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VHE emission from extragalactic sources: open issues from MWL observations

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The Cherenkov telescopes observations together with with Fermi/LAT survey and multi-wavelength (MWL) simultaneous coverage are posing new challenges to the description of extreme sources, such as blazars, flat spectrum radio quasars (FSRQs), and radiogalaxies.

We will review some of these new results threatening the conventional emission models. Among them: the difficulties of the usual description with single-zone SSC models of the SED of BL Lacs objects, when simultaneous very-high energy (VHE) and MWL observations are taken into account; the constraints on the location of the gamma-ray emission region as revealed by the MAGIC observations of the FSRQ PKS 1222+21; the unprecedented activity recently detected on the BL Lac PG 1553+113; the firm VHE detection of somewhat unexpected sources such as the radiogalaxy NGC 1275 and IC 310 in the Perseus cluster of galaxies.
We will also consider the interplay between intrinsic emission models and the interaction of gamma-rays with the extragalactic background light and intergalactic magnetic fields.

In this talk these issues will be tackled in the framework of the results of MWL observations led by the MAGIC Cherenkov telescopes system.

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