

CTA 報告130: 全体報告

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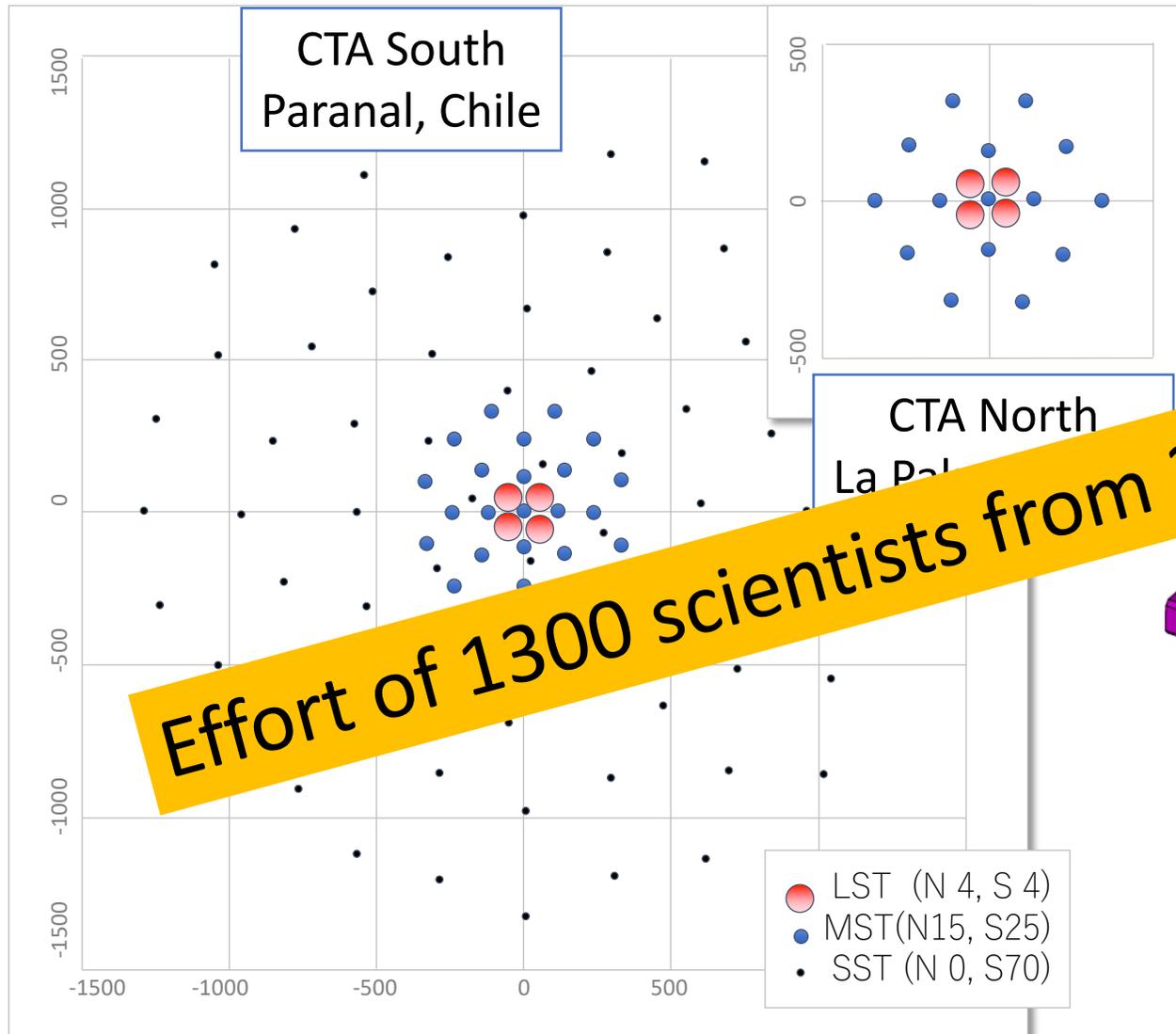




cherenkov
telescope
array

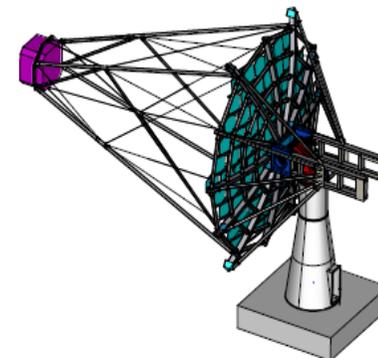
CTA Telescopes Array Configurations

CTA Observatory consists of two sites, Chile
Paranal and Spain Canary Island to cover all sky.

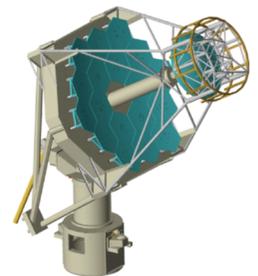


LST 23m Low-Energy

Effort of 1300 scientists from 33 countries



MST 12m
Mid-Energy



SST 4.3m
High-Energy

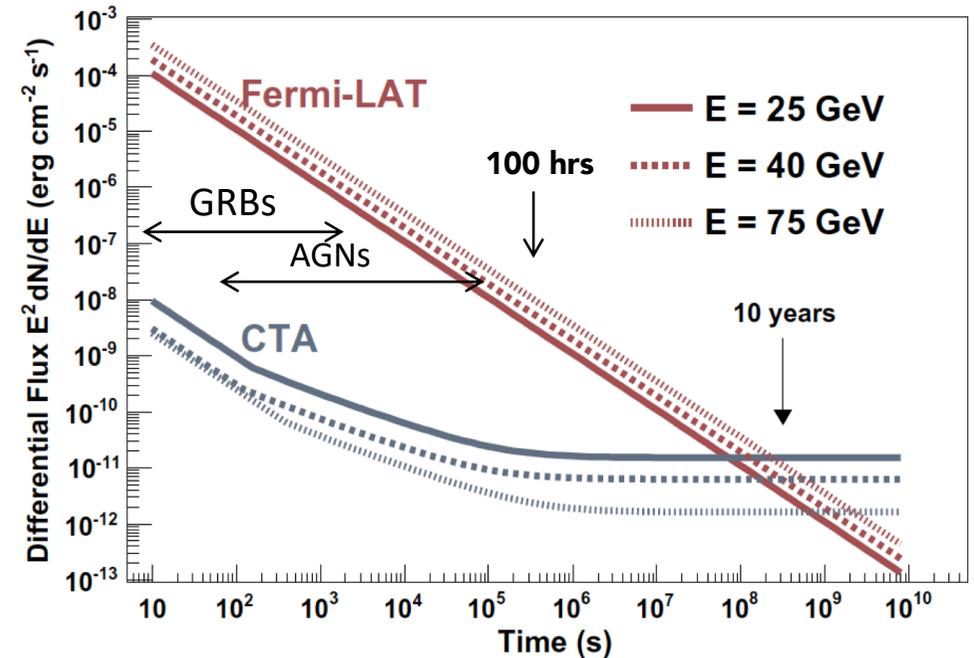
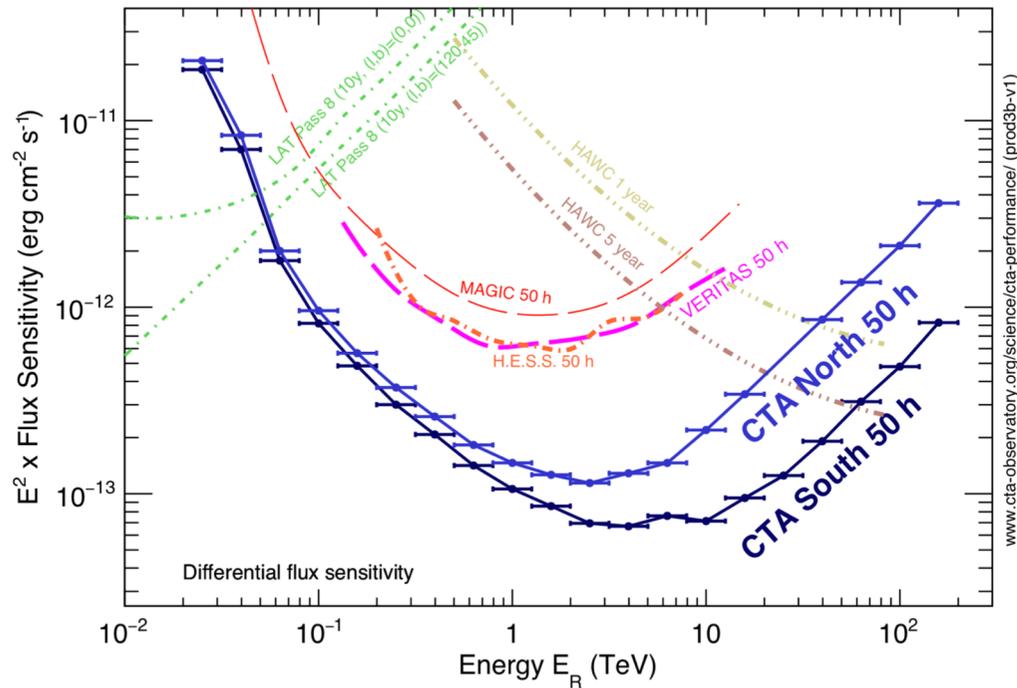


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CTAN-LST Array

Sensitivity x3, Angular Resolution x2

Energy Range > 20GeV



- CTA-LST array contributes to the sensitivity in low energies
- >20GeV Threshold Energy
- Distant AGNs are observable up to $z=2$
- X10000 sensitivity for GRBs and AGN flares than Fermi
- First observation of GRBs from ground

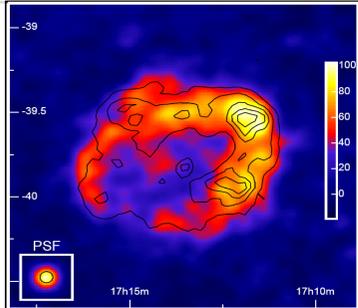


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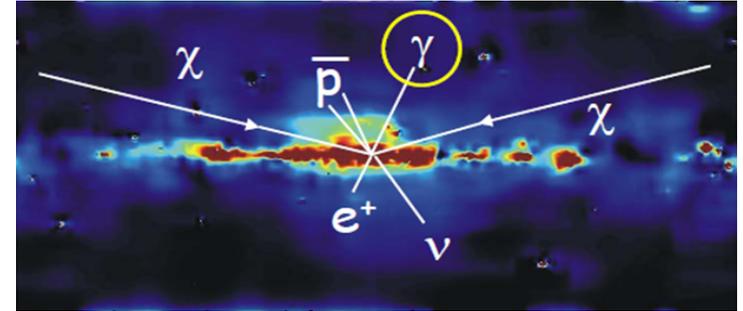
Science with CTA is very wide Energy Frontier in Astrophysics



Cosmic Ray Origin

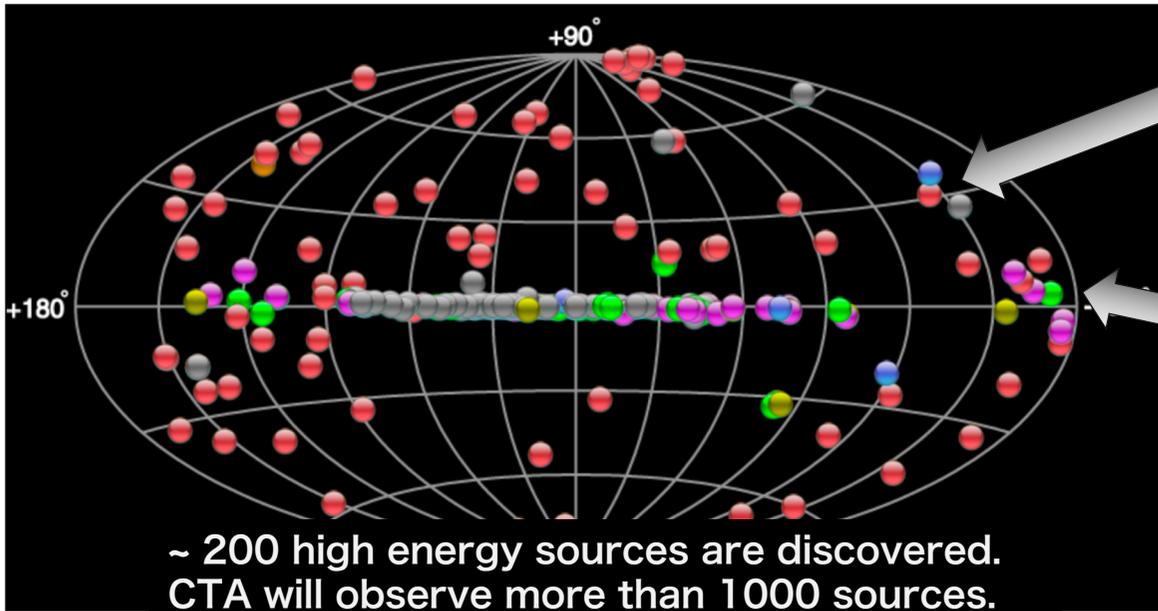


Super Massive
Black Holes



Dark Matter Search (Discovery)

- Origin of Cosmic Rays (Big accelerators)
- Black Hole and S.M.B.H.
- Dark Matter Search (Discovery)



Extragalactic Sources



Active Galactic Nuclei

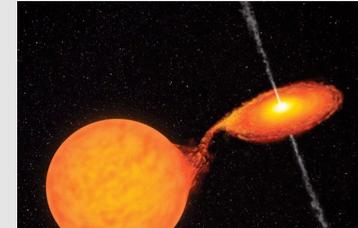


Gamma Ray Bursts

Galactic Sources



Super Nova Remnants



Binaries



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CTA North at ORM

Observatorio del Roque de los Muchachos



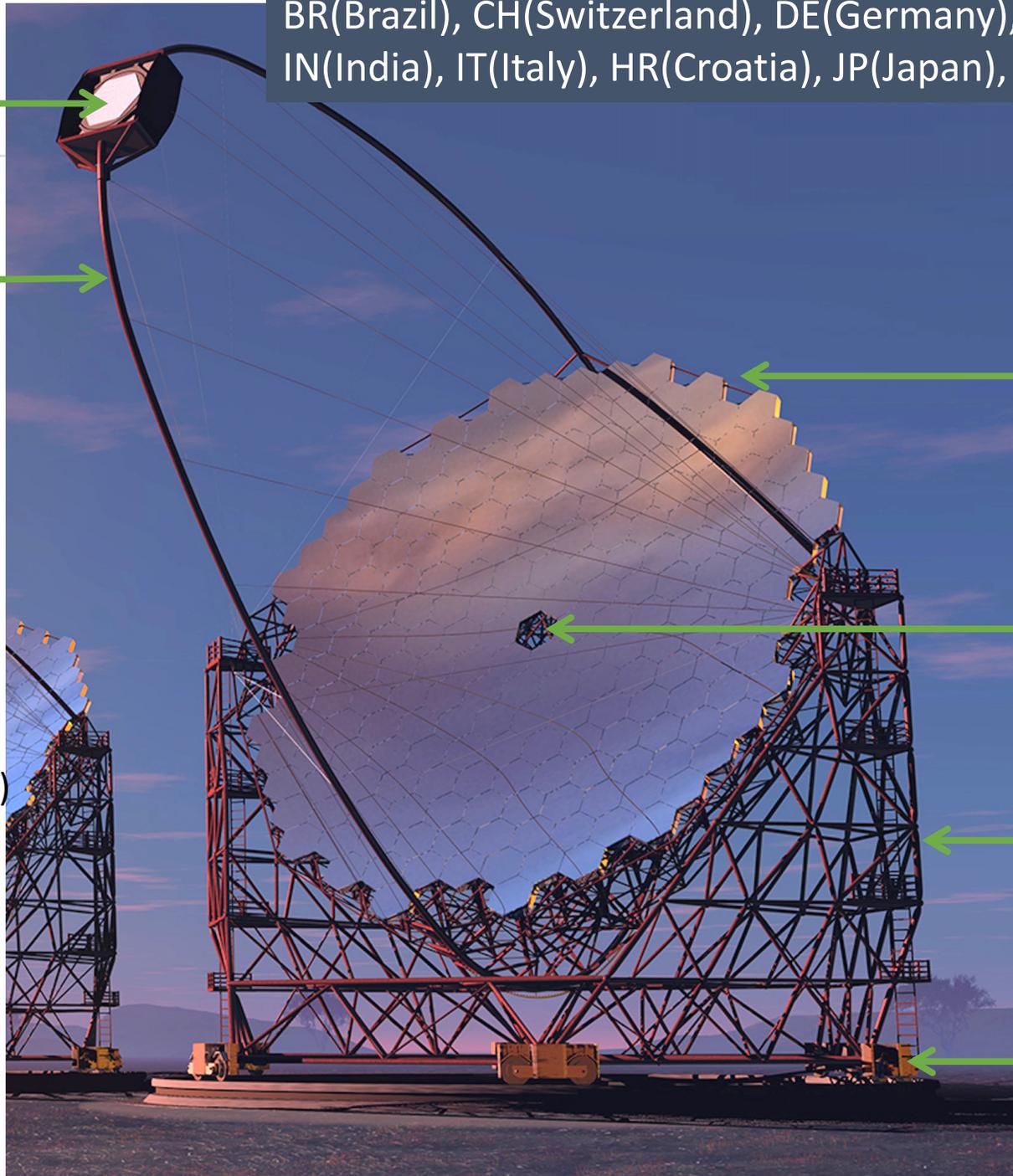
CTA-LST Project : Big International Effort

BR(Brazil), CH(Switzerland), DE(Germany), ES(Spain), FR(France), IN(India), IT(Italy), HR(Croatia), JP(Japan), SE(Sweden)

Focal Plane Instr.
Electronics (JP/IT/ES)
Camera body (ES)

Camera Supporting
Structure (FR/IT)

Flywheel, UPS (JP)
Computers, network (JP)
INFRA (ES)



Mirror (JP)
Interface Plate(DE/BR/JP)
Actuator (JP/CH)
CMOS-Cam (JP)

Star Guider (SE)
Calibration Box (IN/IT)

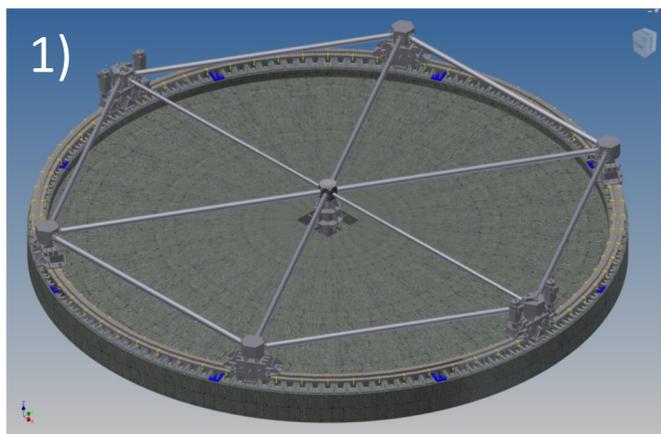
Structure (DE/ES)
Access Tower (DE/ES)

Drive (ES/FR)
Bogie (ES/DE)
Rail (ES/DE)
Foundation (ES)



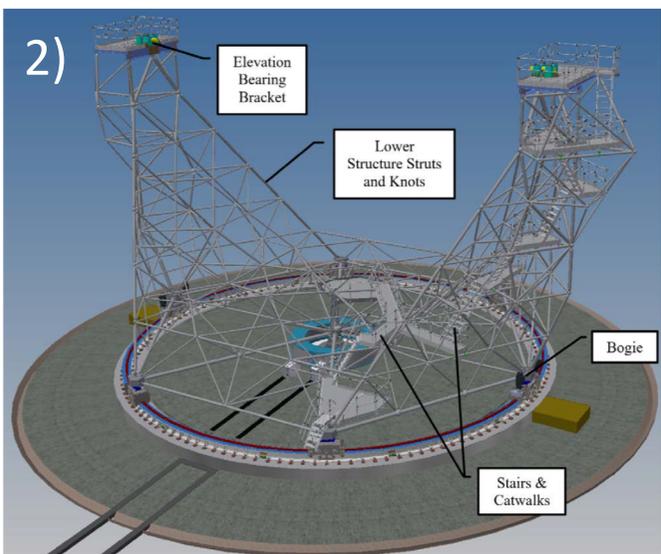
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Installation Sequence after the rail system



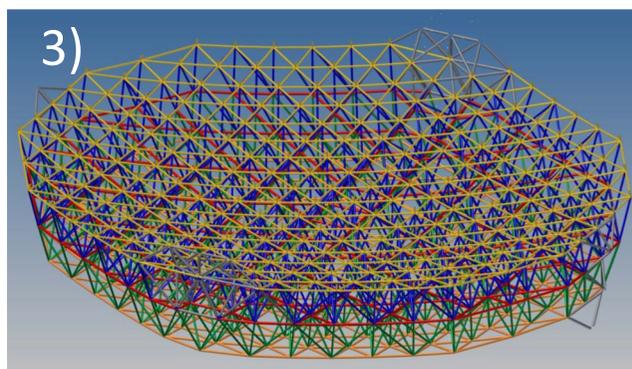
1)

Install bogies and lower structure



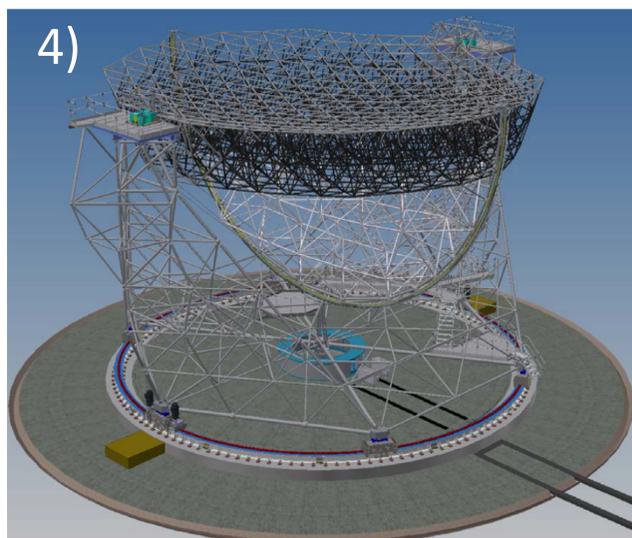
2)

Install azimuth structure



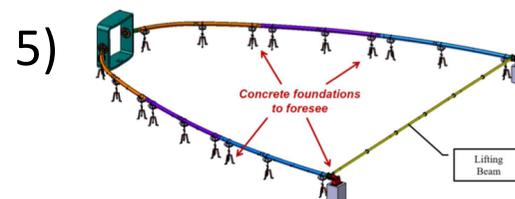
3)

Assemble dish structure on the ground



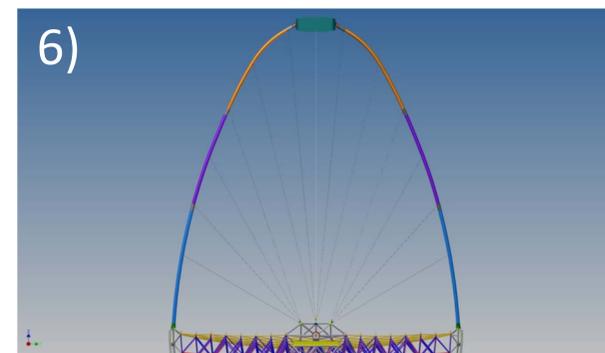
4)

Mount dish structure and assemble elevation sub-structure/ mount mirrors



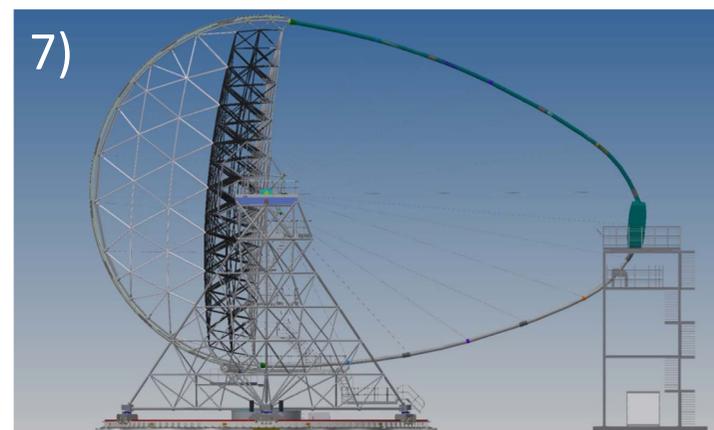
5)

Assemble the camera supporting structure



6)

Mount the camera supporting structure



7)

Install the camera access tower and the camera



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CTA-LST1 Construction



After the long delay of the construction permission





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Status of LST1 construction

Azimuth structure completed

Nov 2017





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Dish structure is mounted

4. Dec. 2017





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After Ice Storm

6. Feb. 2018

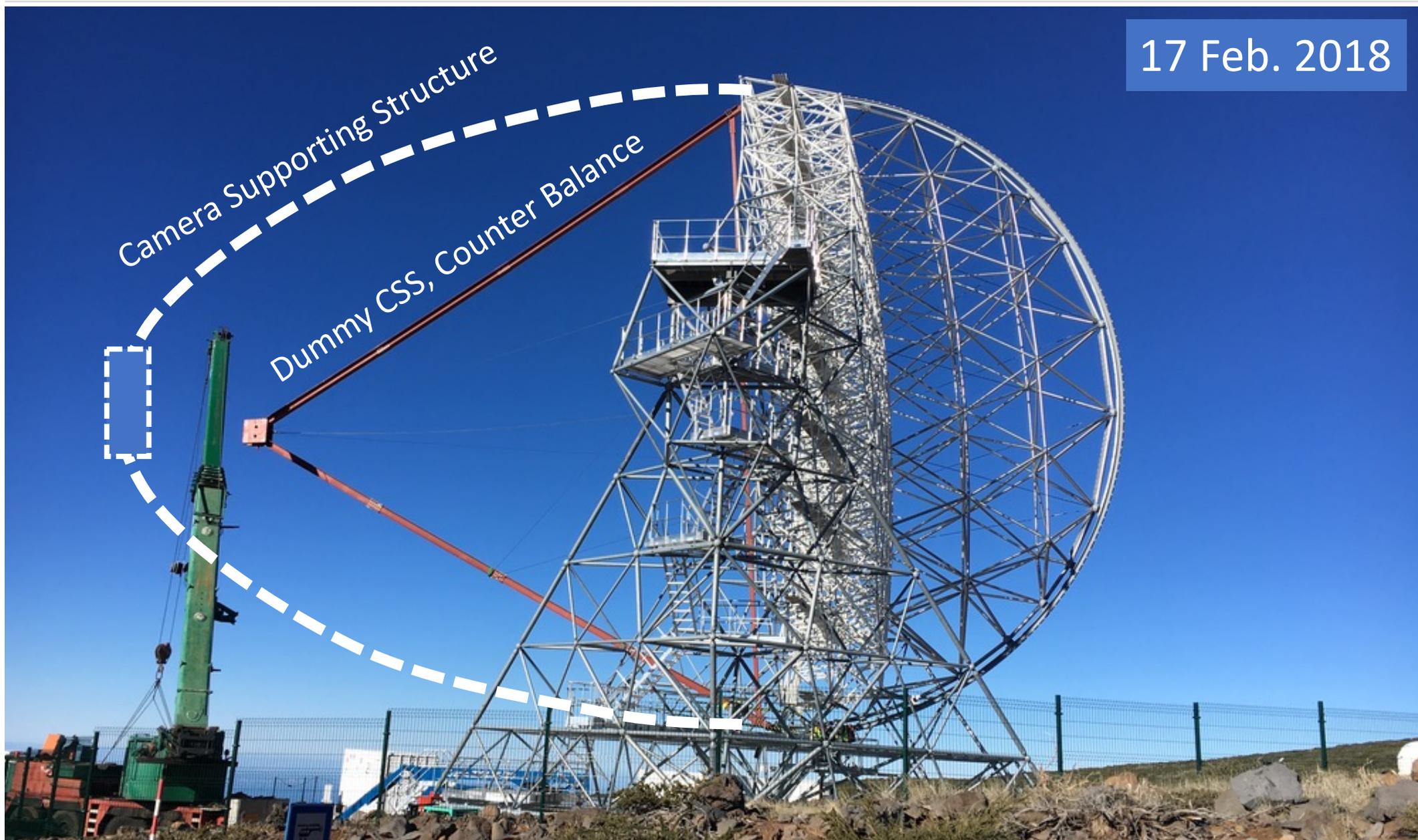




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CTA LST1 Construction Dummy CSS for balancing

17 Feb. 2018

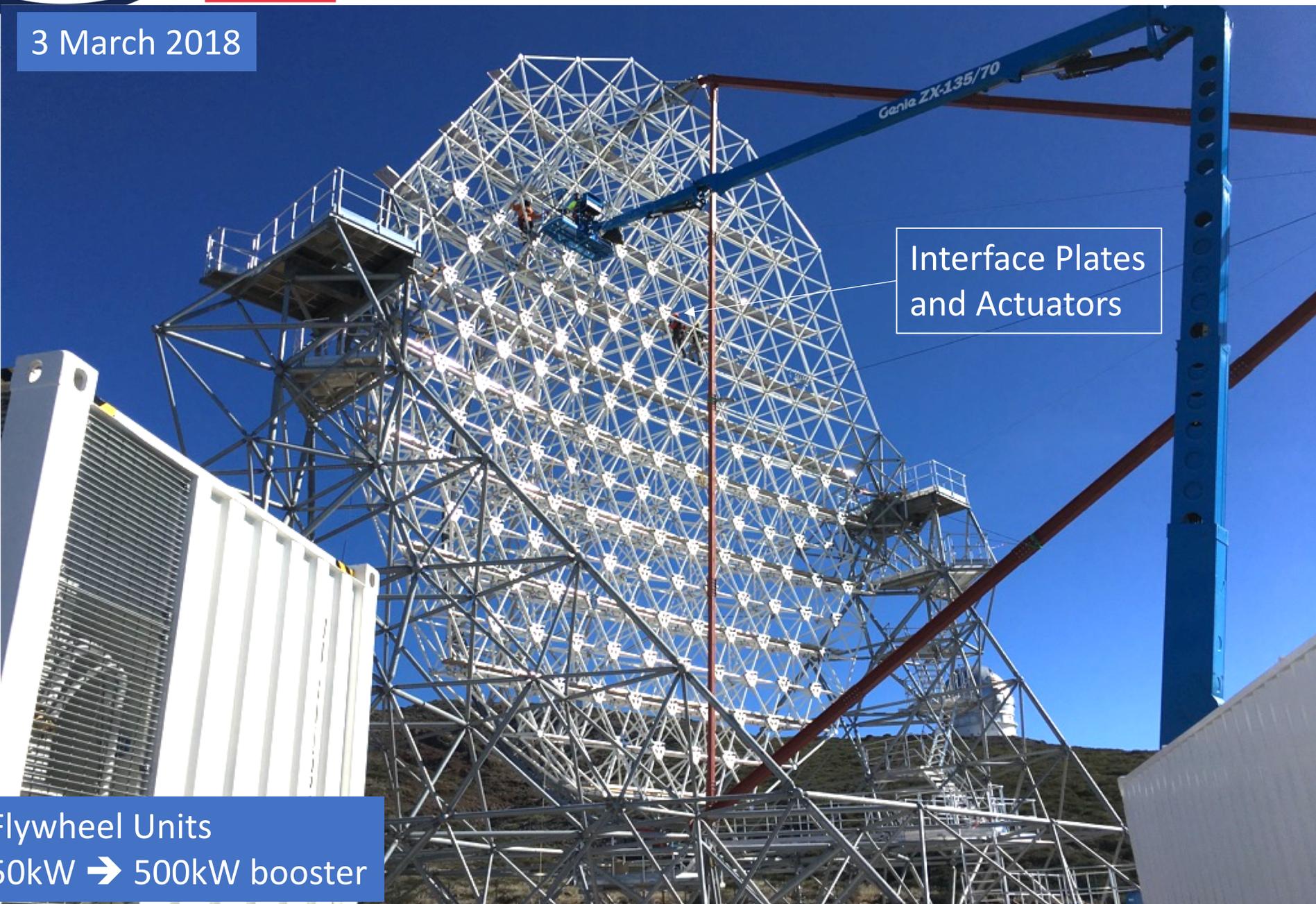




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LST1 construction Installing Mirror Interface Plates

3 March 2018



Interface Plates
and Actuators

Flywheel Units
50kW → 500kW booster

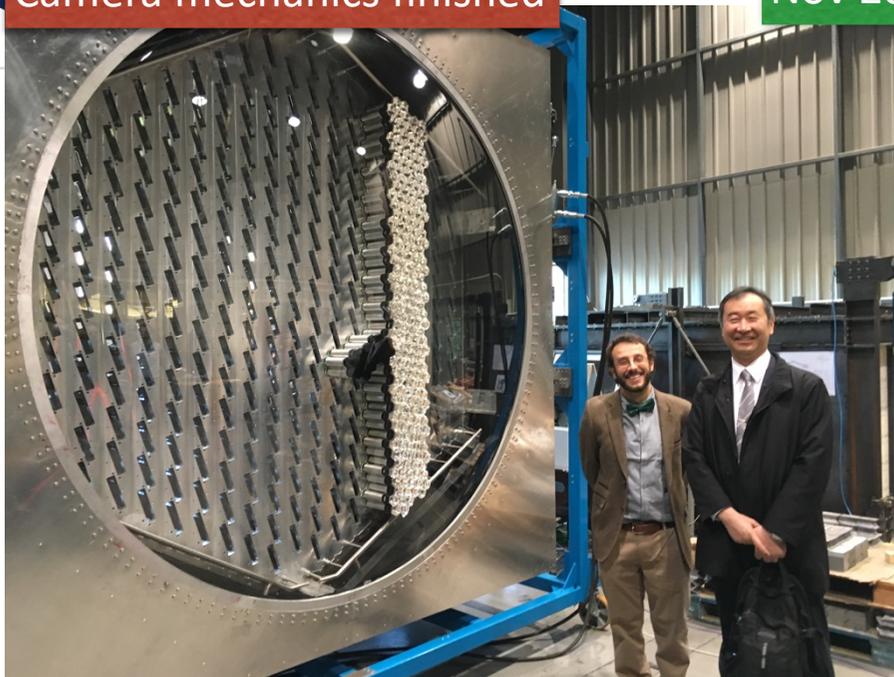


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Status of LST1 construction

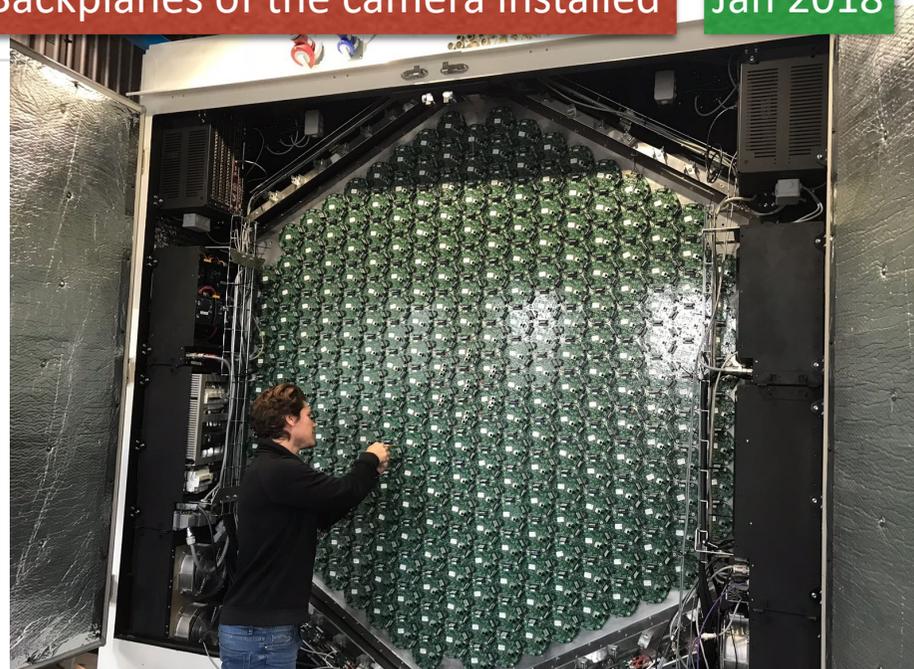
Camera mechanics finished

Nov 2017



Backplanes of the camera installed

Jan 2018



IT computer center installed, 2k Cores, 3PB

Power and Network ready

Mar 2018



Dec 2017



Diesel

ATS, Transformer



500kW Flywheel Power Units



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Yes, we can do it

Construction of four LSTs

- CTA LST1 will have the first light in summer 2018
 - We do not see any major problem in LST1 construction
 - LST1 Inauguration is scheduled on 10th October in 2018
- Early Science during engineering run
 - Proof the threshold energy of 20GeV by observing Pulsars and GRBs
 - Onsite analysis (on-fly data analysis chain)
 - Cross Calibration with MAGIC Telescopes → deep observation
- Continue the the construction of LST2-4 and complete array of 4 LSTs in FY2018-FY2020

