ICRC

The Astroparticle Physics Conference

34th International Cosmic Ray Conference
July 30 - August 6, 2015
The Hague, The Netherlands

Contribution ID: **509**   Type: **Poster contribution**

MAGIC discovery and observation of the candidate extreme BL Lac object RBS 0723

Saturday 1 August 2015 15:30 (1 hour)

The BL Lac object RBS 0723 is an extreme BL Lac object (EHBL) candidate. These sources are known to show an extreme frequency of their synchrotron and inverse Compton peaks in the spectral energy distribution (in the hard X-ray and TeV bands respectively). Furthermore, they are characterized by the extreme hardness of the UV-X-ray and intrinsic TeV continua. These characteristics are usually explained in a leptonic synchrotron+SSC emission model under the assumption that the energy distribution of the emitting relativistic electrons has a large value of the minimum Lorentz factor ($\approx 10^5$) and a rather low magnetic field intensity (10^{-2} G). This aspect points out a significant difference with respect to the parameters usually used in "classical" TeV BL Lac modelling. Thus, EHBLs are important and very interesting targets as their observation allows to investigate the properties of blazars belonging to a poorly known category of sources described by peculiar values of the relevant physical quantities of the jets.

MAGIC performed an observational campaign on RBS 0723 between December 2013 and April 2014. The source was detected for the first time in the GeV-TeV regime on January 2014 with a statistical significance of more than 5 standard deviations. The non-detection in the earlier data taken in December points to a possible VHE flux variability, at variance with common wisdom on similar sources such as 1ES 0229+200, where variability is considered quite limited. In this contribution, we will report about MAGIC observation results including the light curve and the spectral energy distribution modelling.

Collaboration

MAGIC

Registration number following "ICRC2015-I/"

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Session Classification: Poster 2 GA

Track Classification: GA-EX