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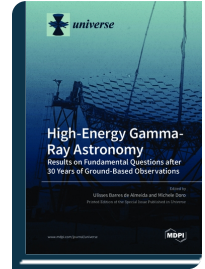
High-Energy Gamma-Ray Astronomy

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This volume celebrates the 30th anniversary of the first very-high energy (VHE) gamma-ray Source detection: the Crab Nebula, observed by the pioneering ground-based Cherenkov telescope Whipple, at teraelectronvolts (TeV) energies, in 1989. As we entered a new era in TeV astronomy, with the imminent start of operations of the Cherenkov Telescope Array (CTA) and new facilities such as LHAASO and the proposed Southern Wide-Field Gamma-ray Observatory (SWG0), we conceived of this volume as a broad reflection on how far we have evolved in the astrophysics topics that dominated the field of TeV astronomy for much of recent history.

In the past two decades, H.E.S.S., MAGIC and VERITAS pushed the field of TeV astronomy, consolidating the field of TeV astrophysics, from few to hundreds of TeV emitters. Today, this is a mature field, covering almost every topic of modern astrophysics. TeV astrophysics is also at the center of the multi-messenger astrophysics revolution, as the extreme photon energies involved provide an effective probe in cosmic-ray acceleration, propagation and interaction, in dark matter and exotic physics searches. The improvement that CTA will carry forward and the fact that CTA will operate as the first open observatory in the field, mean that gamma-ray astronomy is about to enter a new precision and productive era.

This book aims to serve as an introduction to the field and its state of the art, presenting a series of authoritative reviews on a broad range of topics in which TeV astronomy provided essential contributions, and where some of the most relevant questions for future research lie.



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