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Physics : Astrophysics and Astroparticles

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Very-high-energy Gamma-ray Observations of Pulsar Wind Nebulae and Cataclysmic Variable Stars with MAGIC and Development of Trigger Systems for IACTs

- Nominated as an outstanding PhD thesis by the Universitat Autònoma de Barcelona, Spain
- Presents a state-of-the-art overview of the imaging atmospheric Cherenkov technique and the MAGIC telescopes
- Offers a complete picture of the relation between pulsar properties and their very-high-energy gamma-ray emissions
- Features cutting-edge results on the very-high-energy emissions of cataclysmic variable stars with contemporary observations

This thesis is a comprehensive work that addresses many of the open questions currently being discussed in the very-high-energy (VHE) gamma-ray community. It presents a detailed description of the MAGIC telescope together with a glimpse of the future Cherenkov Telescope Array (CTA). One section is devoted to the design, development and characterization of trigger systems for current and future imaging atmospheric Cherenkov telescopes. The book also features a state-of-the-art description of pulsar wind nebula (PWN) systems, the study of the multi-TeV spectrum of the Crab nebula, as well as the discovery of VHE gamma rays at the multiwavelength PWN 3C 58, which were sought at these wavelengths for more than twenty years. It also includes the contextualization of this discovery amongst the current population of VHE gamma-ray PWNe.

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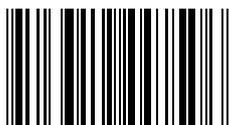
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