

CTAO

CONSORTIUM



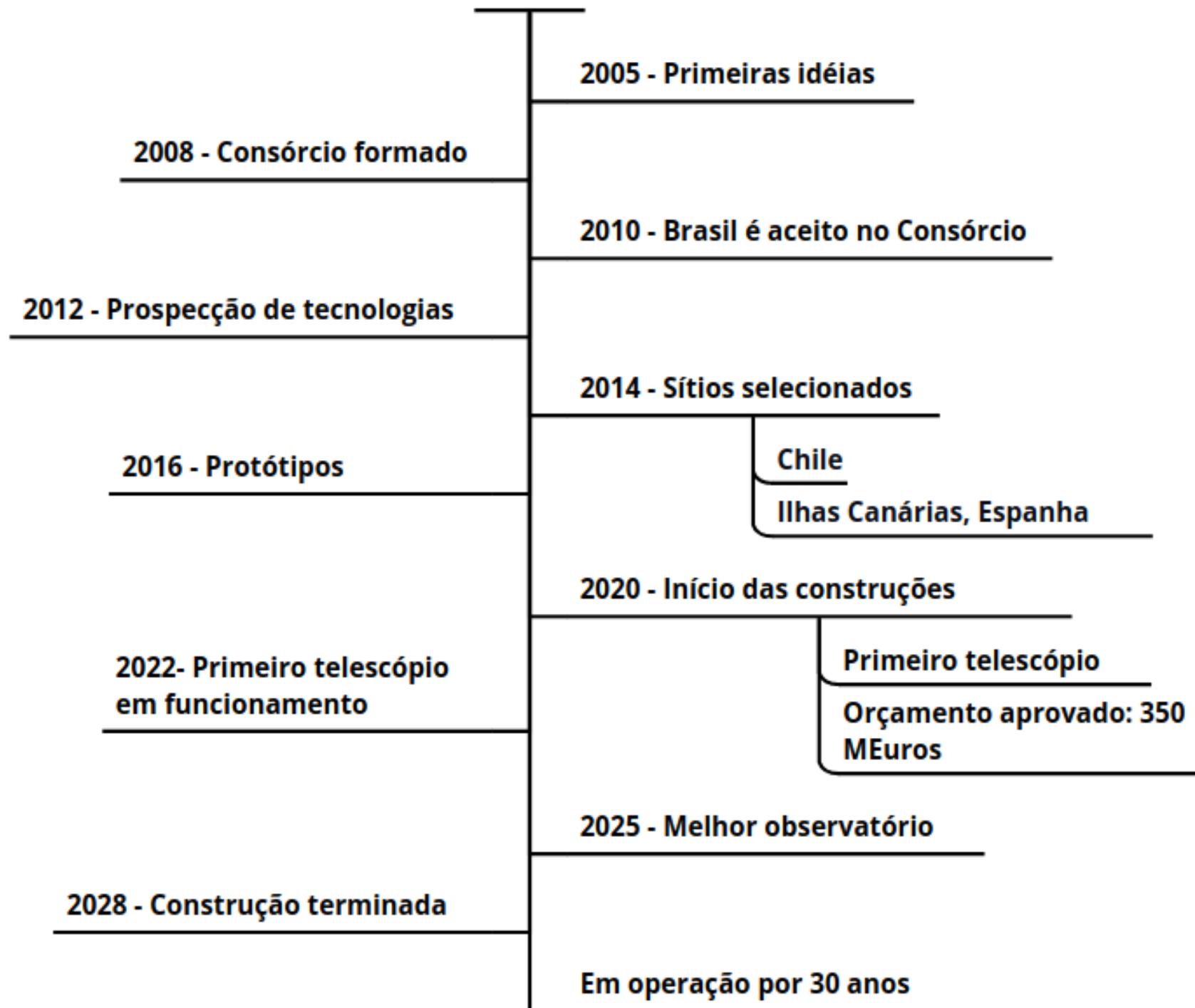
Vitor de Souza

vitor@ifsc.usp.br



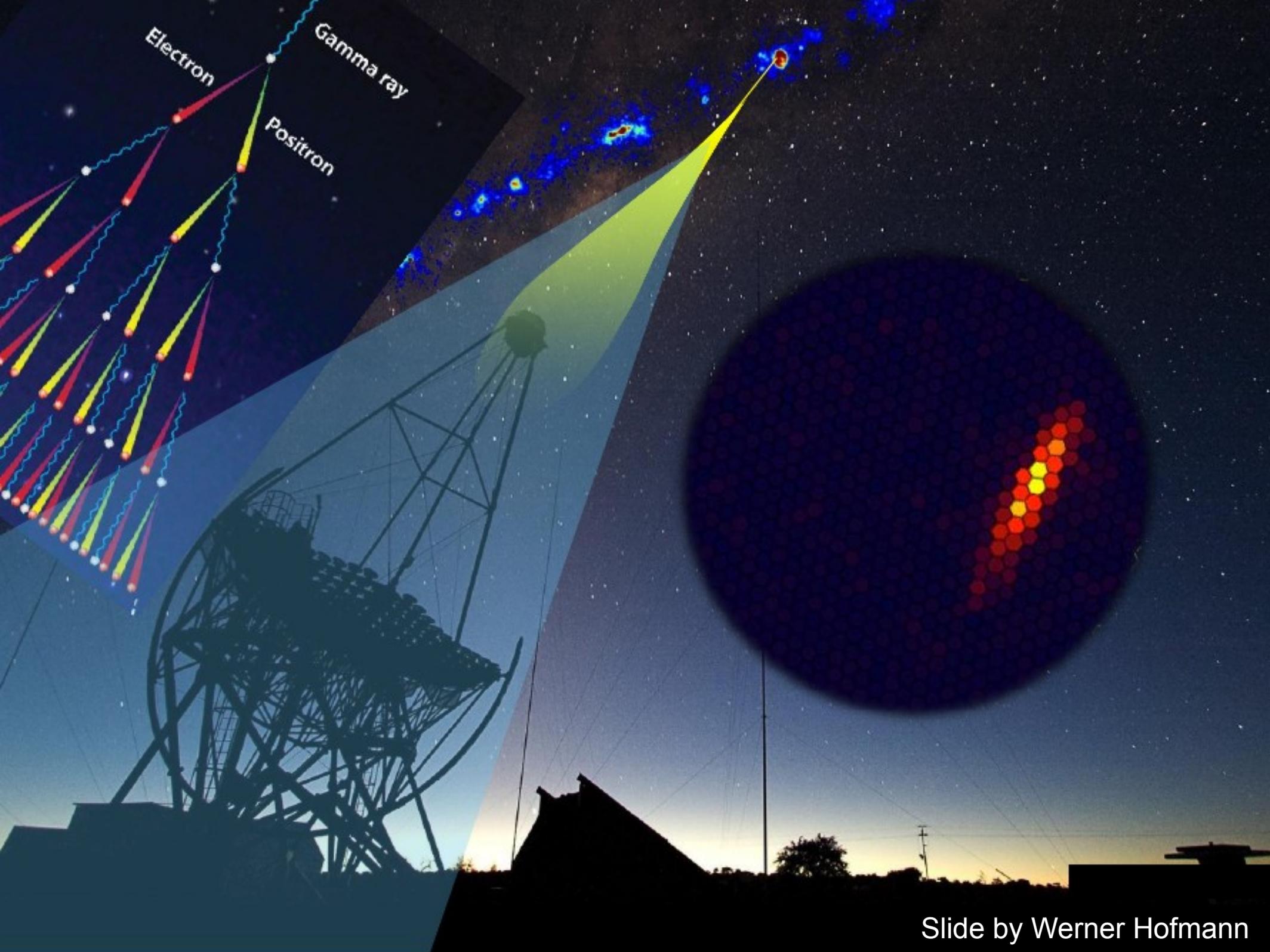
Next meeting: Nov 4-8 @ Bologna, Italy.

CTA



CTAO is:

- an effort being put together for more than 1000 people over the last two decades
- the first open gamma-ray Observatory
- an improvement of one order of magnitude
- the missing probe to the extremes of Nature
- being built now



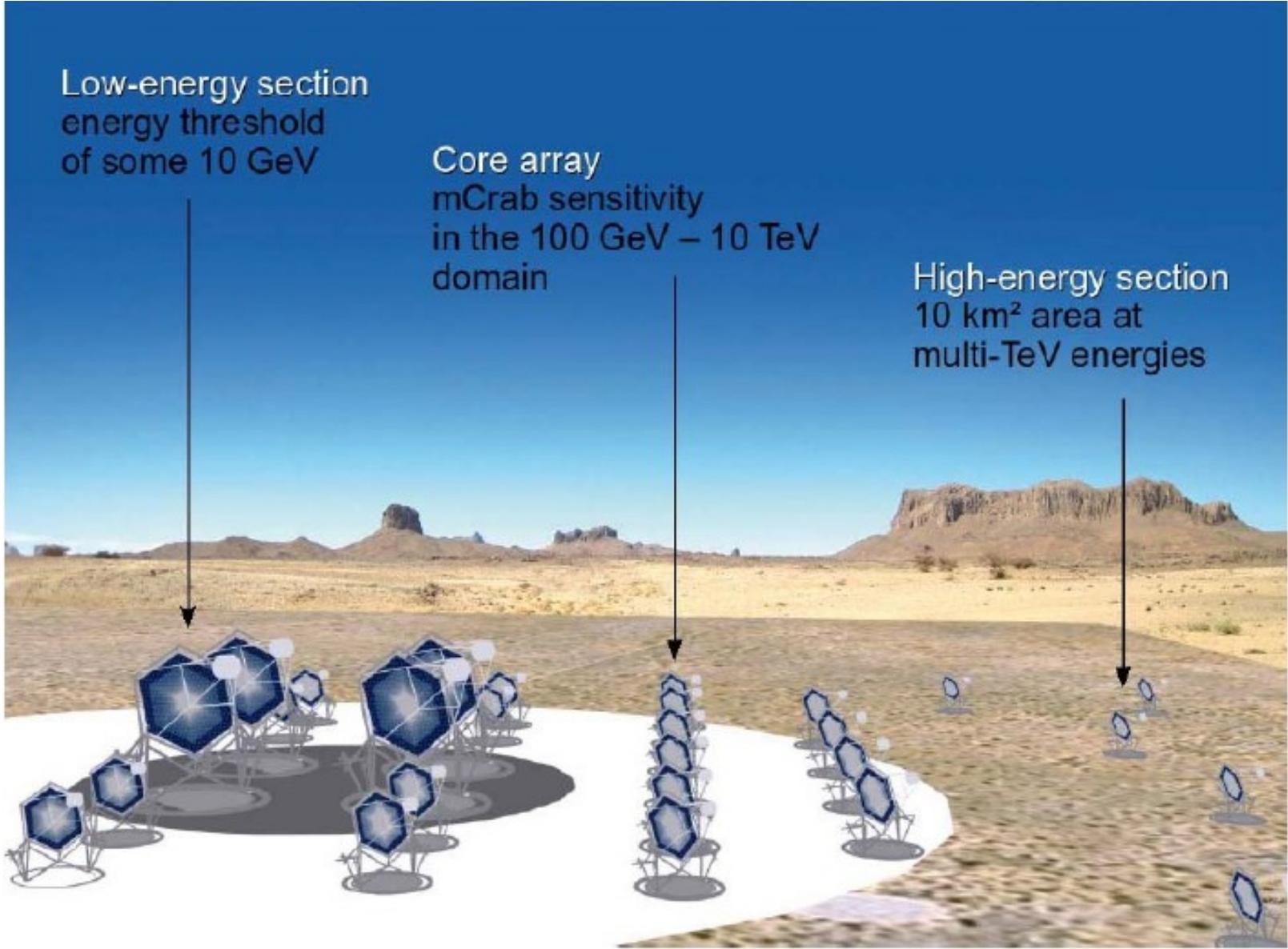
Electron

Gamma ray

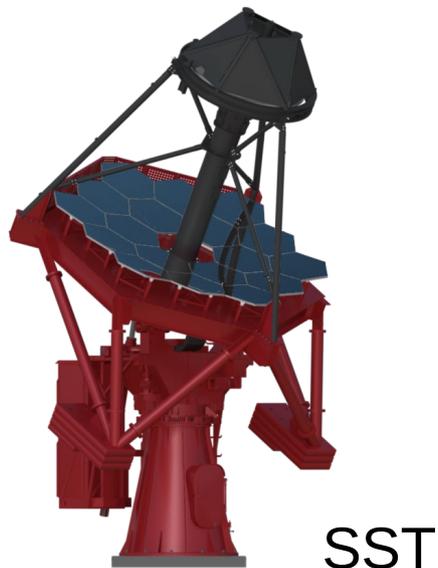
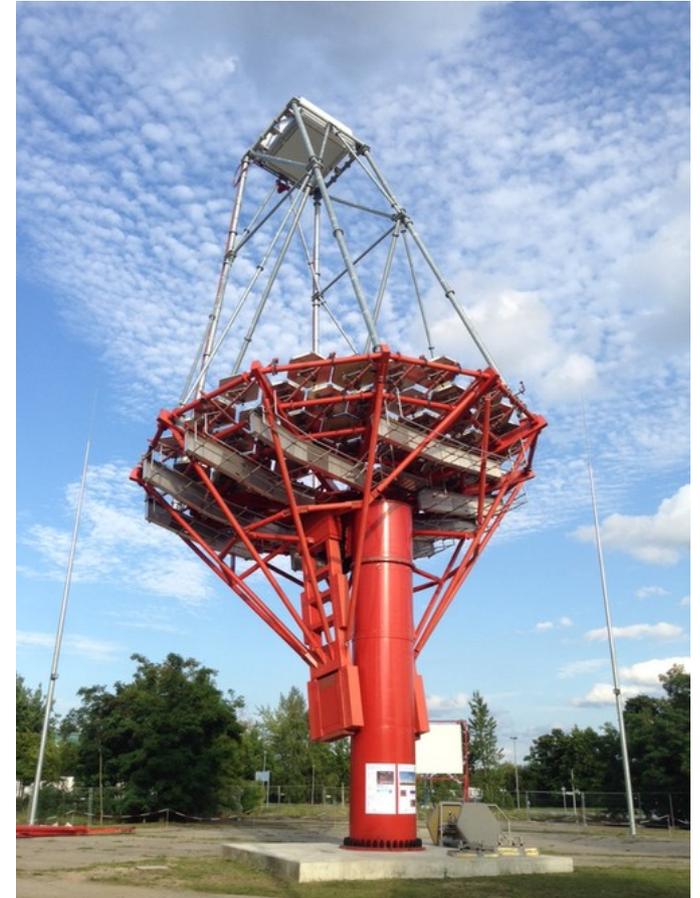
Positron

CTA Targets

- Improve the sensitivity in one order of magnitude
- Widen the energy range
 - $20 \text{ GeV} < E < 300 \text{ TeV}$
- Increase the field of view
- Improve the angular resolution
 - 1- 3 arcmin
- Flexibility in operation



Telescopes in two sites: La Palma + Chile



Alpha Configuration:

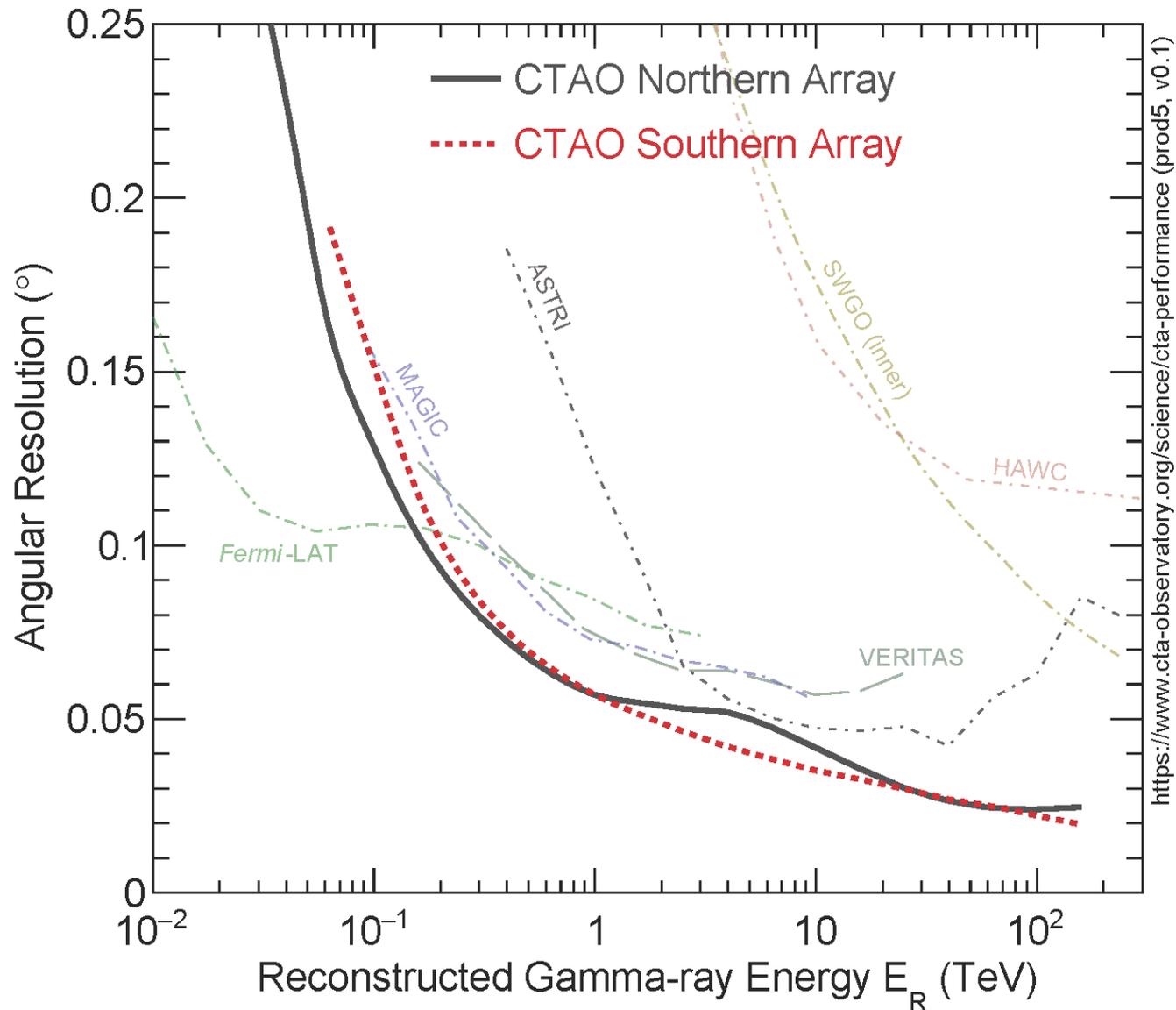
4 LST (La Palma)

9 + 14 MST

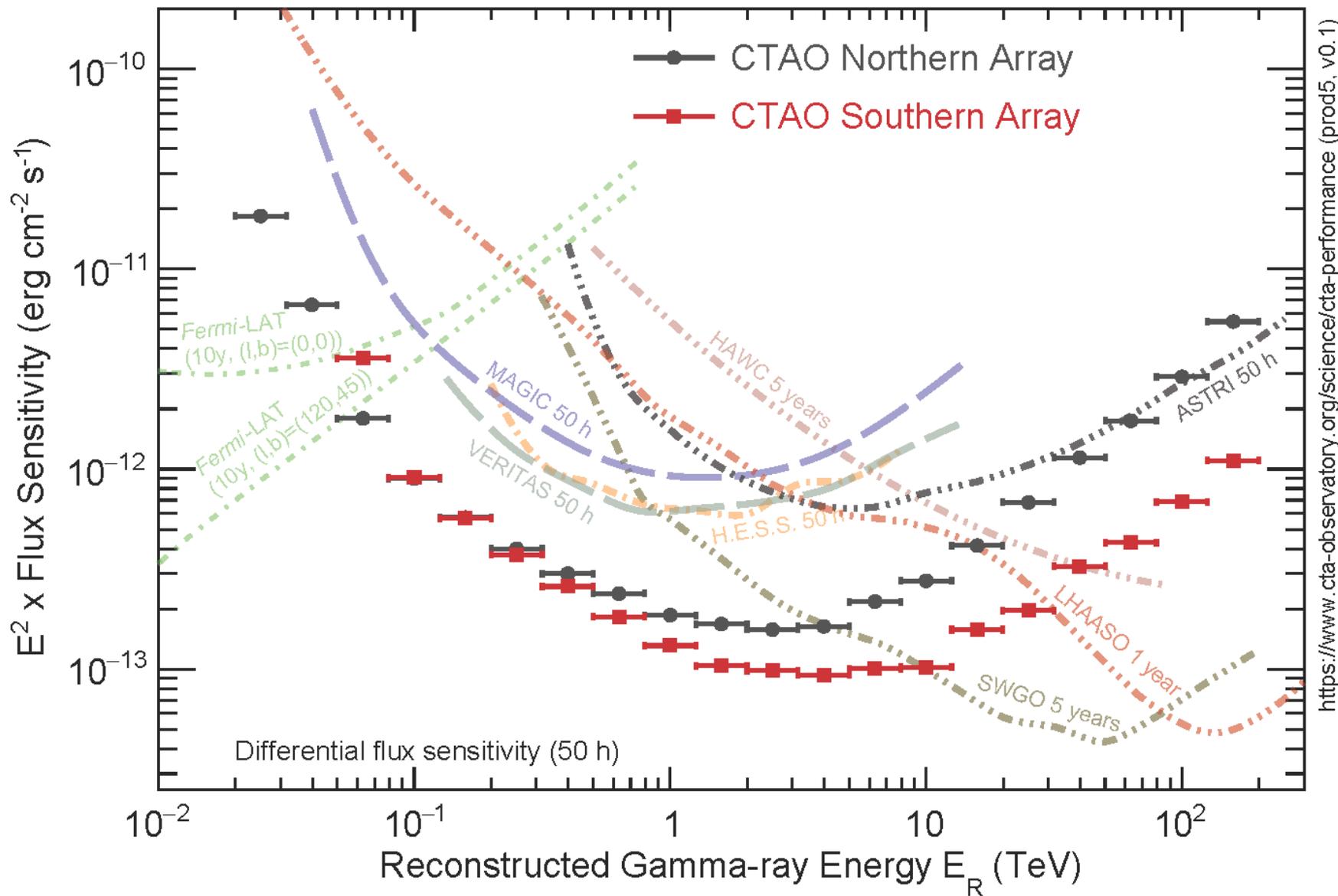
37 SST (Chile)

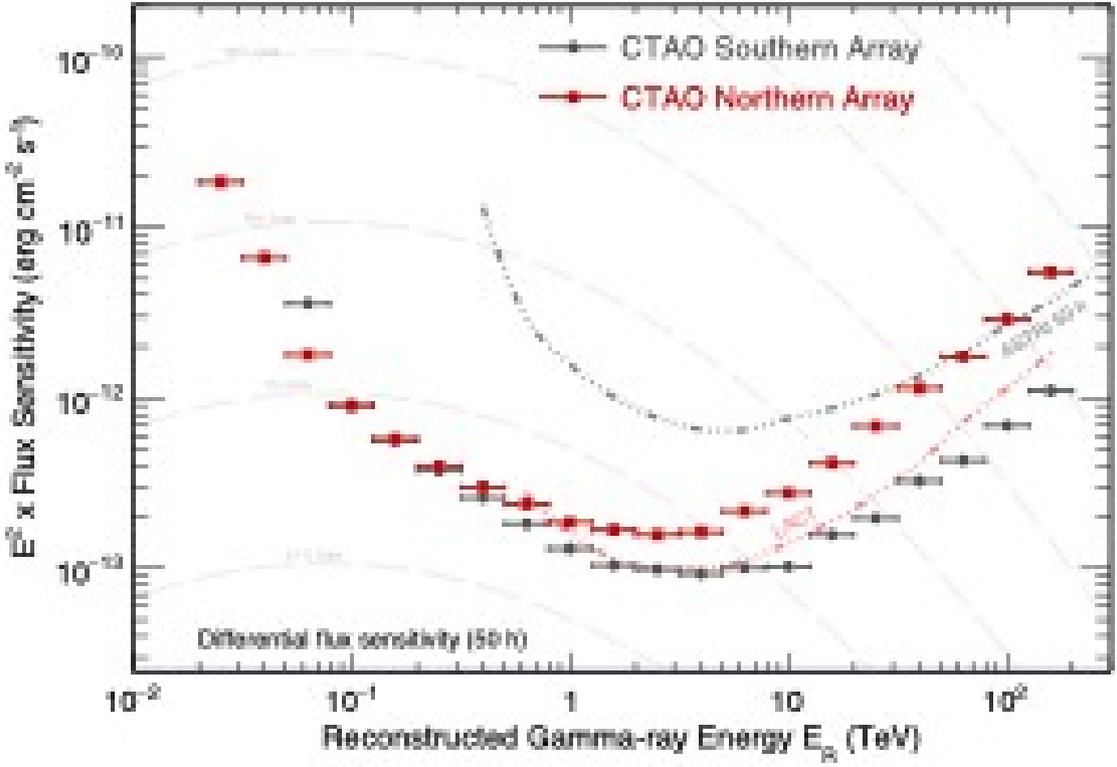
3 LST (Chile)

Angular Resolution

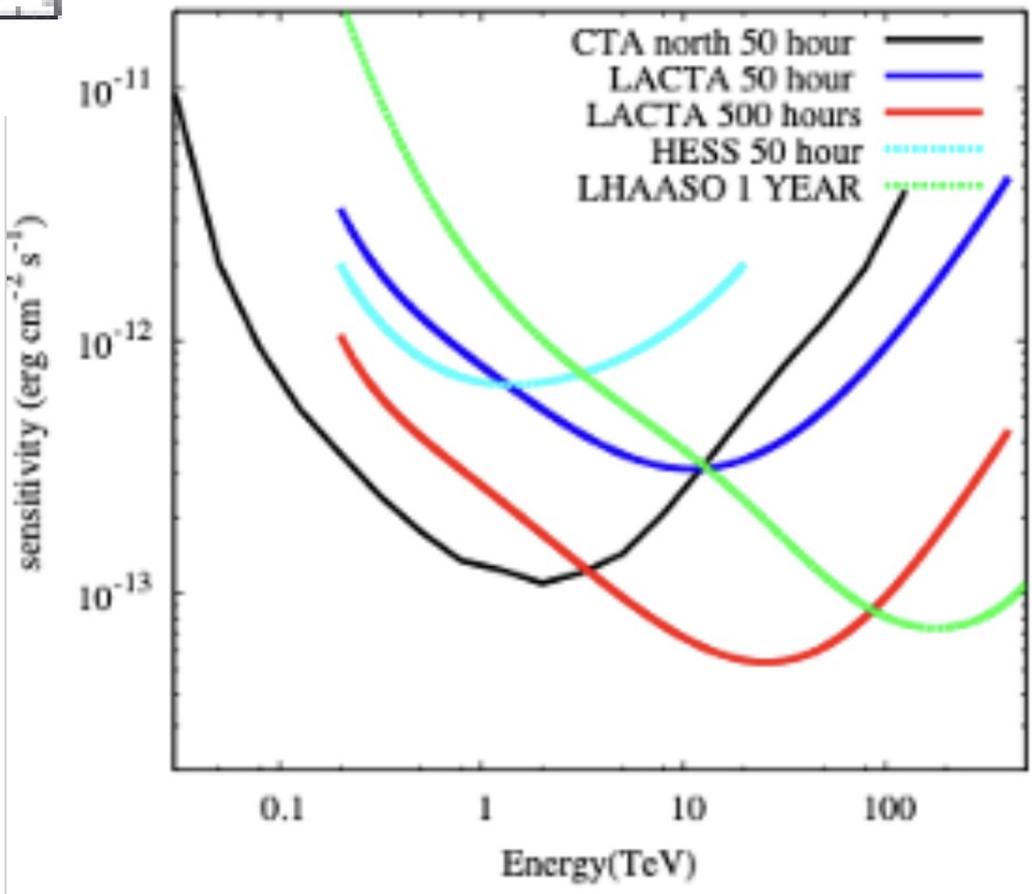


Sensitivity



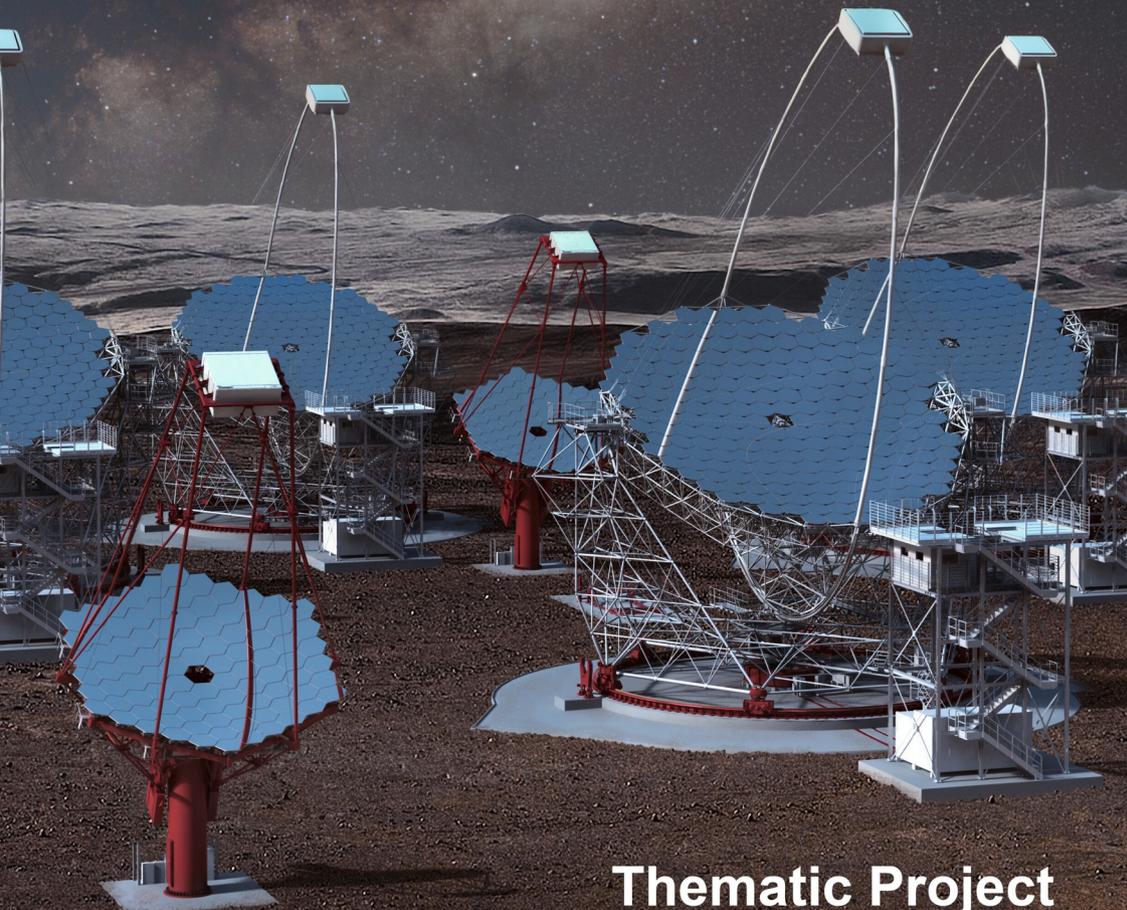


LACT - LHAASSO



CHERENKOV TELESCOPE ARRAY:

Construction and First Discoveries



Thematic Project



CBPF
Centro Brasileiro de
Pesquisas Físicas



INSTITUTO DE
ASTRONOMIA,
GEOFÍSICA
E CIÊNCIAS
ATMOSFÉRICAS



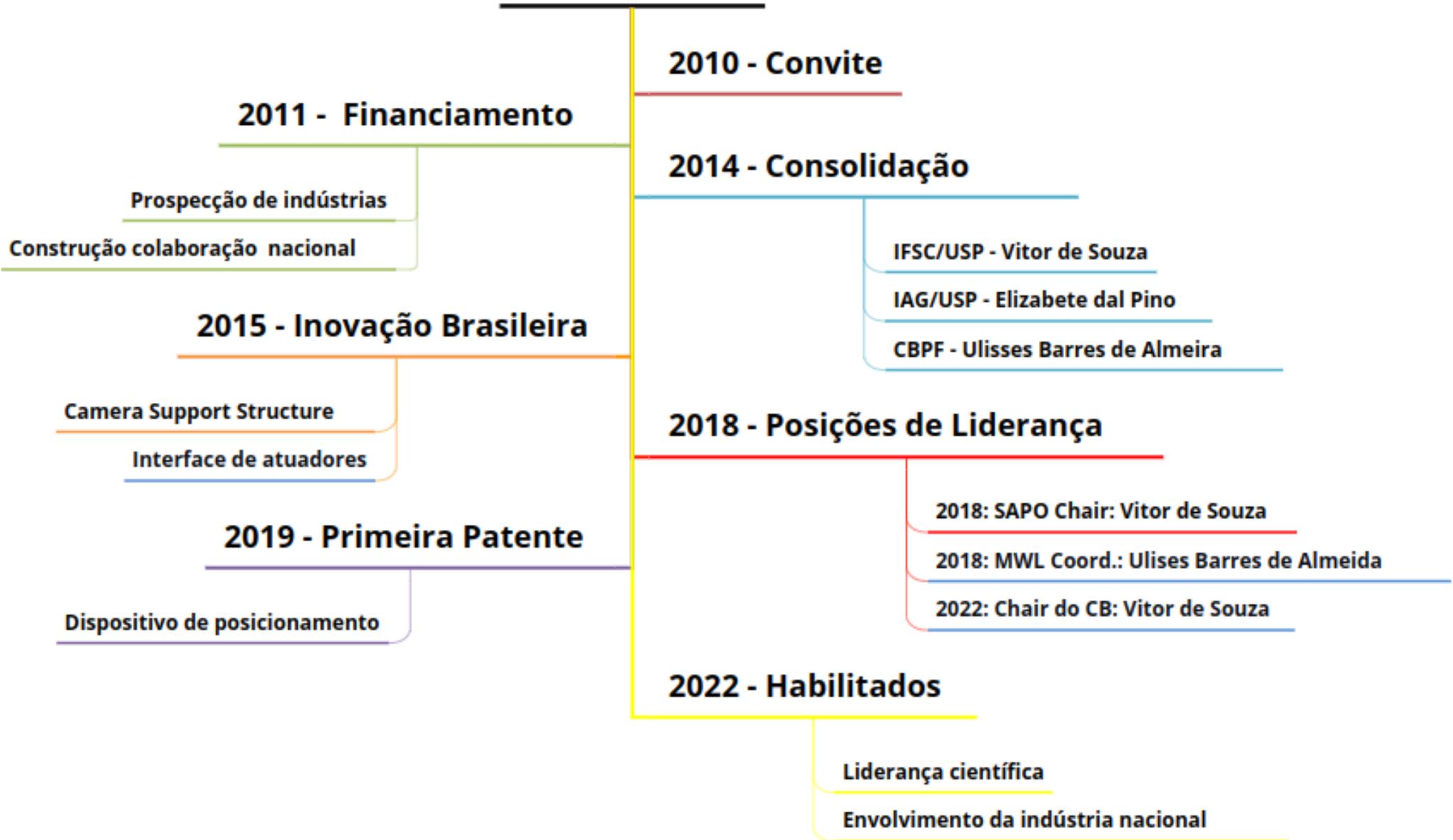
Universidade Federal do ABC



Our project

- Dark matter
- Lorentz Invariance Violation
- Sources and propagation
- Shower simulation and reconstruction
- Instrumentation
- Outreach and education

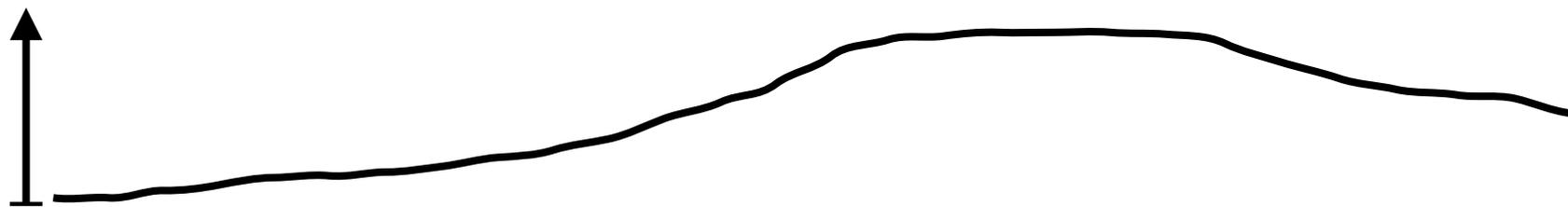
CTA Brasil



CIÊNCIA BÁSICA: Resultados científicos de impacto

CIÊNCIA APLICADA: Inovação em instrumentação

COMUNICAÇÃO E EDUCAÇÃO: Presencial, virtual e inclusiva



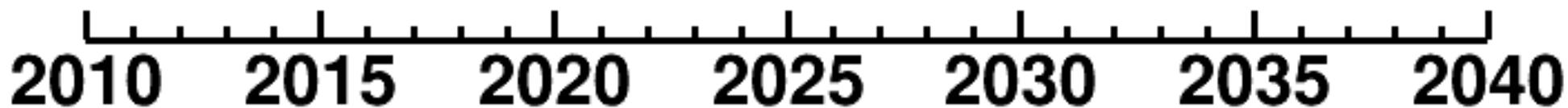
P
E

7
10

12
17

30
15

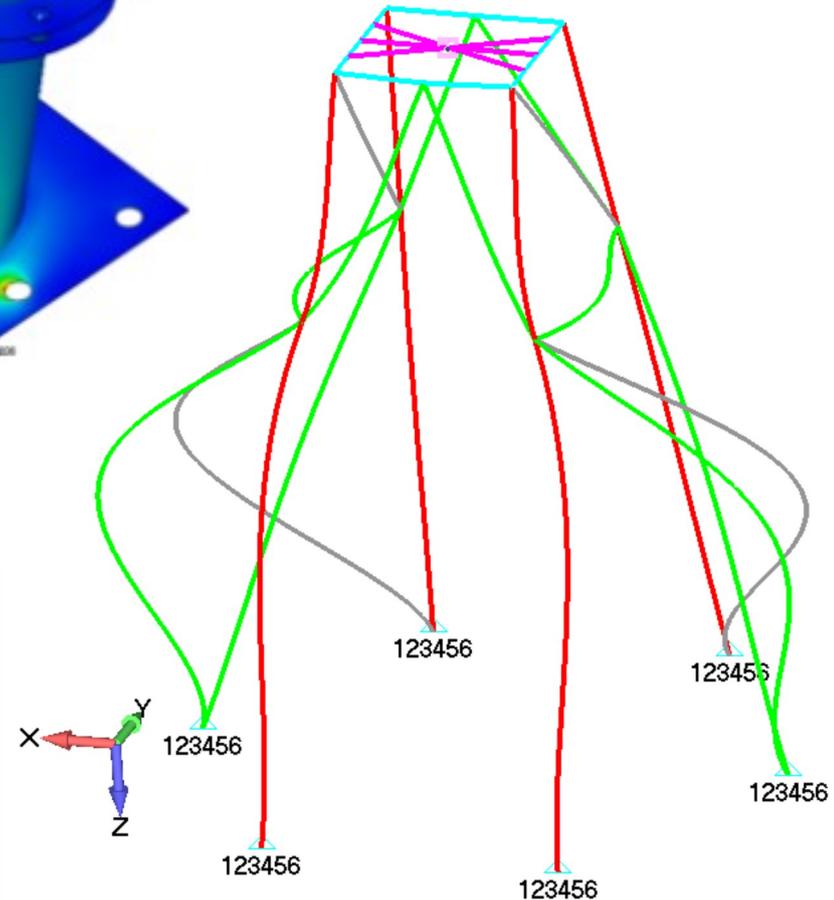
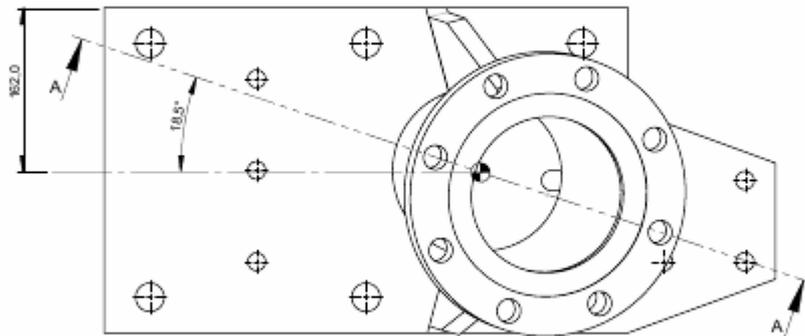
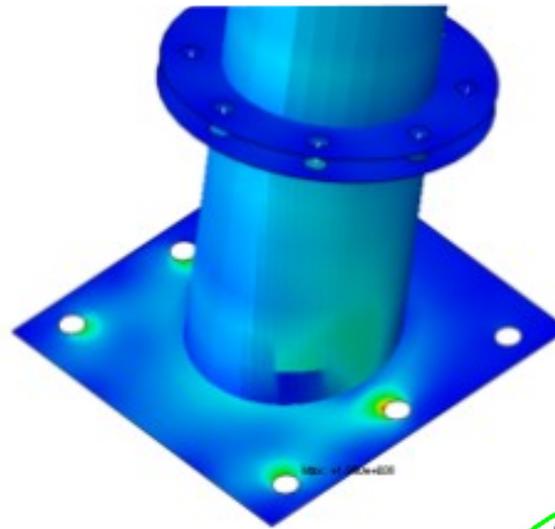
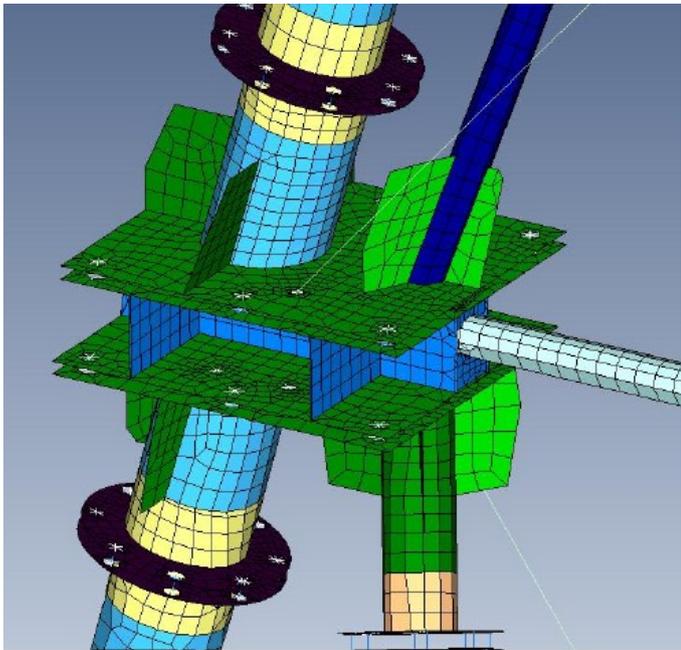
45
21



Análises detalhadas

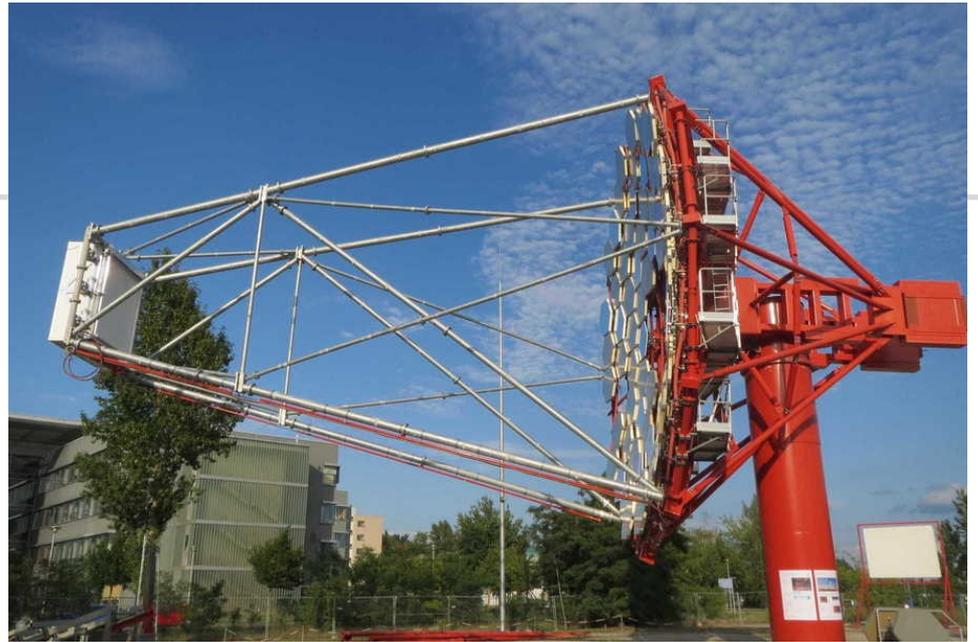
térmico – carga (vento, gelo, água, areia)

vibração (terremoto) – deformação



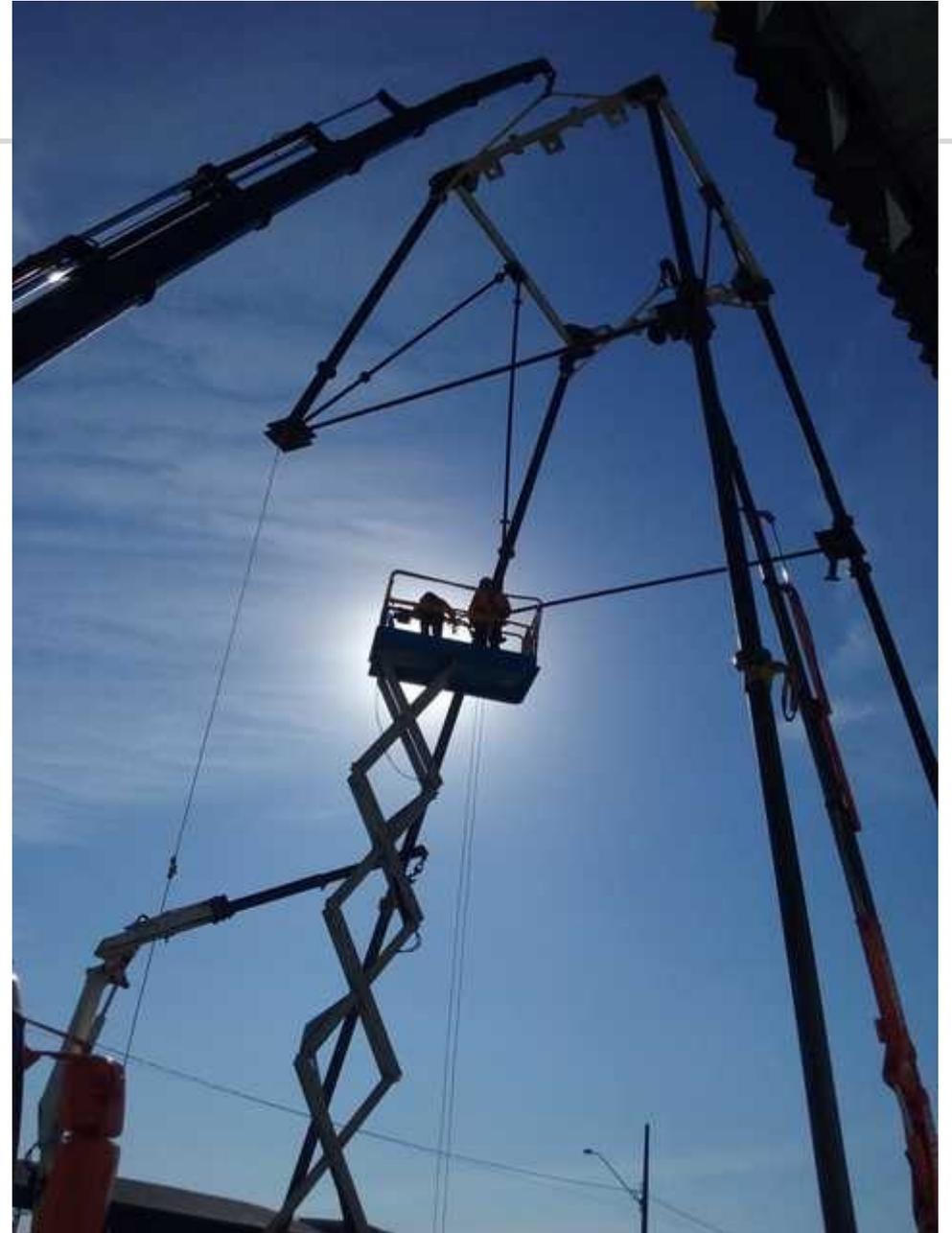


Protótipo 0



Protótipo 1





Part of the MST

Camera Support Structure

Brazilian project



2 prototypes
already
constructed,
delivered
and
approved

Patent of
positioning
system



Budget approved for 10
structures to be build in
the next two years.

9 x  **FAPESP**
+ 1 x  **ARAUCARIA**

CTA observation modes

very deep field 

 deep field



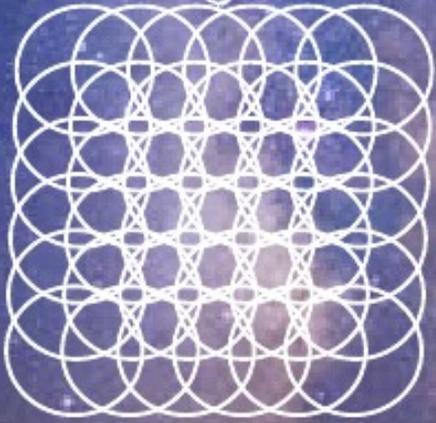
deep field 

monitoring





survey mode

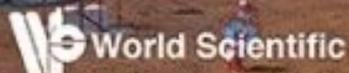




cherekov
telescope
array

Science with the Cherenkov Telescope Array

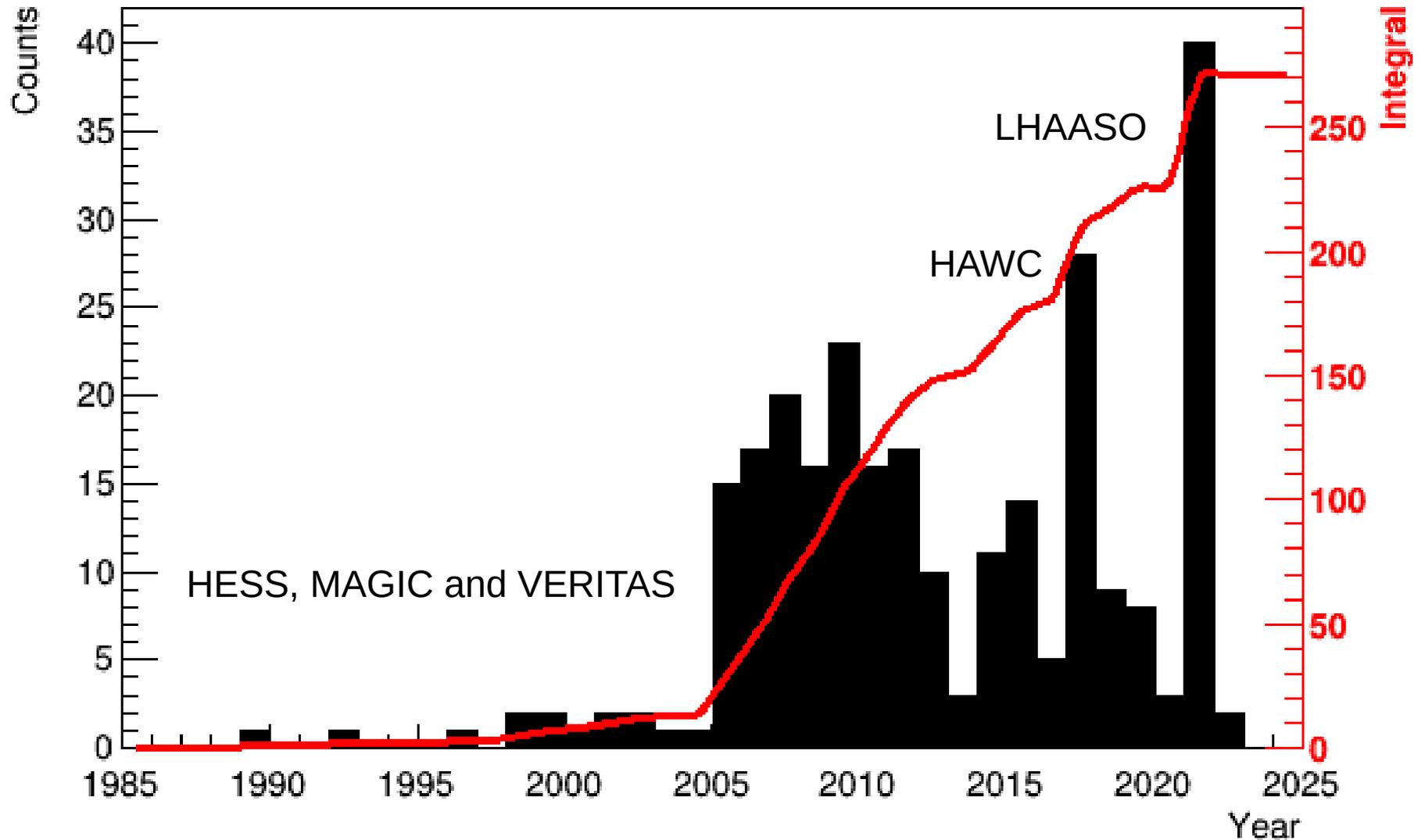
The CTA Consortium



**Unveil the extremes
of the Universe**

[https://arxiv.org/abs/
1709.07997](https://arxiv.org/abs/1709.07997)

TeV gamma-rays sources



Re-branding



Reason: transition to full construction

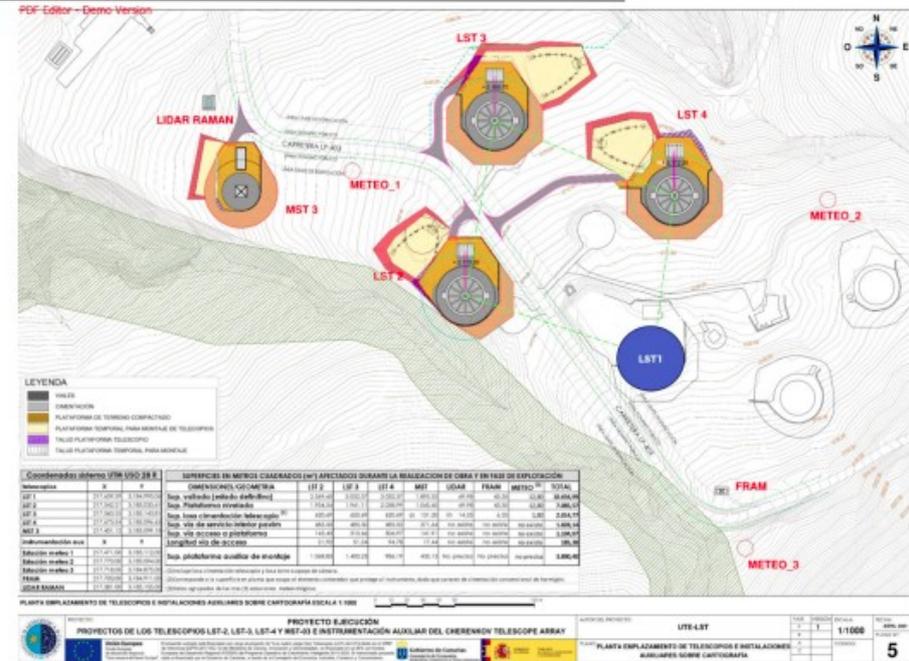


LST-1: Ready and taking data



<https://www.lst1.iac.es/webcams.html>

Toward the LSTs Array

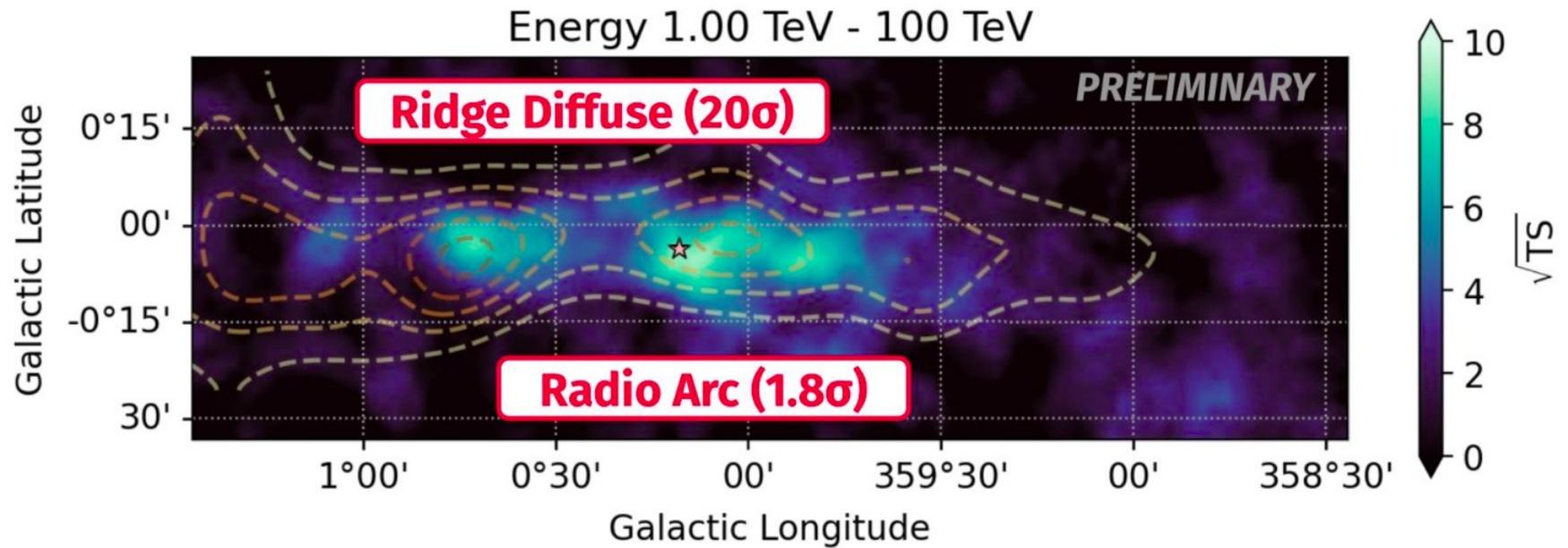


- works ongoing for LST-2, -3 & -4
- End of Installation foreseen by 2025
- + LST in the south founded by PNRR

We can access LST data !

Early Science: Galactic Center

Sgr A* & G0.9+0.1
subtracted



Spokesperson election

- The candidates are:
 - Patrizia Caraveo
 - Francesco Longo
 - Thierry Stolarczyk
 - Masahiro Teshima

Take away message

- CTAO is launching
- Even prior to launch, CTAO is making many important contributions
- CTAO is a great opportunities for young people and safe environment for group's inception
- CTAO will open a new window of discoveries