



Contribution ID: 112

Type: **Oral contribution**

The Cherenkov Telescope Array and its Key Science Projects

Wednesday, 19 April 2017 16:40 (20 minutes)

The Cherenkov Telescope Array (CTA) will be the next generation gamma-ray observatory, open to the scientific community, to investigate the very high-energy emission from a large variety of celestial sources in the energy range 20 GeV - 300 TeV. The full array, distributed over two sites, one in the northern and one in the southern hemisphere, will provide whole-sky coverage and will improve the sensitivity of the current imaging atmospheric Cherenkov telescope arrays by a factor of 5-10. CTA will investigate a much higher number of sources of already known classes, reaching much larger distances in the Universe, performing population studies and accurate variability and spatially-resolved analyses. New light will be shed on possible new classes of TeV sources and on fundamental physics. We review the main CTA technical characteristics as well as its Key Science Projects, which will focus on major scientific cases and will provide a clear advance beyond the current state of the art. CTA Key Science Projects will allow scientists to benefit from high-value legacy data-sets for both multi-wavelength and dedicated follow-up studies.

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Session Classification: Sessione Cosmologia e Astroparticelle

Track Classification: Sessione Cosmologia e Astroparticelle