Contribution ID: **244** Type: **Oral Contributions**

Insights into pulsar physics from very high energy gamma-ray observations

Thursday, 15 September 2016 16:15 (30 minutes)

Most of the 200 gamma-ray pulsars detected by the Fermi-LAT space telescope exhibit sharp spectral cutoffs around a few GeV. This can be explained by classical pulsar models, in which gamma-ray emission originates from curvature radiation emitted by e-/+ pairs, accelerated either close to the neutron star surface or to the pulsar light cylinder. These models naturally predict the observed cutoffs at a few GeV, suggesting that pulsars are inviable targets for VHE (>100 GeV) ground-based gamma-ray detectors. However, the detection of the Crab pulsar up to hundreds of GeV by MAGIC and VERITAS, and the detection of Vela by HESS, have shown that pulsar spectra can extend beyond what was previously expected. These discoveries have raised important questions about our understanding of pulsar electrodynamics. It seems unlikely that curvature radiation can be the main source of photons at VHE energies, and so new models involving e.g. inverse Compton scattering or emission beyond the light cylinder have been proposed.
In this talk, I will review the latest observations of pulsars with the current VHE gamma-ray instruments. I will discuss the implications of these observations in our understanding of pulsar physics, and summarise the latests ideas to explain such energetic and unexpected radiation. Finally, prospects for pulsar observations with the coming CTA observatory will also be shown.

Summary

Primary author: Dr LÓPEZ MOYA, marcos

Presenter: Dr LÓPEZ MOYA, marcos

Session Classification: Gamma-ray astrophysics

Track Classification: Gamma-ray astrophysics