



Cherenkov Telescope Array: An overview of research objectives

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Cherenkov Telescope Array (CTA) is a next generation ground based very high energy gamma ray observatory. High energy gamma-rays, the most energetic form of the electromagnetic radiations, do not originate in our solar system and are important in the study of extrasolar, and especially extra-galactic astronomy. Thus CTA is believed to serve as an open observatory for a broad astrophysics community to provide a deep insight into the non-thermal high-energy universe. It will be used to study the most extreme and violent events in the Universe, from exploding stars, to black holes and rapidly rotating stars composed entirely of neutrons. It has the potential to detect gamma-radiation from dark matter, as yet undetected form of matter believed to make up around 20% of the total mass in the Universe.

In this paper we provide an overview of the physics potential of the CTA, which includes the searches for the ultimate nature of the matter along with the origin of the cosmic ray and their impact on the constituents of the Universe. We also present a brief comparison of CTA with other observatories operating at other wavelength ranges of the electromagnetic spectrum.

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