constrain the physics of the ongoing radiative processes during different activity states.
The blazar 1ES 1959+650 represents an ideal laboratory for that, thanks to its brightness at all wavelengths. Its favourable low redshift (z = 0.047) makes it detectable also at very high gamma-ray energies. Additionally, its activity has demonstrated flaring episodes in the past, making it ideal for a variability study.
A long-term MWL monitoring of 1ES1959+650 is ongoing under the coordination of the MAGIC collaboration. Over the 2020-2022 period, the source has experienced one of its lowest states ever reached, mainly at very high energies. This contribution presents the MAGIC and MWL observations and the study of the spectral changes of the source during these three years, focusing on an SSC interpretation of the data.

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