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PIANO NAZIONALE
DI RIPRESA E RESILIENZA



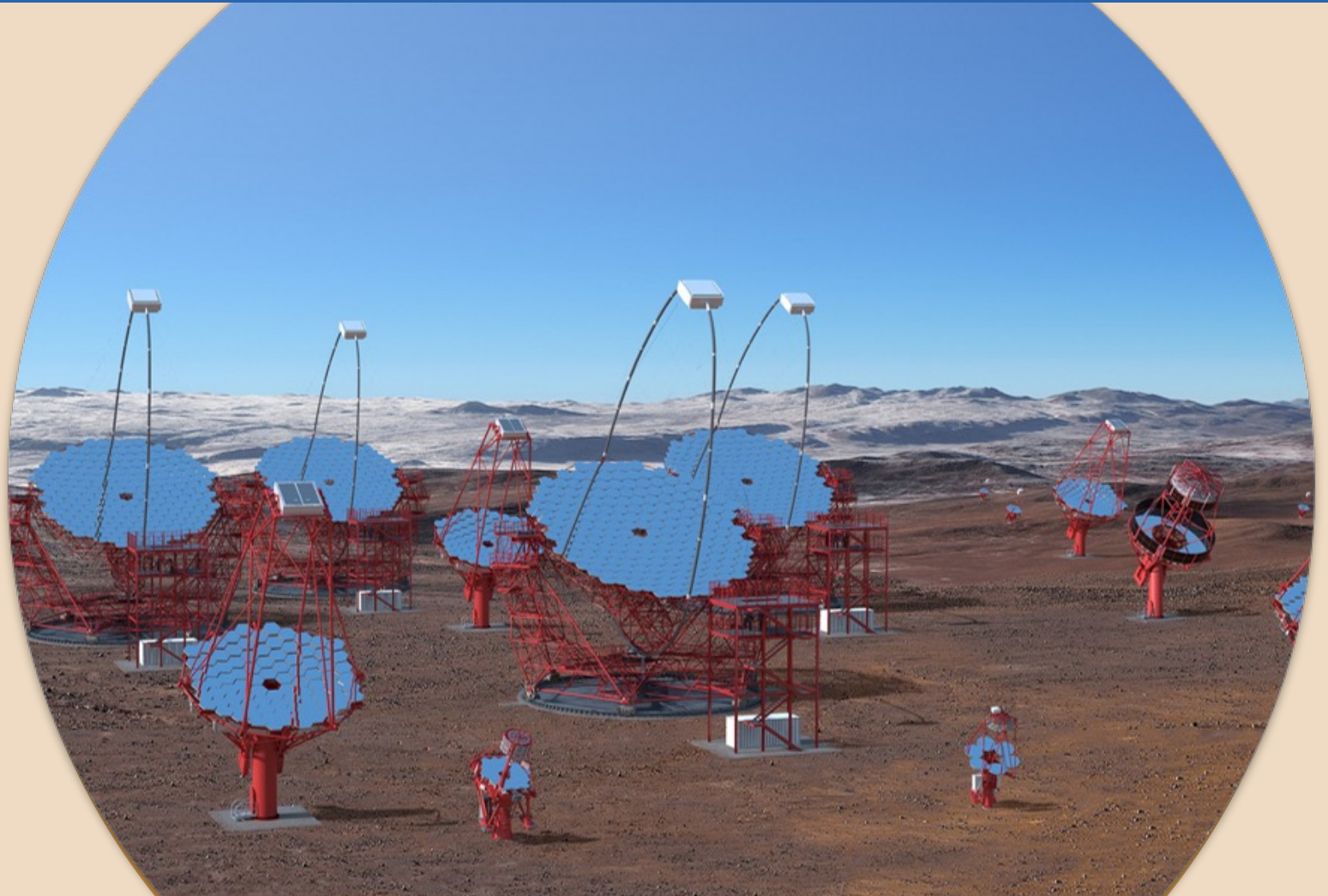
The CTA + Project

Davide Miceli

INFN Padova

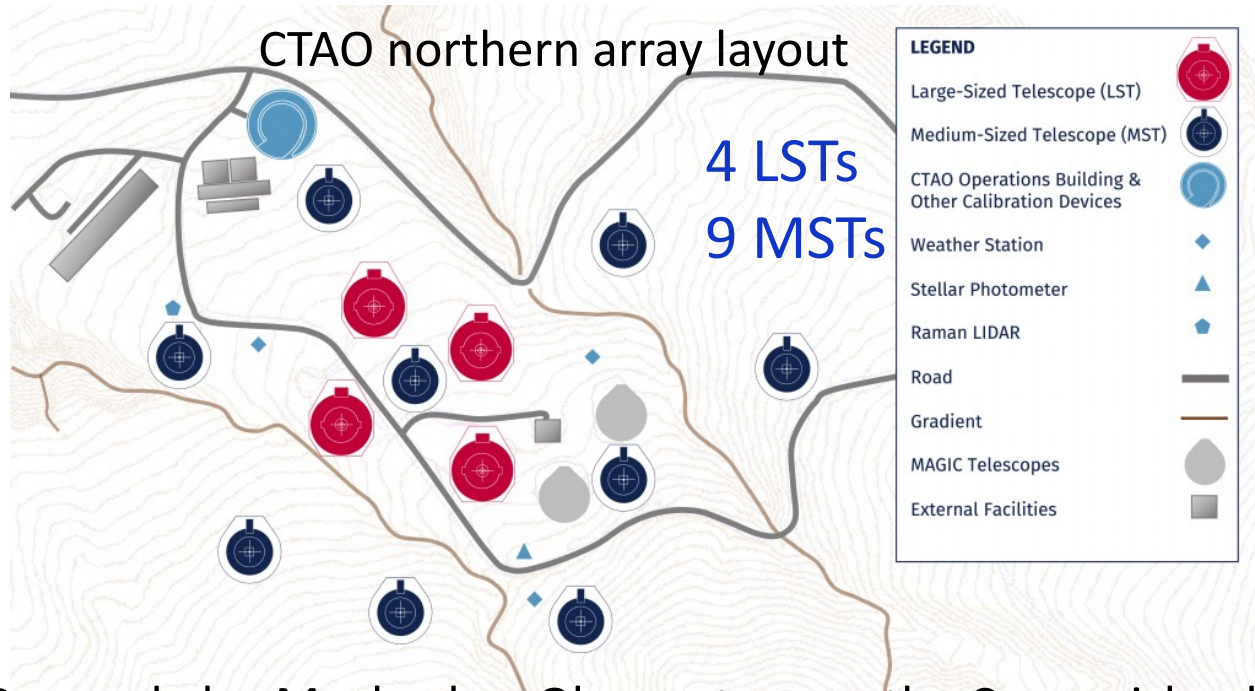
06/10/2023

MAGIC 20 Years Symposium,
La Palma

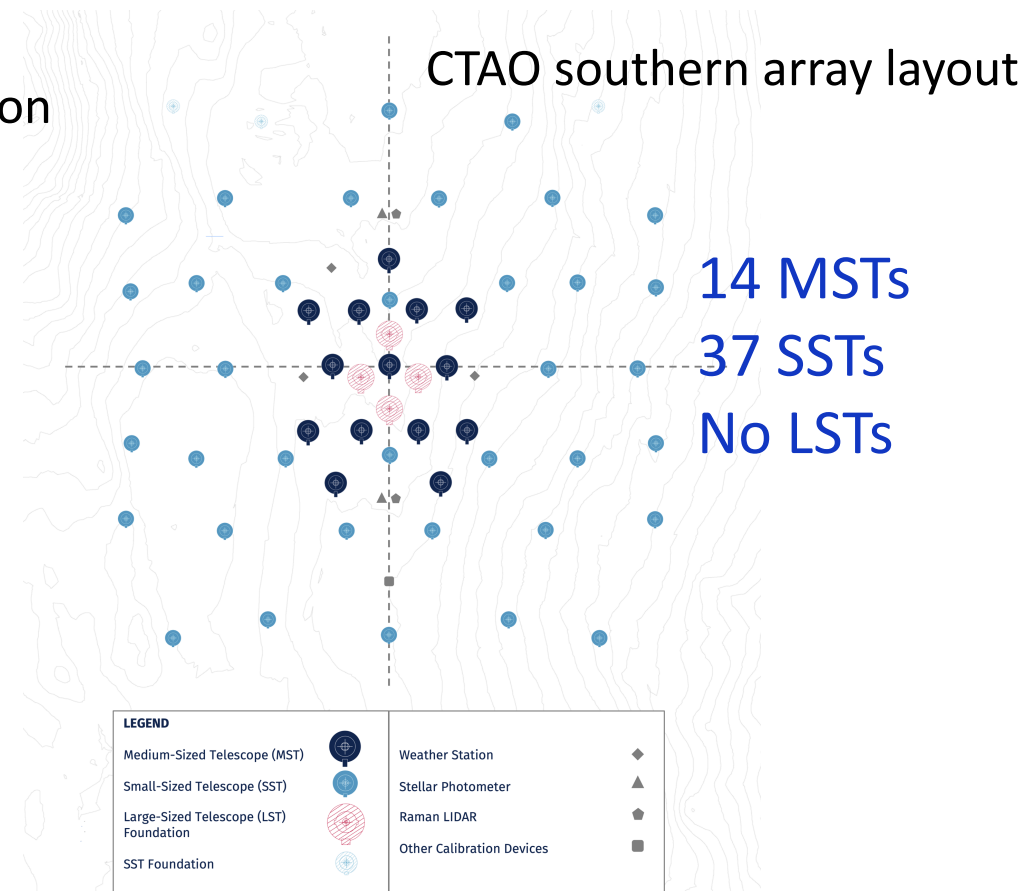


CTAO and CTA+

CTAO "Alpha" configuration



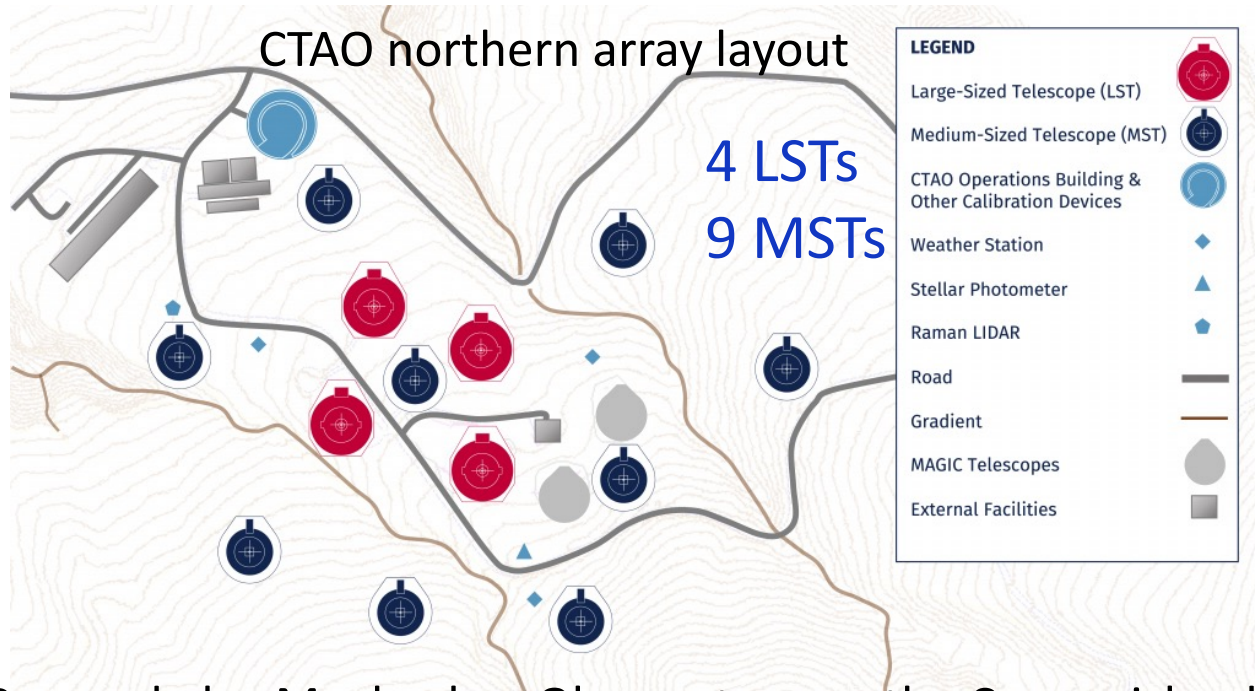
Roque de los Muchachos Observatory on the Canary island of La Palma (Spain)



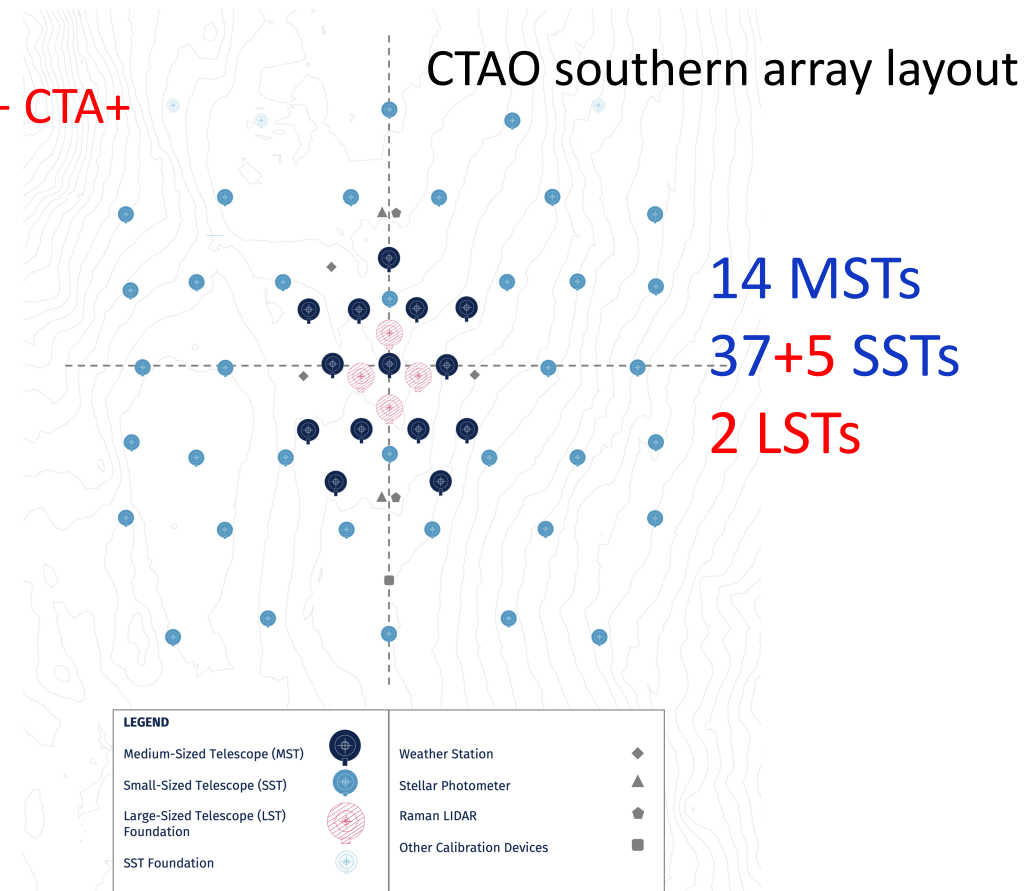
European Southern Observatory's (ESO's) Paranal Observatory in the Atacama Desert (Chile)

CTAO and CTA+

CTAO "Alpha" configuration + CTA+



Roque de los Muchachos Observatory on the Canary island of La Palma (Spain)



European Southern Observatory's (ESO's) Paranal Observatory in the Atacama Desert (Chile)

The CTA+ project

- CTA+ is a (~71M€) INAF-lead Italian program funded by the Programma Nazionale di Resistenza e Resilienza (PNRR) to enhance the ESFRI CTA infrastructure in the south site in Chile

Main targets:

- Enhance low (< 100 GeV) and high (>10s TeV) energy sensitivity of CTAO southern array
- Improve multi-messenger facilities for better synergy with CTAO
- R&D activities for future Cherenkov instruments
- Science and outreach connected with CTAO

The CTA+ project

INAF leadership with co-participation of INFN and Universities

INAF (PI: M.Cappi)

13 operative units

INFN (PI: C.Aramo)

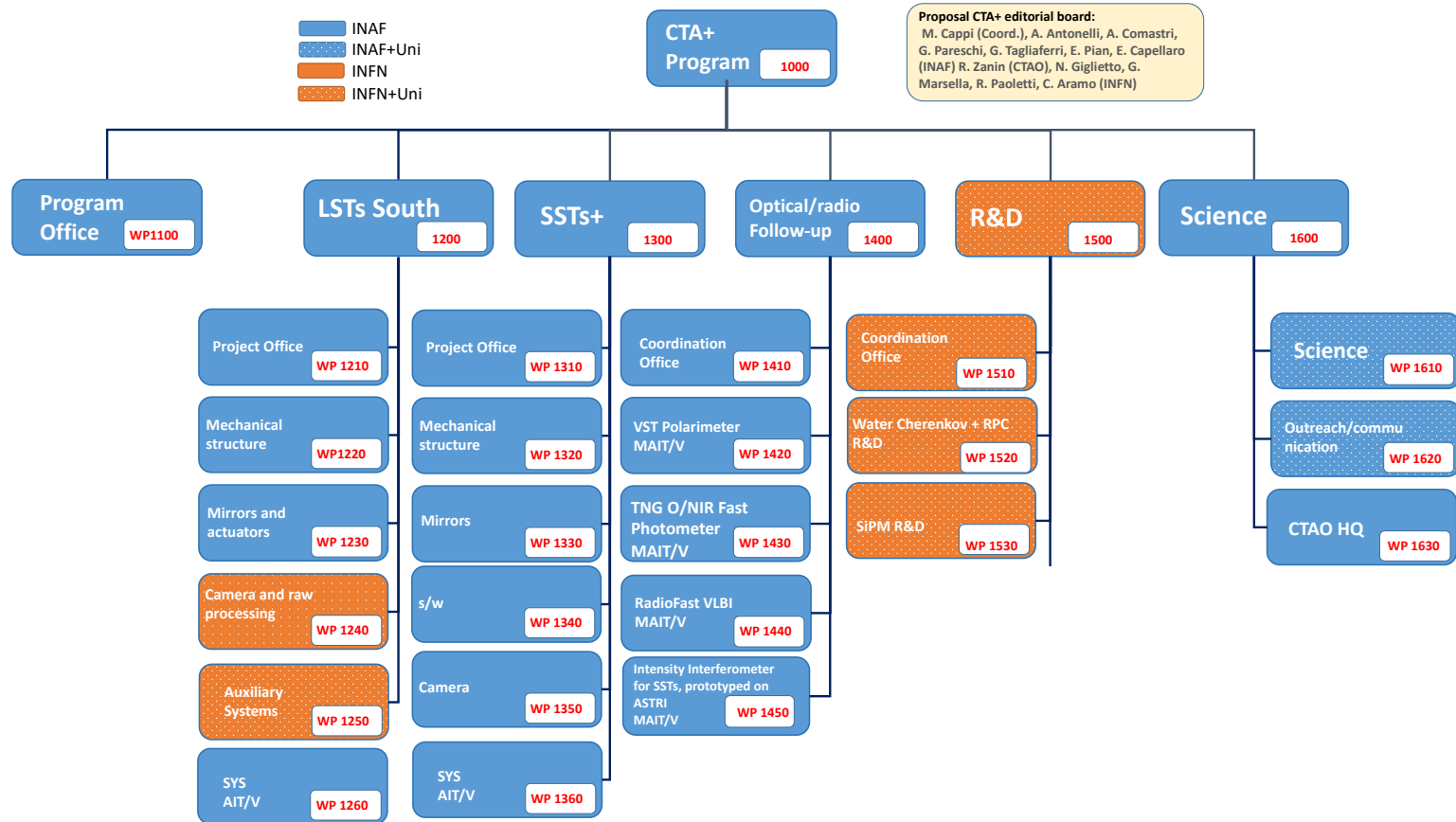
7 INFN sections: Bari, Catania, Napoli, Padova, Pisa, Roma2, Torino

Universities

UniBO, UniBA, UniPA, UniSI, PoliBA

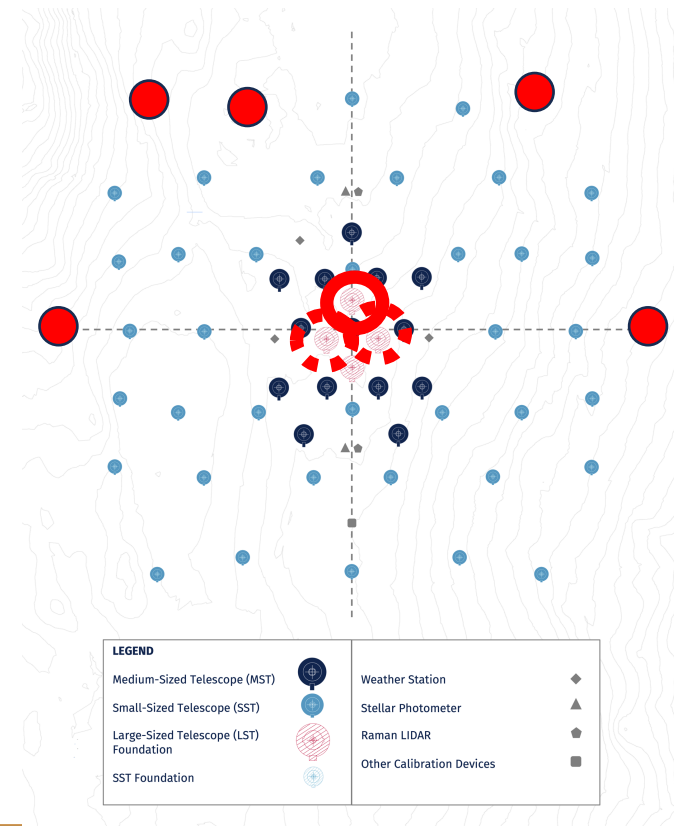
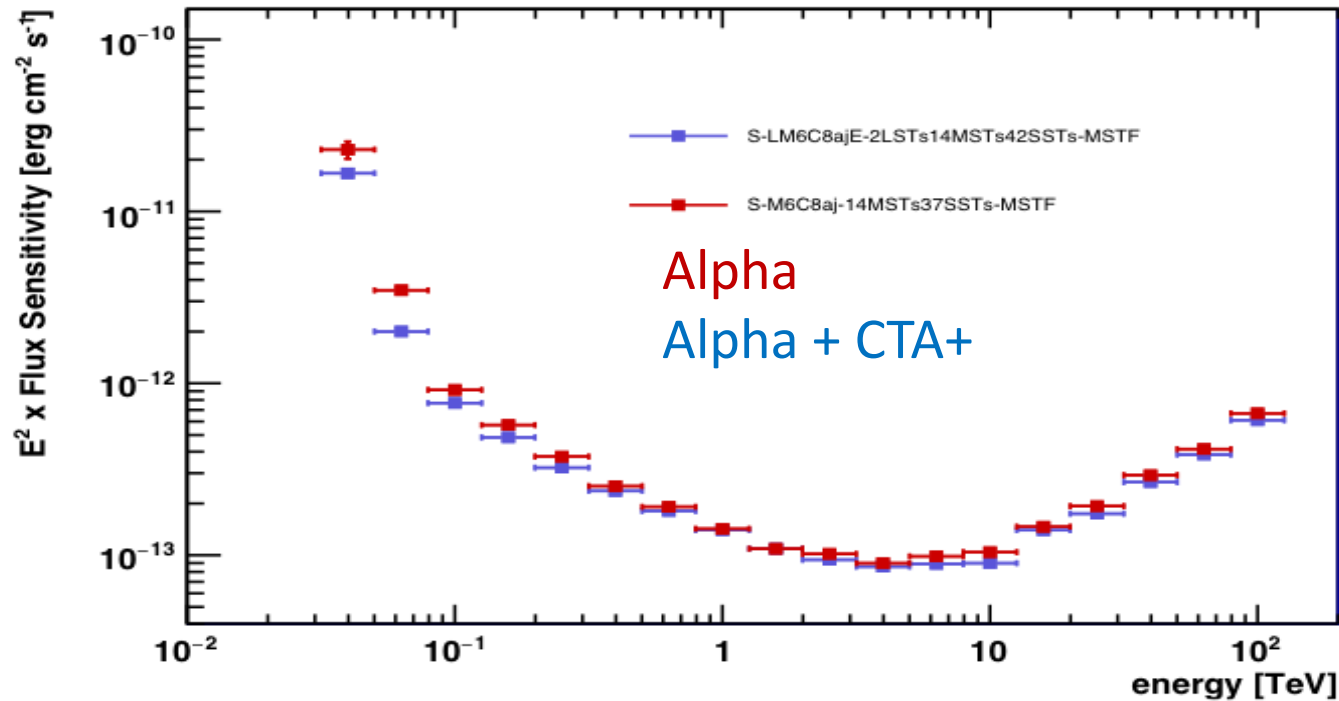
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The CTA+ project



The CTA+ project

Enhance low (< 100 GeV) and high (>10s TeV) energy sensitivity of CTAO southern array



WP1200: *LSTs South*
(PI: A.Antonelli)

WP1300: *SSTs+ South*
(PI: G.Tagliaferri)

The CTA+ project

Improve multi-messenger facilities for better synergy with CTAO

- Optimization of multi-wavelength follow-up instruments in the Optical/IR/radio band enhancing the INAF instruments:
 - VST polarimeter (PI: Schipani)
 - TNG fast photometer (PI: Ambrosino)
 - 3 fast radio VLBI (PI: Giroletti)
 - Realization of an end-to-end prototype for Intensity Interferometry (PI: Zampieri)

WP1400: Enhancement of INAF Observatories for optical/IR/radio follow-up

Impact on follow-up of transient objects (GRBs, GWs, Neutrinos) in a multi-wavelength and multi-messenger view

The CTA+ project

R&D activities for future Cherenkov instruments

- R&D studies for future detectors for Cherenkov telescopes

WP1500: R&D for future technologies for CTA: (Water Cherenkov, RPC, SiPM)

1. WP1510-R&D Project Office: G. Marsella (Uni. Palermo/INFN)
2. WP1520-R&D Water Cherenkov + RPC: A. Chiavassa (Uni.Torino/INFN)
3. WP1530-R&D R&D SiPM: F. Giordano (Uni. Bari/INFN)

Explore future technologies available for CTA and ancillary instrumentation

The CTA+ project

Science and outreach connected with CTAO

- Support for science activities for CTA+ project
- Support to outreach activities and CTAO HQs in Bologna

*WP1600: **Science:** (Science with CTA+, outreach and communication, enhancement of HQ of CTA+) (R.Zanin)*

Education program for general public and training of early-career scientists

The CTA+ project is now!

Proposal approved in June 2022 → Activities started 01/01/2023 → 21 months to the end
End 30/06/2025