

VHE pulsed gamma-ray emission from the Crab Pulsar by MAGIC

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The last six years have witnessed major revisions of our knowledge about the Crab Pulsar, the central engine of the remnant of the supernova explosion that occurred in 1054 AD. The consensus scenario for the origin of the high-energy pulsed emission has been challenged with the discovery of a very-high-energy power law tail extending up to ~ 400 GeV, above the expected spectral cut off at a few GeV. Now, new measurements obtained by the MAGIC collaboration, with more than 300 hours of observation time, extend the energy spectrum of the Crab Pulsar even further, on the TeV regime. Above ~ 400 GeV the pulsed emission comes mainly from the interpulse, which becomes more prominent with energy due to a harder spectral index.

These findings require gamma-ray production via inverse Compton scattering close to or beyond the light cylinder radius by an underlying particle population with Lorentz factors greater than 5×10^6 . We will present those new results and discuss the implications in our current knowledge concerning pulsar environments.

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