

MAGIC detection of Geminga: an Inverse Compton tail?

Friday 16 July 2021 13:18 (12 minutes)

We report the detection of pulsed emission from the Geminga pulsar (PSR J0633+1746) with the MAGIC Telescopes. After the Crab and Vela pulsars, Geminga is the third one detected in the very high energy domain, and its estimated age of ~340 ky makes it the oldest one. The spectrum derived by MAGIC extends from ~15 GeV to 75 GeV and can be well modeled with a simple, soft power-law function. For energies below 40 GeV it overlaps with Fermi-LAT measurements. Joint fits to MAGIC and Fermi-LAT data disfavour the existence of a sub-exponential cut-off in this energy range. Our results are discussed in the framework of the outer gap accelerator model. Such power-law emission can be interpreted as the transition from curvature radiation to inverse Compton (IC) scattering of charges accelerated in the northern outer gap. The IC component is expected to continue towards higher energies. The model fails to fit the overall shape of the spectrum, indicating that a major review is required.

The MAGIC Telescopes are two IACTs on the Canary Island of La Palma. In recent years they have significantly improved their performance below 100 GeV with the introduction of a novel trigger system, the Sum-Trigger-II, which halves the energy threshold of the system.

Keywords

Pulsars; Geminga; MAGIC; IACT;

Collaboration

MAGIC

other Collaboration

Subcategory

Experimental Results

Primary authors: CERIBELLA, Giovanni (Max-Planck-Institute for Physics); LÓPEZ-MOYA, Marcos (Universidad Complutense Madrid); MIRZOYAN, Razmik (Max-Planck-Institute for Physics); FOR THE MAGIC COLLABORATION

Presenter: CERIBELLA, Giovanni (Max-Planck-Institute for Physics)

Session Classification: Discussion

Track Classification: Scientific Field: GAI | Gamma Ray Indirect