

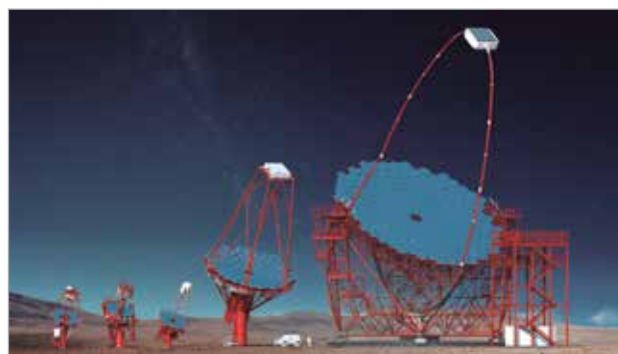
CHERENKOV TELESCOPE ARRAY

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FAPESP Process 2015/15897-1 | Term: Aug 2016 to Jul 2021

This project aims at assuring the permanence of the proponents in the world leadership in astroparticle physics through the participation in the Cherenkov Telescope Array Observatory (CTA). CTA is an international collaboration which intends to construct the new generation of ground gamma ray telescopes to study astroparticle physics among other subjects of astrophysical interest. The plan is to build hundreds of telescopes in three different configurations in order to detect gamma rays with energies between 10 GeV and 100 TeV. Ground-based gamma-ray telescopes have been proved to produce outstanding results over the last two decades. The CTA Observatory will have 10 times more sensitivity than any currently operating gamma ray telescope. In the past five years, the scientists involved in this project have developed astrophysical models, proposals for data analysis, simulations and instrumentation related to the physics and astrophysics of CTA. This effort was supported by FAPESP via two regular grants (process 2010/19514-6 and 2012/22540-4) and many scholarships. The success of the work done in the past years has culminated in this Thematic Project in which FAPESP is supporting us to improve our studies in: a) new physics: dark matter and Lorentz Invariance, b) cosmic rays and gamma rays: production and propagation, c) air showers and the configuration of telescopes, d) instrumentation of telescopes and e) astroparticle physics outreach.



Source: <https://www.cta-observatory.org/project/technology>

This project has already contributed to the development of fundamental science, innovation and formation of human resources. Since the beginning of our involvement with CTA, the group of scientist in this project have published several scientific papers in high impact factor journal. These publications are receiving numerous citations. Besides that, more than 10 students have been supported for graduate studies within this subject. The project includes the design, construction and test of a sophisticated metallic structure for the middle size telescope of CTA. The project was developed in collaboration with the Brazilian industry was tested under the conditions of the international CTA collaboration and approved to equip the middle size telescope. During the development of this structure, an innovative device to adjust the position of large weight load was developed and the process to request a patent is under way. These results were achieved before the CTA Observatory is taking data which increases our perspectives of success when the operation starts.

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