

Measurement of the Extragalactic Background Light using MAGIC and Fermi-LAT

The EBL is the diffuse optical-IR background light accumulated during the history of the Universe, mainly emitted by stars with a contribution from AGNs and exotic components such as Population III stars which is currently under debate. Direct measurements are plagued by uncertainties in the total emission from foreground sources, orders of magnitude more intense. On the other hand, indirect measurements using the attenuation of VHE blazar emission are challenging due to the unknown intrinsic spectrum and the usually oversimplified treatment of the spectral information. In this talk, we describe a measurement of the EBL intensity from a combined likelihood analysis of blazar spectra detected by MAGIC and Fermi-LAT. The 12 blazar spectra, covering a range of $z=0.03$ to $z=0.94$, allows to study the EBL evolution up to redshift $z=1$ and resolve its spectral shape. Finally, we discuss the different systematic uncertainties that affect indirect measurements of EBL in the VHE band and the most limiting factors that will affect future instrumentation.