The universe is a unique laboratory to study fundamental physical processes at extreme energies, well beyond any energy scale that can ever be reached with accelerators on Earth. Gamma-ray astronomy at high energies (VHE) probes the non-thermal universe at TeV-electronvolt energies by tracing populations of high-energy particles in distant regions of our own and other galaxies, allowing to address key issues in areas of astronomy, astrophysics and fundamental physics.

The great success of current generation instruments (H.E.S.S., MAGIC and VERITAS) has demonstrated the great potential of the young field of TeV gamma-ray astrophysics. In order to fully exploit this potential and serve a wider community of users, the next generation instrument CTA aims at providing a significant performance improvement in spectral coverage, angular and timing resolution and operability.

In order for CTA to achieve the envisaged performance, a large array of Cherenkov telescopes, between 50-100, of different sizes and distributed over an area of >1 km² will be needed. The array will operate in a wide range of configurations depending on the nature of the scientific goals.

CTA will have full-sky coverage, by constructing two sites, one in the Northern and one in the Southern hemisphere and for the first time in this field, will work as an open observatory. The sites will be operated by one international consortium, and unlike current experiments, CTA will host its own Science Data Centre, where the data will be stored, made public and accessible through the Virtual Observatory.

The CTA consortium meets these challenges in a Design Study that is jointly performed by all major European and international groups, and in cooperation with the industry.

The CTA observatory as world-class research infrastructure will be open to the scientific community. The project directly involves more than 500 scientists from over 120 institutions across Europe, America, Asia and Africa. CTA is top ranked in the roadmaps of ASPERA and ASTRONET for future projects in particle astrophysics and astronomy, CTA is included in the 2008 update of the roadmap of the European Strategy Forum on Research Infrastructures (ESFRI).

For further reading: arXiv:1008.3703

The CTA-SPAIN Consortium explicitly invites interested members of the astrophysics communities to join this effort.


The CTA-SPAIN Consortium is the Spanish branch of the CTA Consortium. It is composed of groups working at IEE, BCM, IFAE, UAB and UB (Barcelona), CIEMAT, UCM and UCM-Gae (Madrid), IAC (Canary Islands). Around 50 persons currently actively contribute to this effort and participate in the starting preparatory phase work. A dedicated coordinating group is currently being formed in the BIA TREX DE INFRAESTRUCTURAS PARA SPAIN OF PARTICIPATION IN CTA.