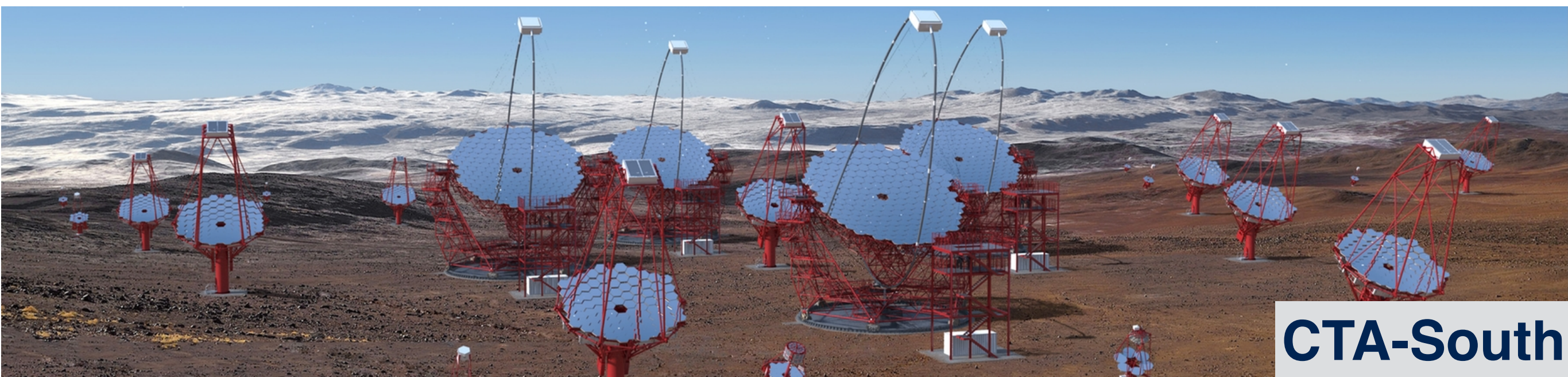


Cherenkov Telescope Array

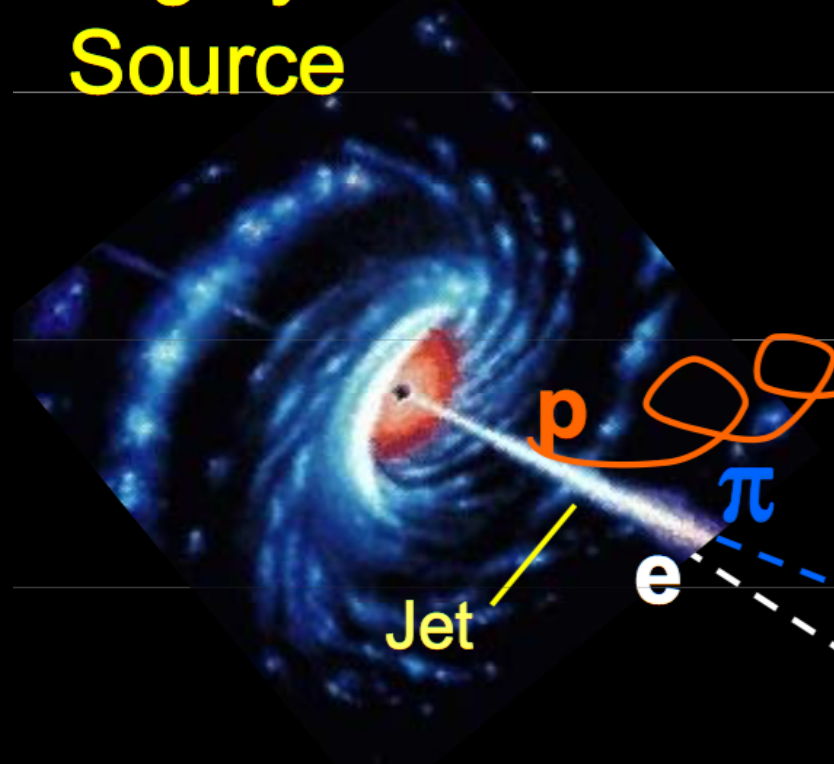
40 CTA contributions at ICRC2019



Daniel Mazin for the CTA consortium
ICRR U-Tokyo, Japan and MPI for Physics, Munich, Germany

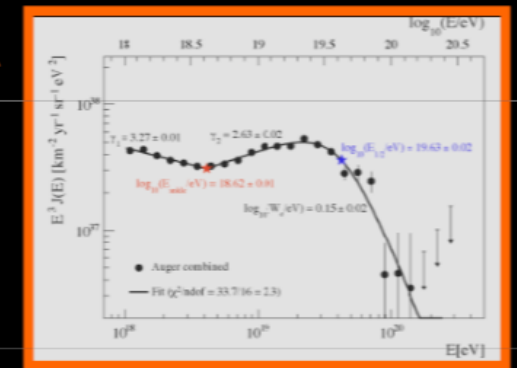
Introduction: perspective

Highly Non-Thermal
Source

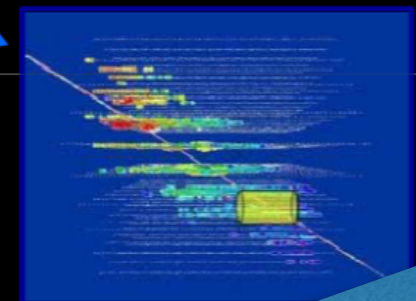


Active Galactic
Nucleus (AGN)

EeV
Cosmic Rays

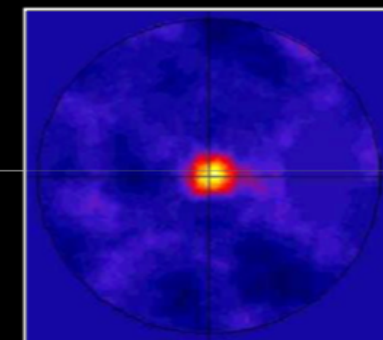


PeV
Neutrinos



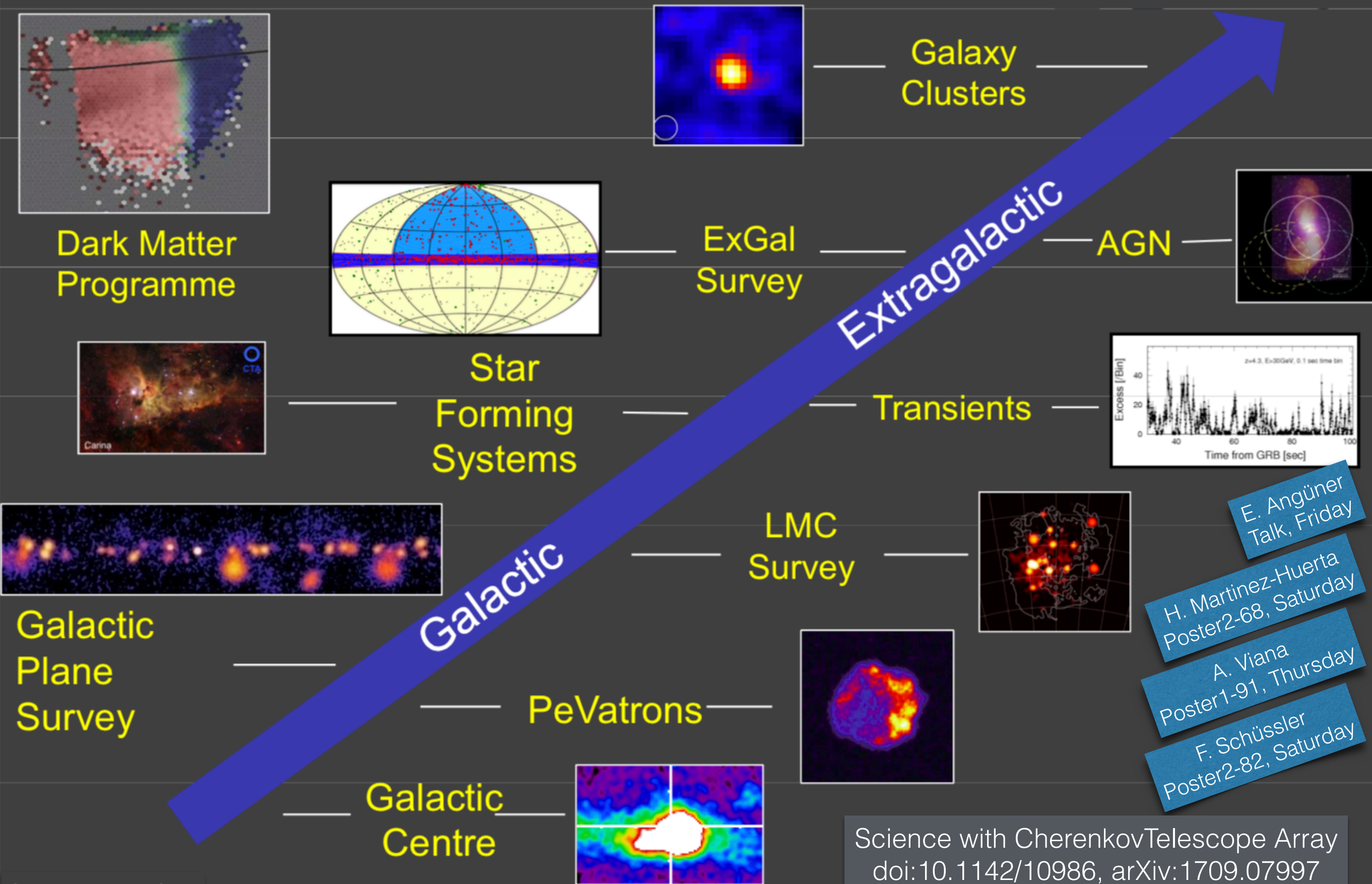
γ rays provide greatest
amount of direct information

GeV/TeV
 γ -rays



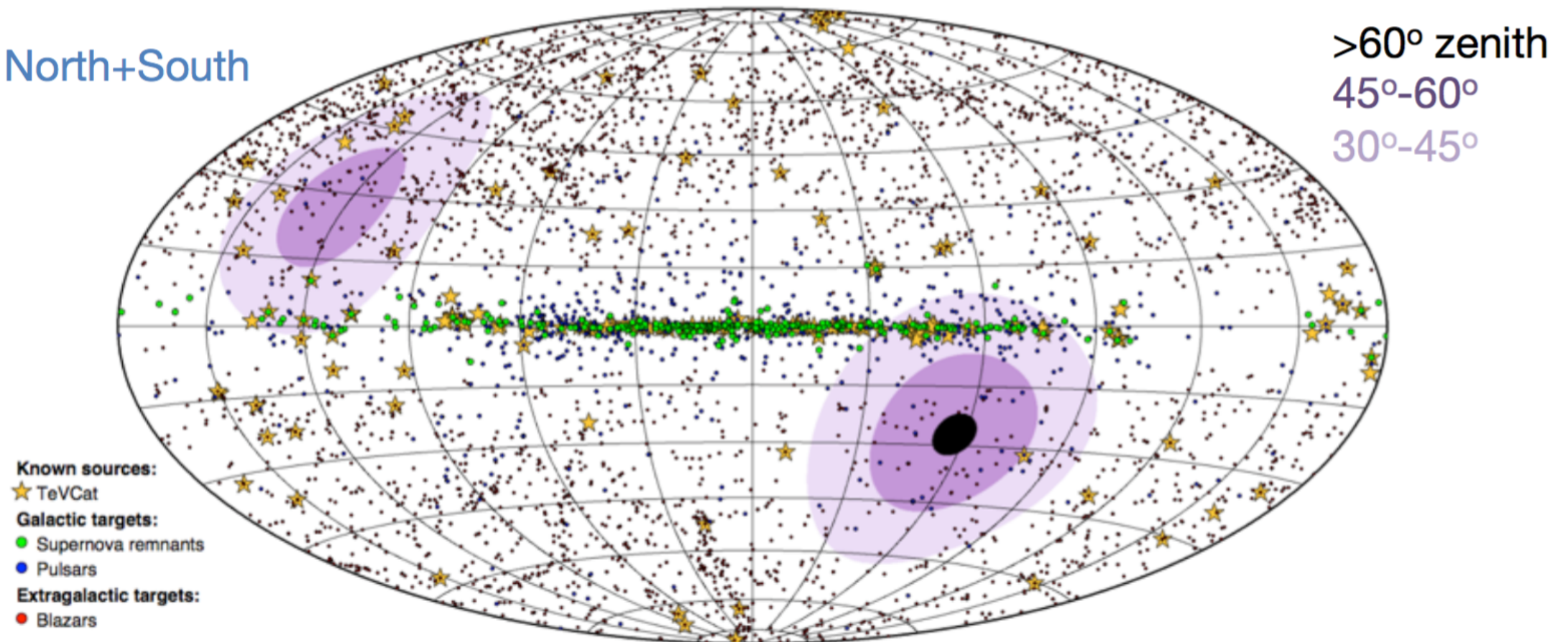
U. Barres de Almeida
Today 14:45

CTA Key Science Projects

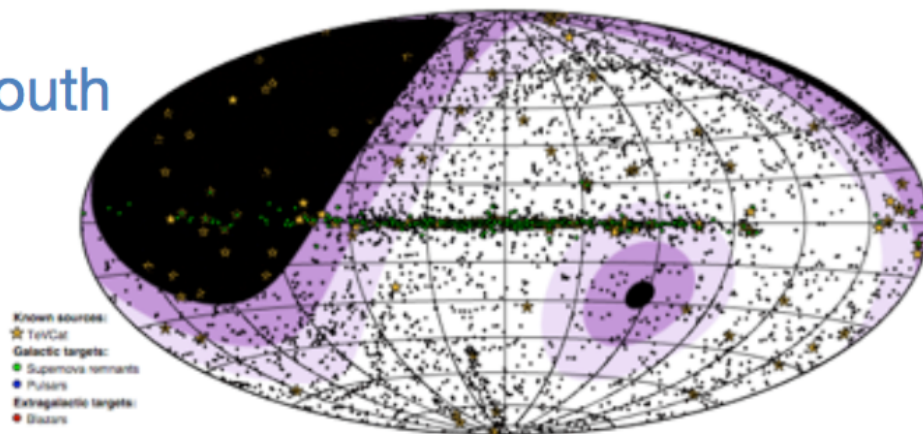


All Sky Coverage

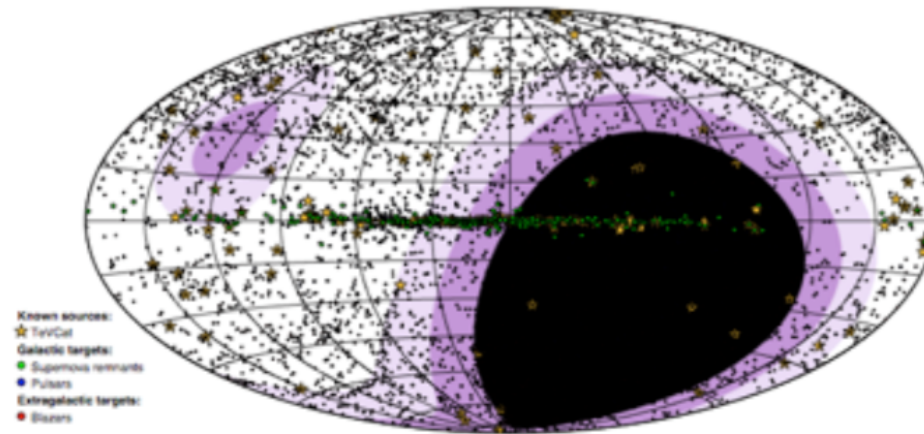
North+South



South



North



Extragalactic survey:

¼ of sky with ~ 6 mCrab
sensitivity during ~1000 h

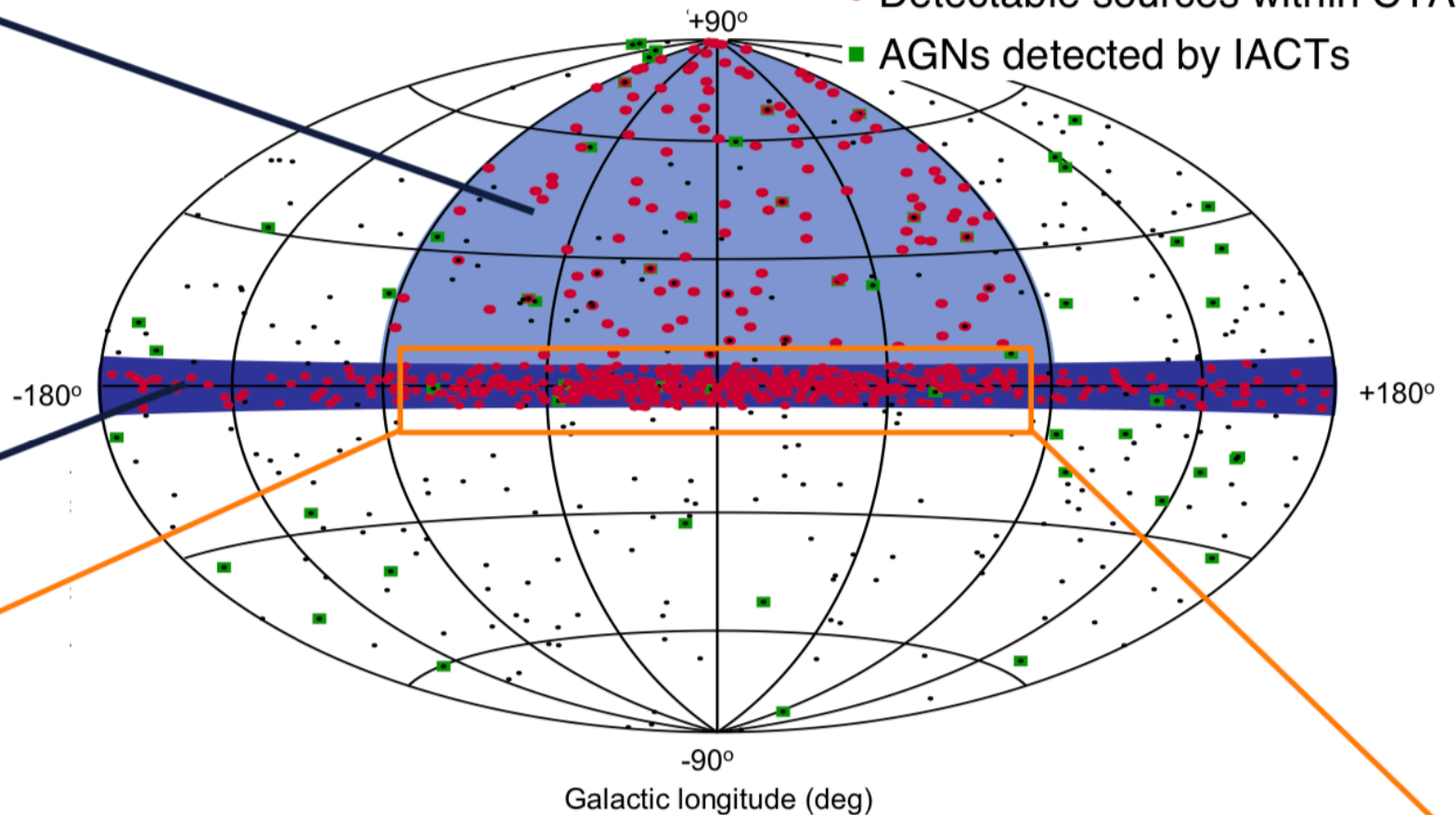
Population studies,
unknown sources

Galactic Plane survey:

Full GP with ~2-4 mCrab
sensitivity during ~1600 h

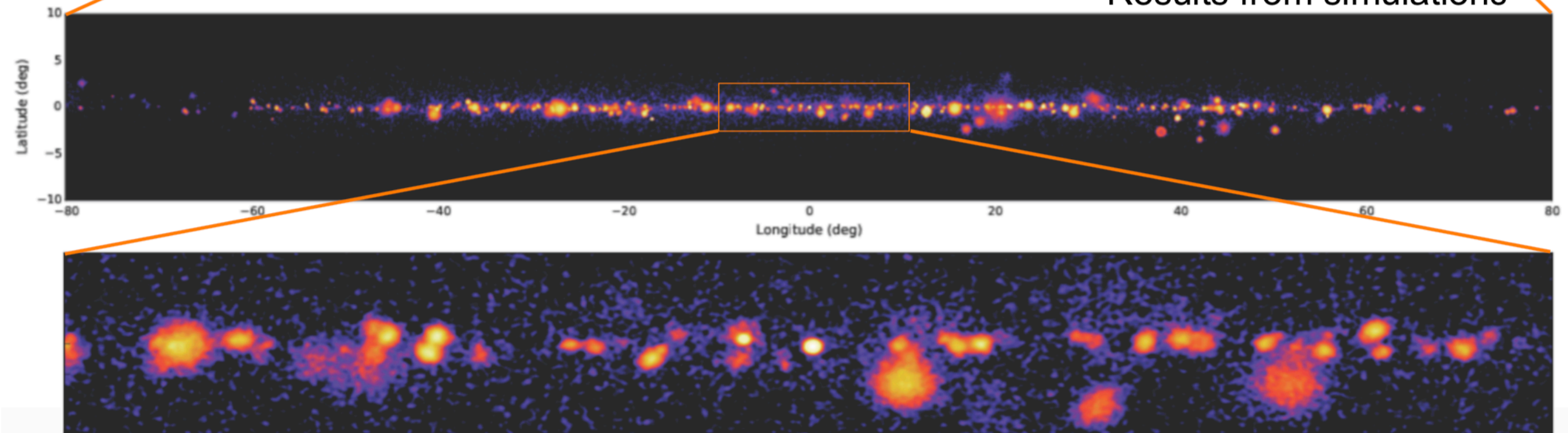
~400 new VHE sources:
SNR, PWN, PeV candidates

Galactic latitude (deg)

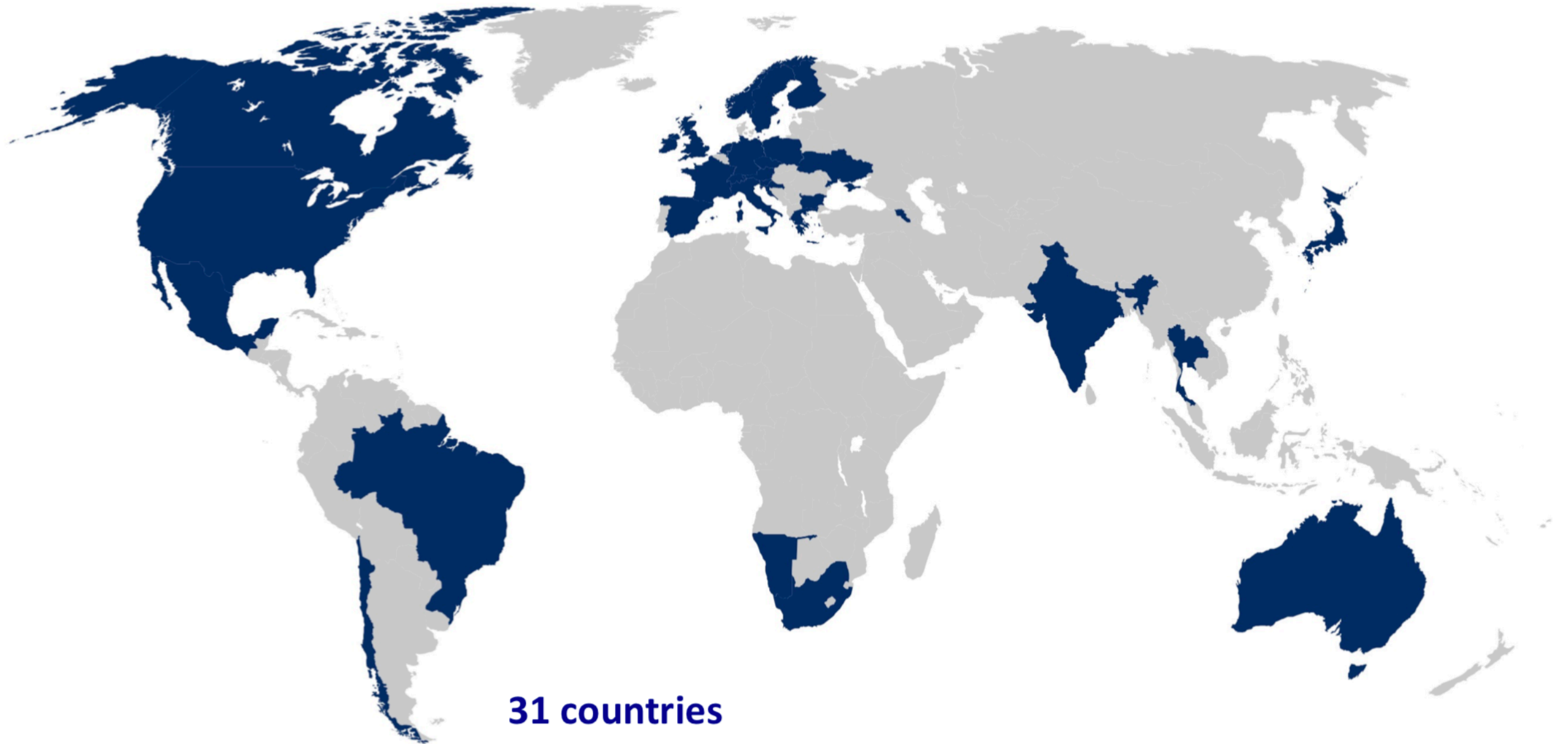


- Fermi/LAT 2FHL catalog
- Detectable sources within CTA surveys
- AGNs detected by IACTs

Results from simulations



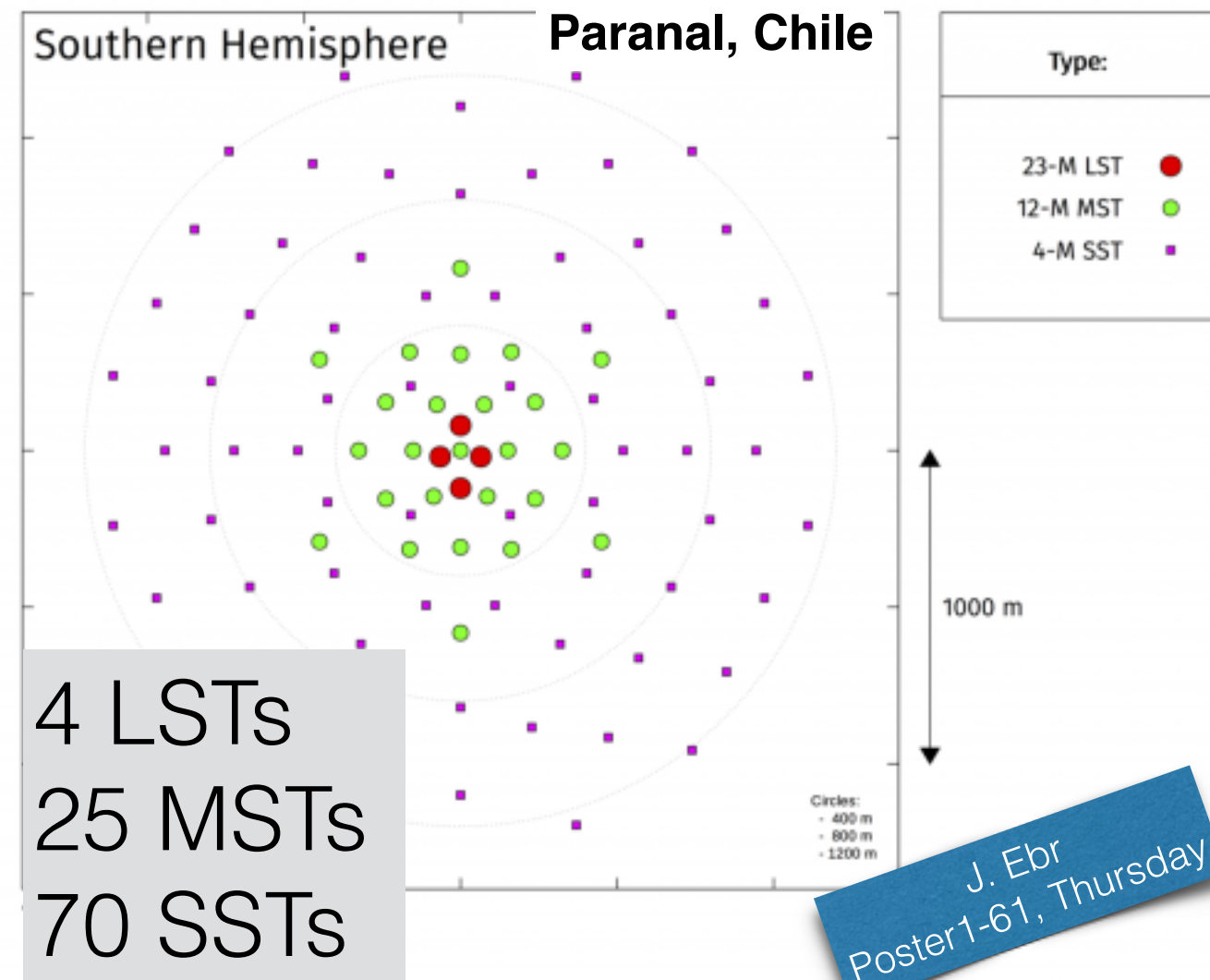
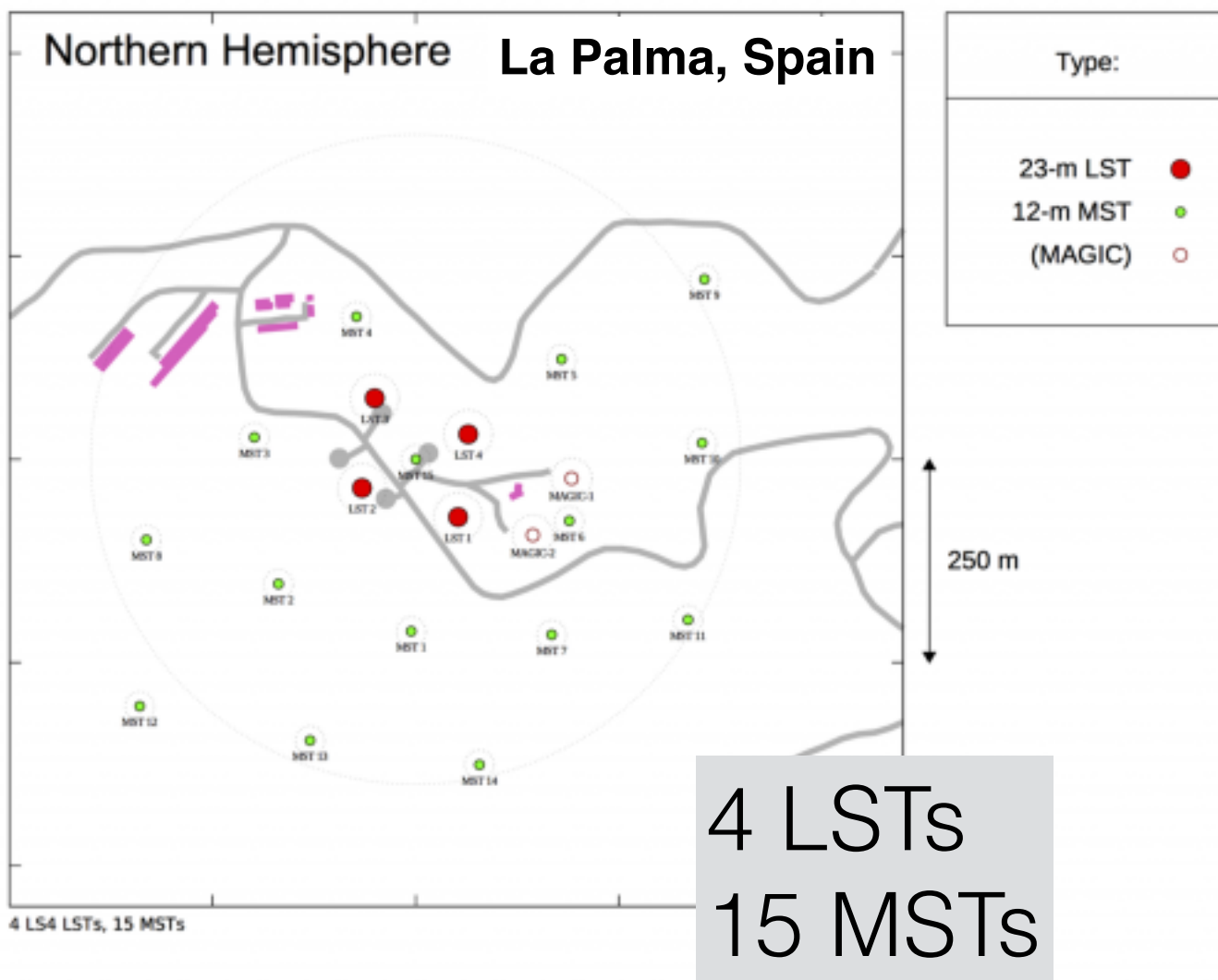
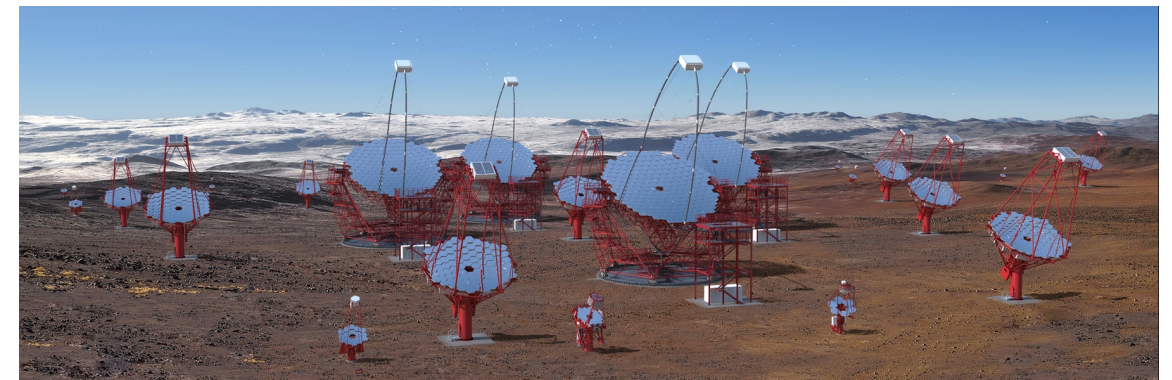
CTA Consortium



**31 countries
94 parties
206 institutes
1501 members (535 FTE)**

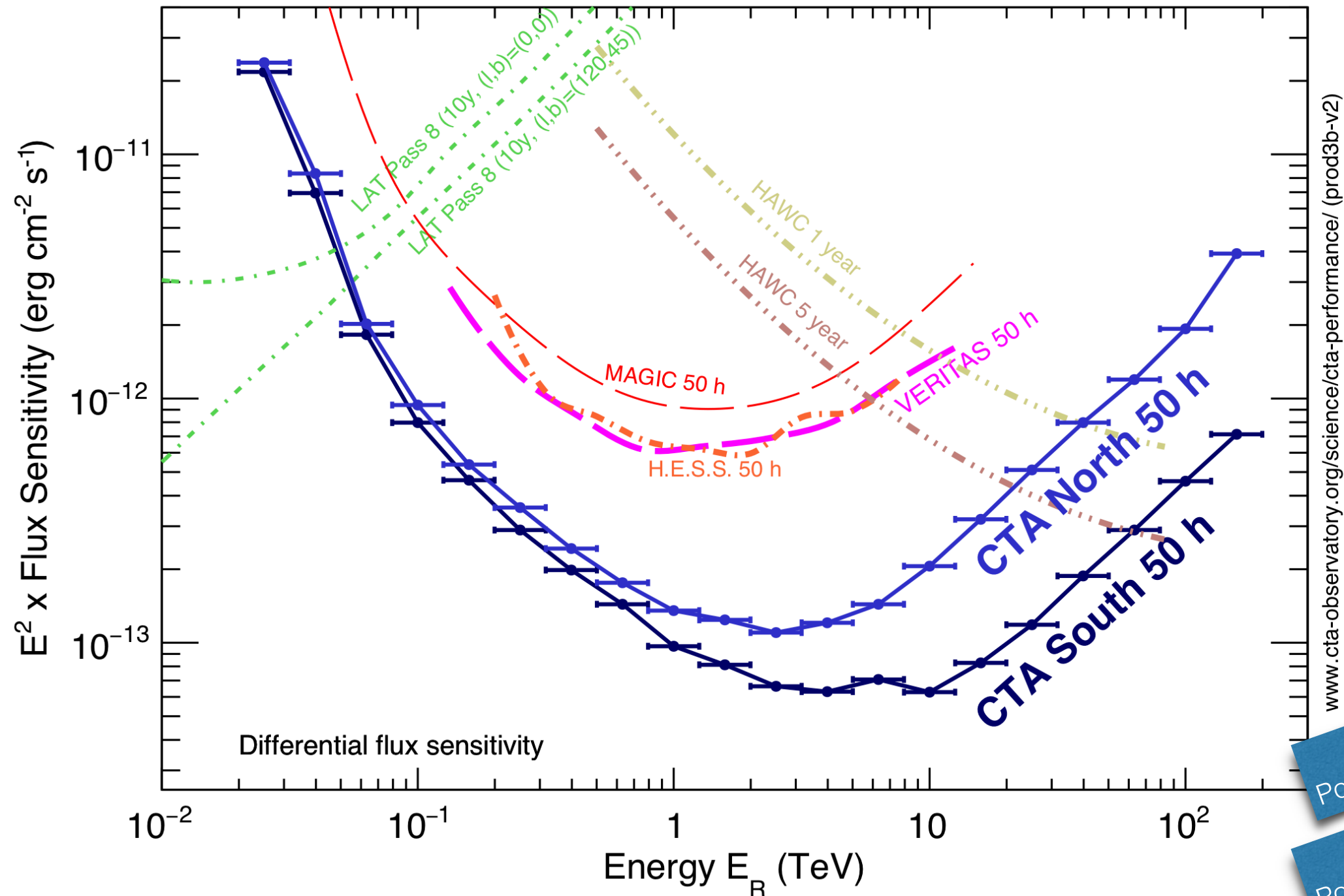
as of June 2019

CTA layout



J. Ebr
Poster1-61, Thursday

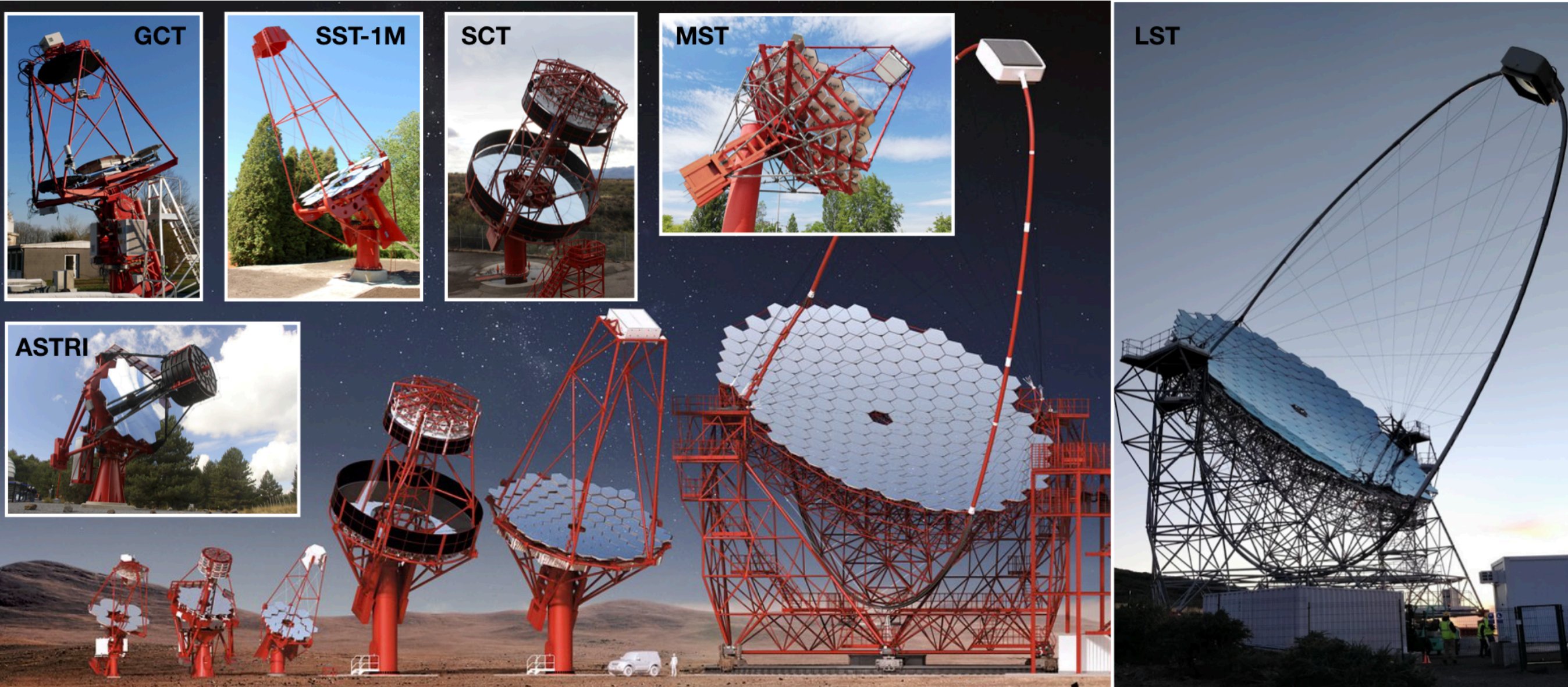
CTA sensitivity



G. Maier
Poster1-80, Thursday

A. Donini
Poster1-60, Thursday

CTA telescope prototypes



CTA telescope prototypes: SST



cherenkov
telescope
array

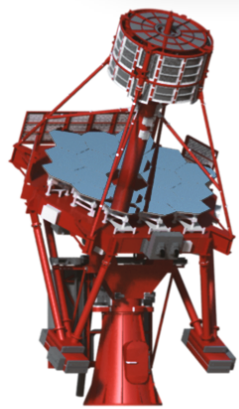
ASTRI-CHEC-S

2-Mirror prototypes

GTC

SST-1M

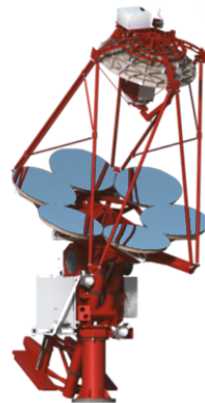
Lightweight camera



SST-2M ASTRI

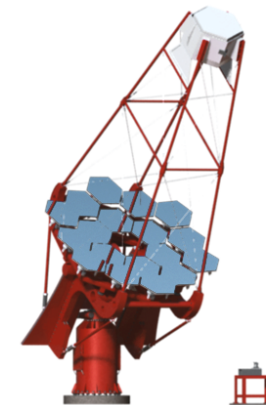
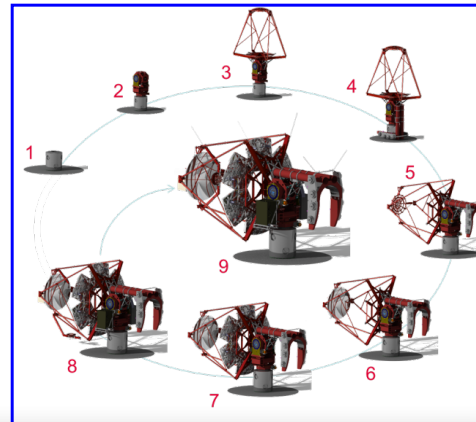


CHEC-S

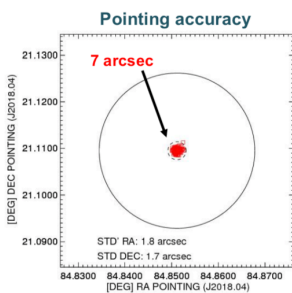
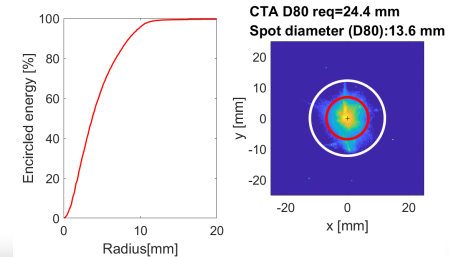
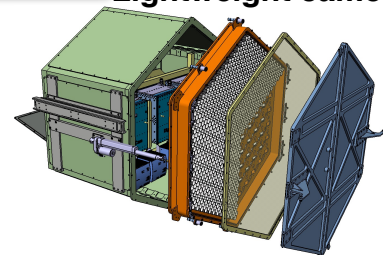


SST-2M GTC

Assembly: 10,5days per GTC

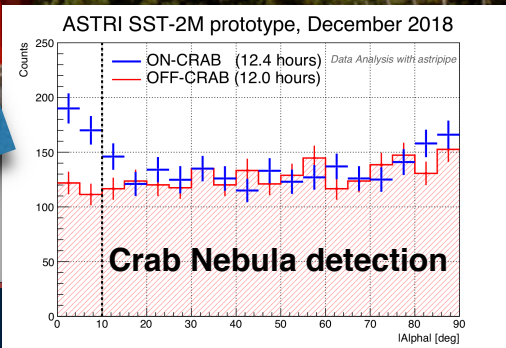
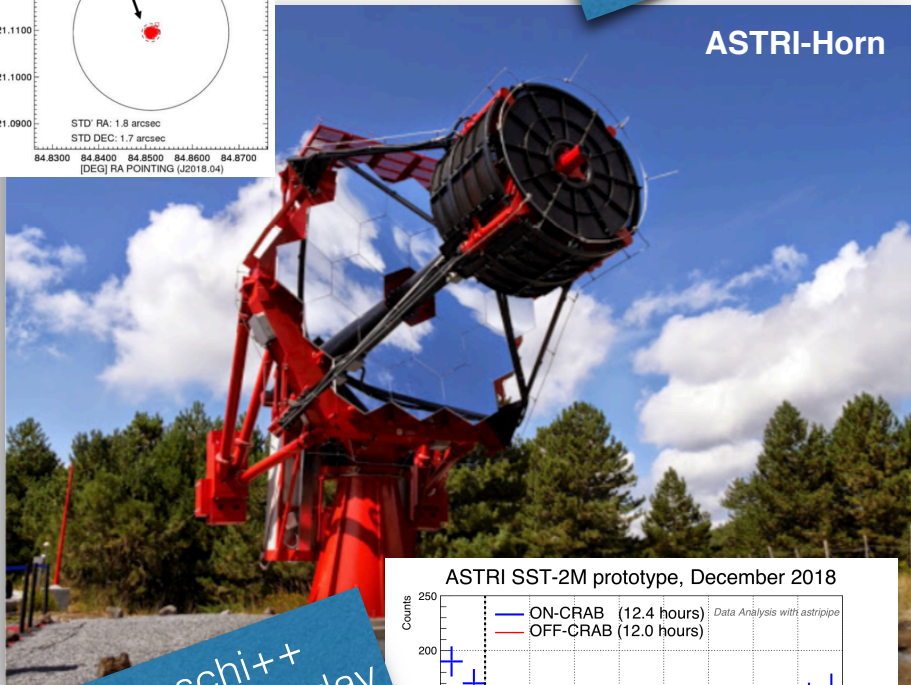


SST-1M

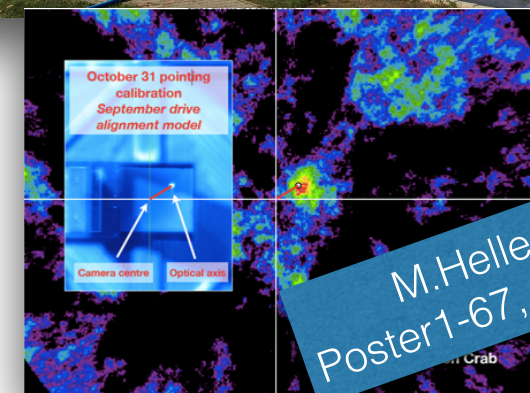


J. Watson++
Poster2-91, Saturday

ASTRI-Horn



G. Pareschi++
Poster2-72, Saturday



M.Heller++
Poster1-67, Thursday

CTA telescope prototypes: SST



cherenkov
telescope
array

ASTRI-CHEC-S

2-Mirror prototypes

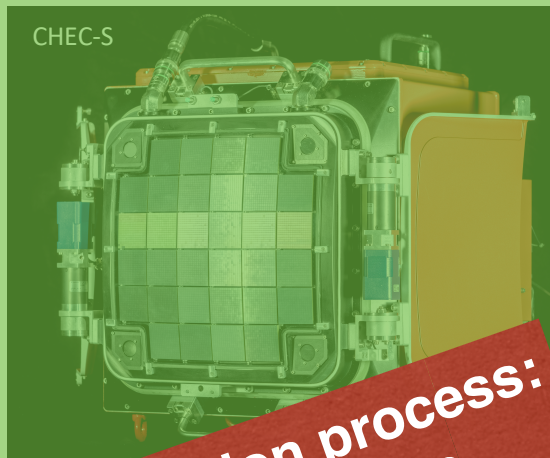
GTC

SST-1M

Lightweight camera



SST-2M ASTRI

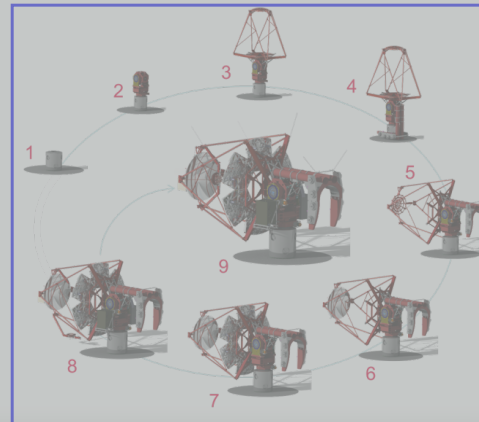


CHEC-S

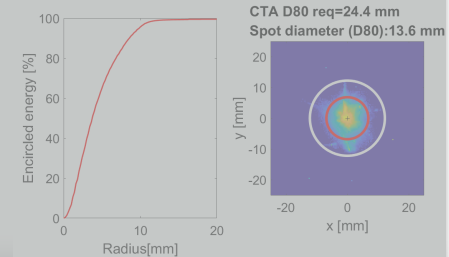
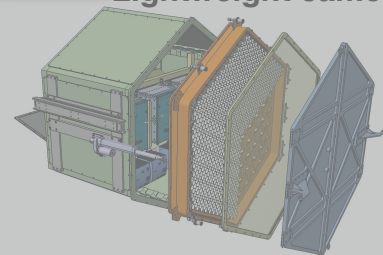


SST-2M GTC

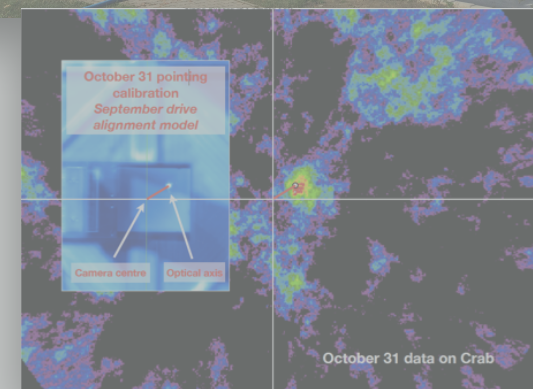
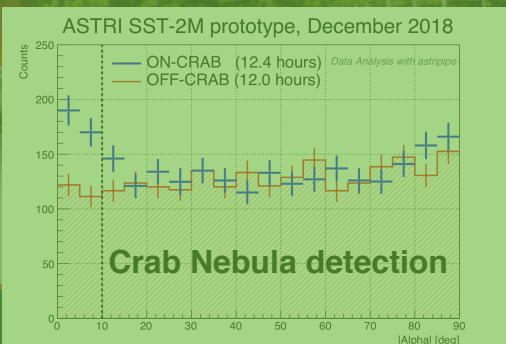
Assembly: 10,5days per GTC



SST-1M



Result of harmonisation process:
CTA SST will be based on
ASTRI-CHEC design



CTA telescope prototypes: MST

cherenkov telescope array

FlashCam



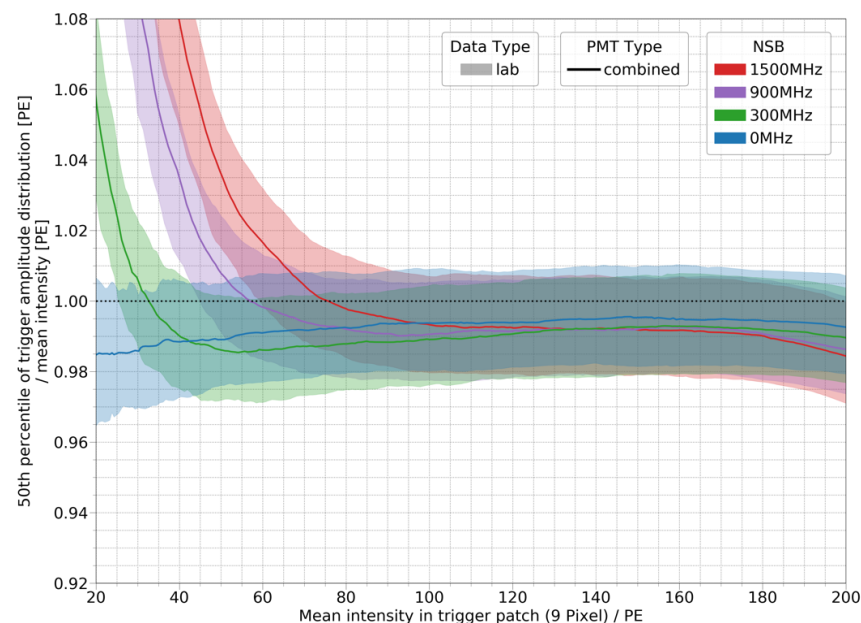
NectarCAM



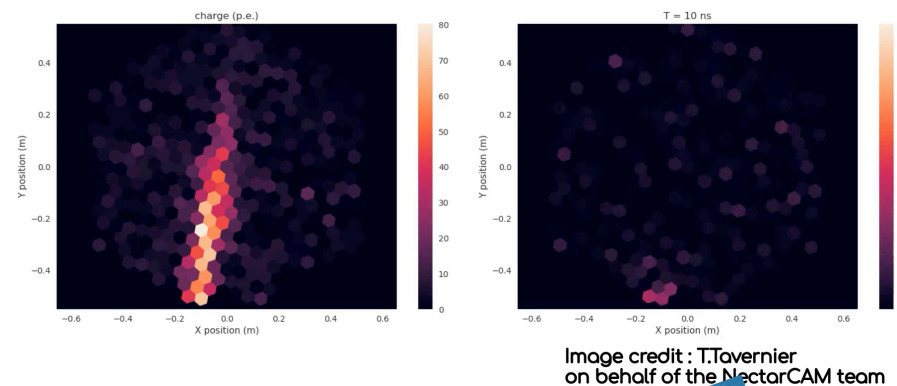
MST-Structure



Trigger response distributions: 5 to 95th percentile bands



NectarCAM -- Adlershof Campaign 2019



May 2019

T. Tavernier
Poster 1-88, Thursday

Optimised camera support structure:

- Reduced shadowing
- Reduced weight
- Stiffening of dish structure

J.-F. Glicenstein
Today, 14:30

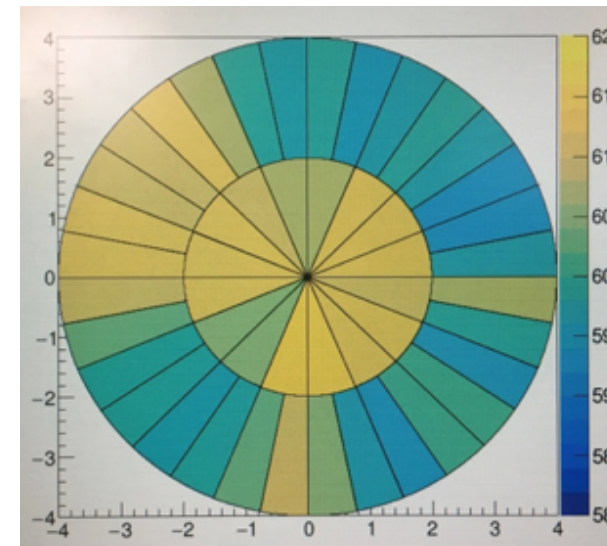
CTA telescope prototypes: SCT cherenkov telescope array

pSCT inauguration

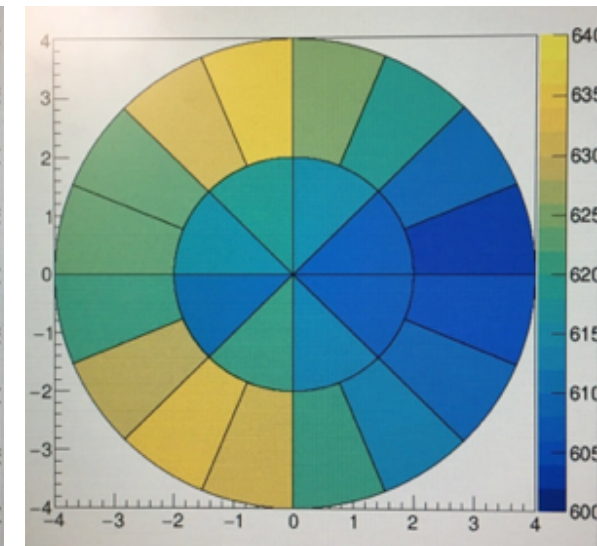
January 17-18, 2019



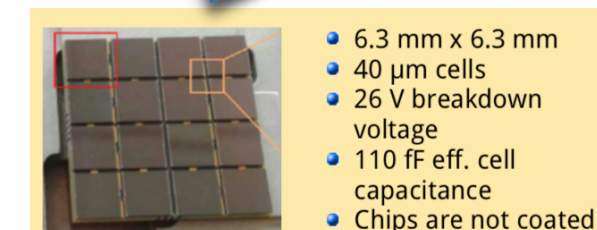
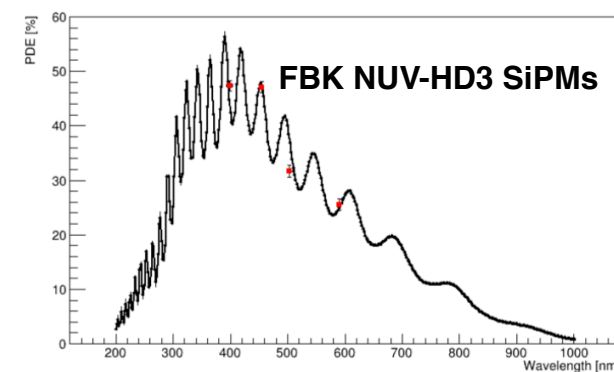
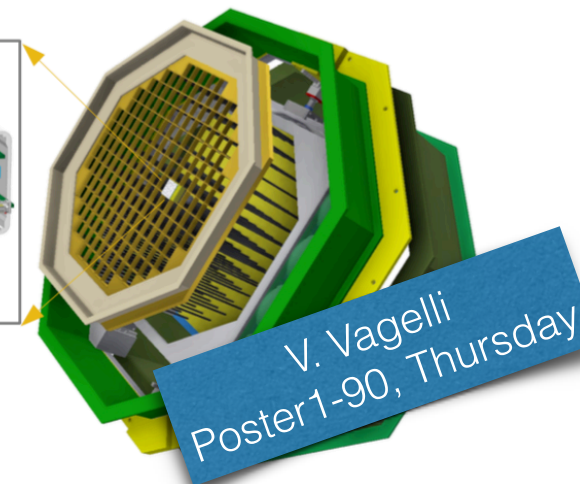
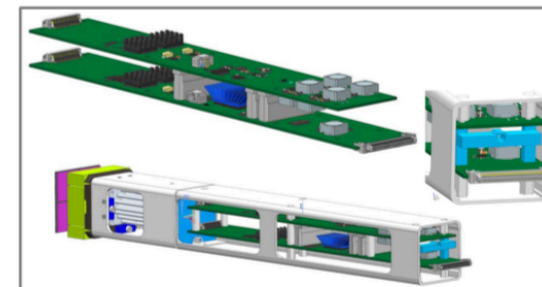
Primary Mirror



Secondary Mirror



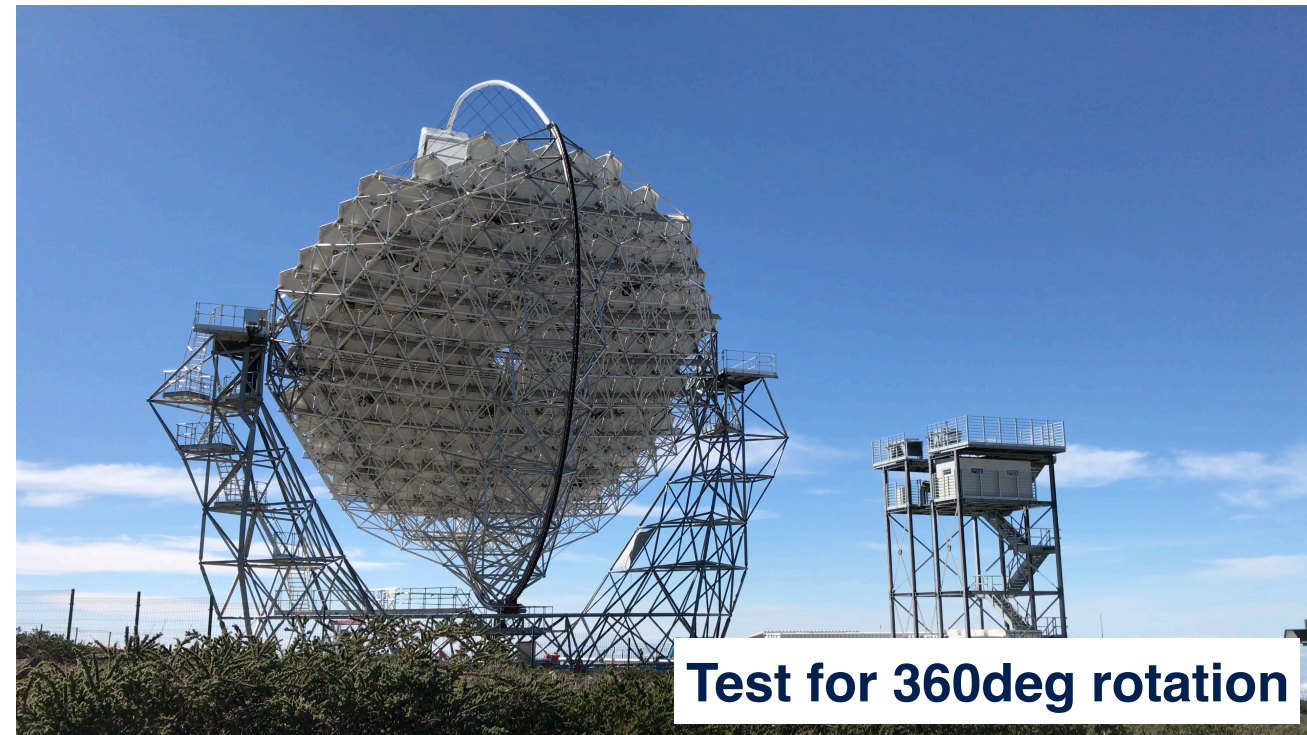
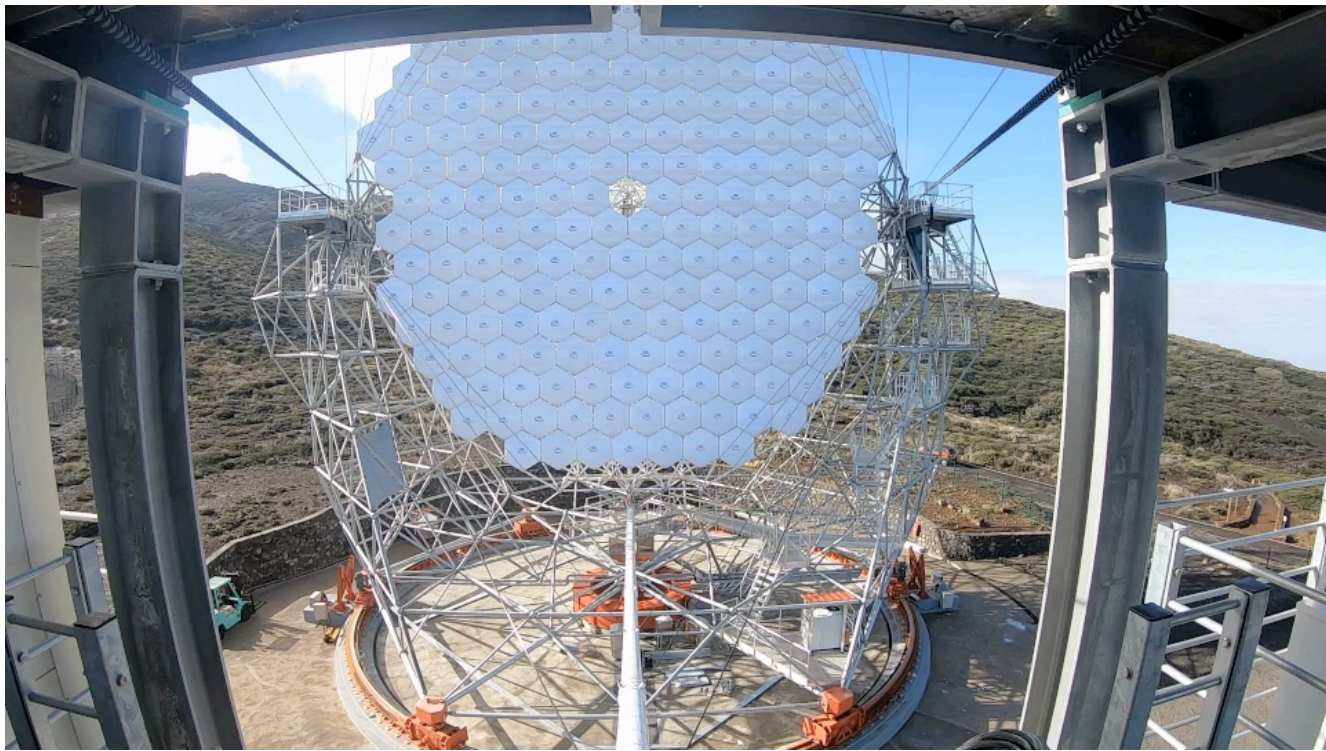
Slight tilting yet to be corrected



Fully upgraded camera in 2021

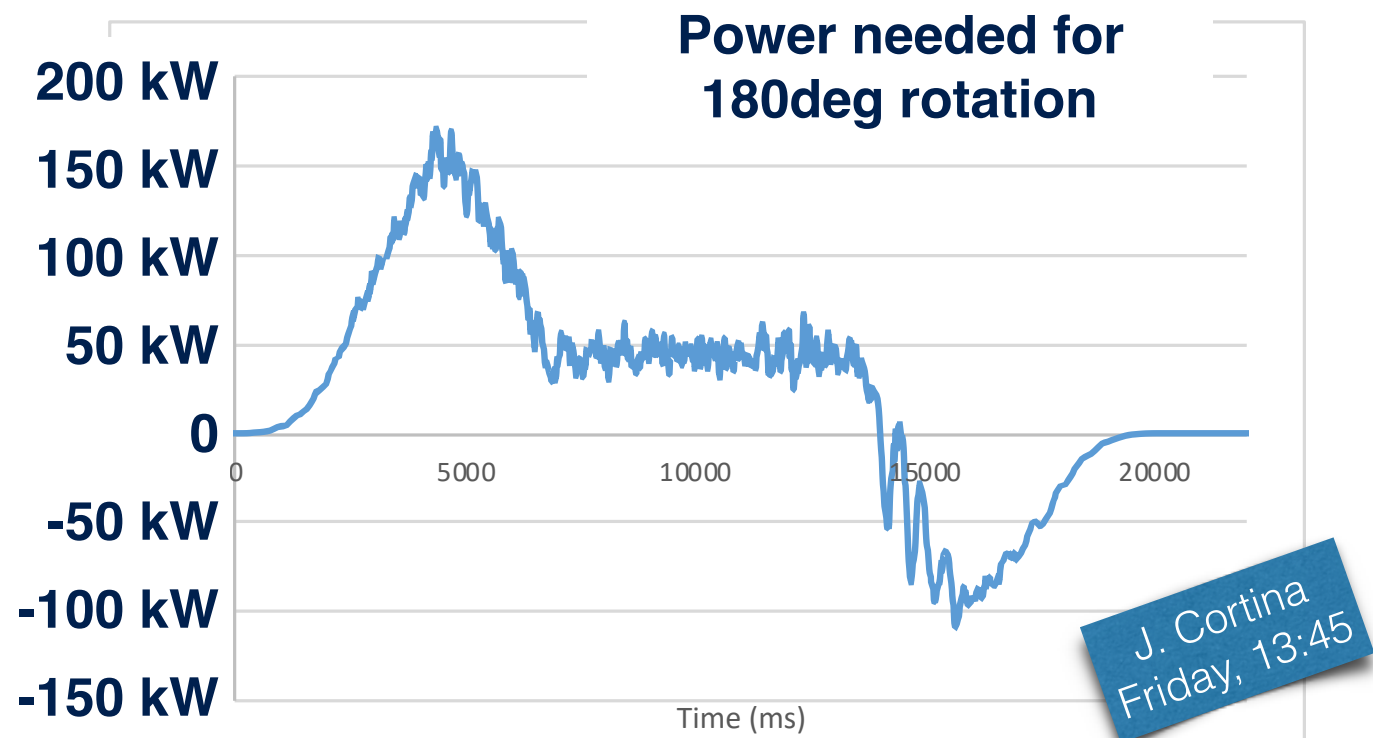
CTA telescope prototypes: LST

cherenkov
telescope
array



Fast repositioning tests on March and April 2019

- Full validation of the 20s goal for 180 degrees (spec is 30s)
 - Drive speed regulation working as expected
 - Feedback from mechanics not showing any issue
 - Emergency stops tested and correctly handled

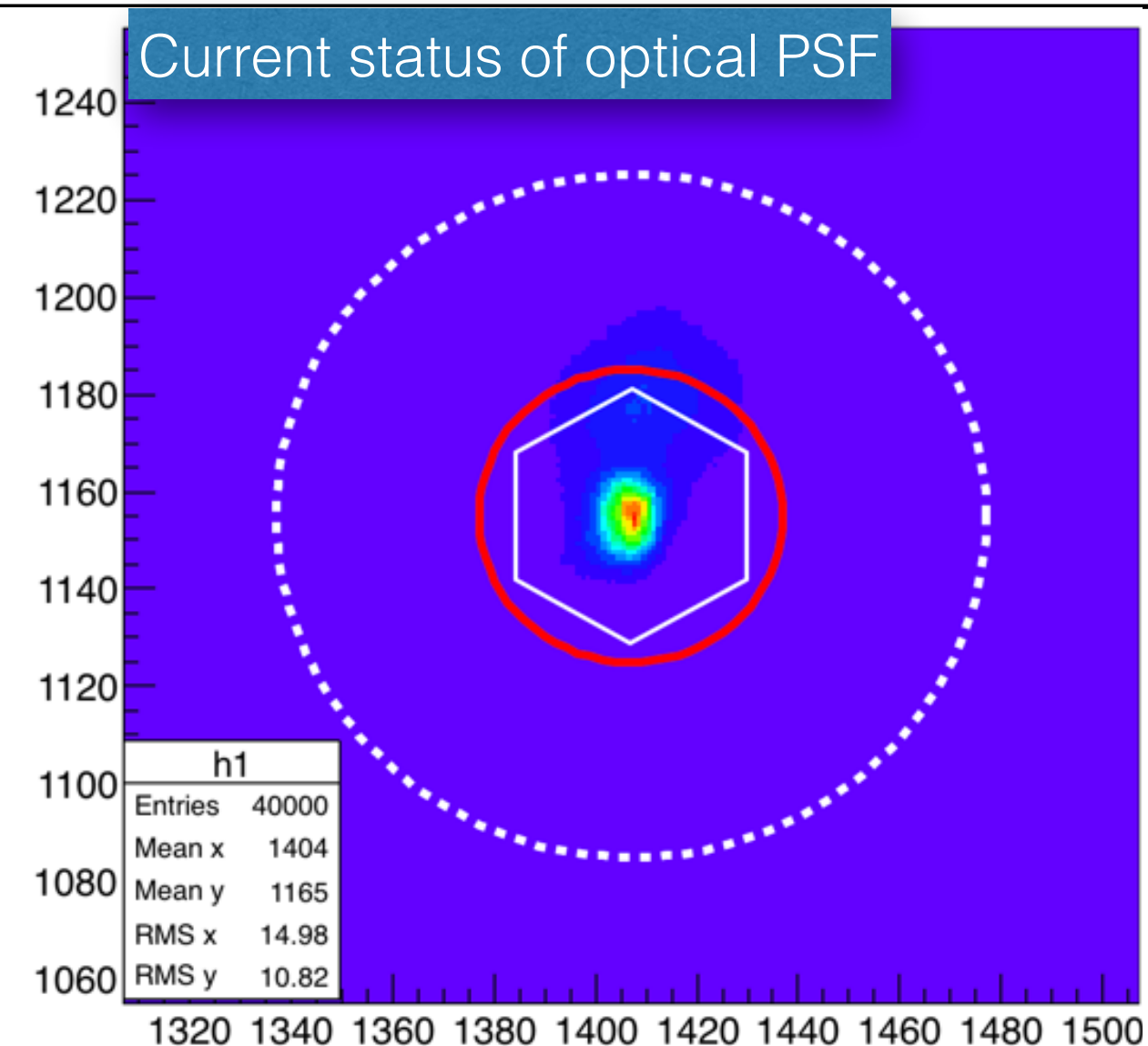


CTA telescope prototypes: LST

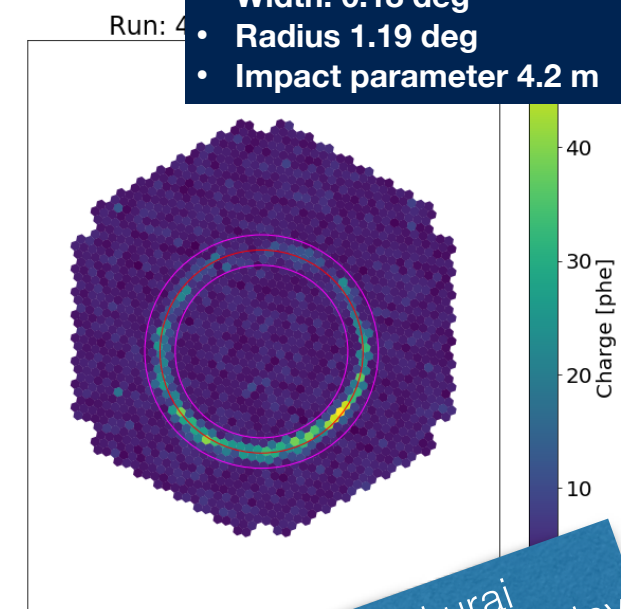
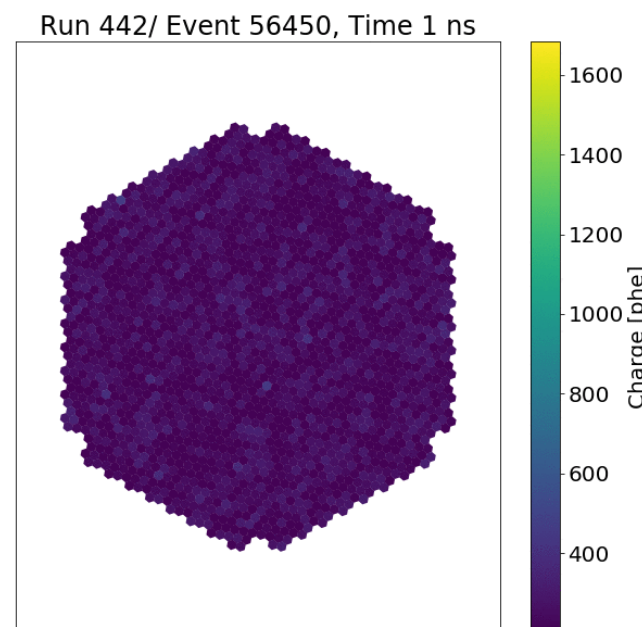
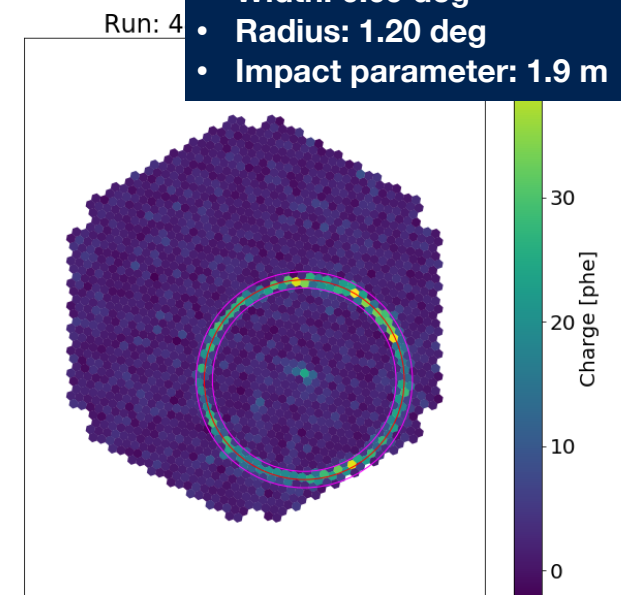
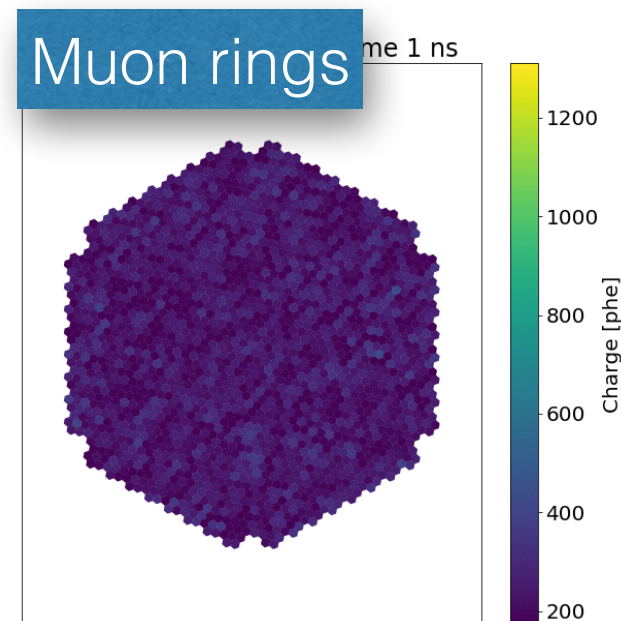


cherenkov
telescope
array

- Size: 3569 phe
- Width: 0.09 deg
- Radius: 1.20 deg
- Impact parameter: 1.9 m



- White solid line : 1 Cherenkov Camera pixel (50mm flat to flat)
- Background is subtracted by the mean value of pixels out of R100 circle.



S. Sakurai
Poster2-78, Saturday

CTA observatory status

- Headquarter in Bologna, staff ramping up steeply
- Science Data Management Center in Zeuthen: starting up; software architecture being finalized
- North Site (La Palma)
 - Agreement signed, site manager in place
 - LST1 prototype under commissioning
 - Preparation for next stage of infrastructure implementation
- South Site (Chile)
 - Agreements signed (ESO-CTAO, CTAO-CONICYT, ESO-Chile), site manager in place
 - CTA-South array will be operated by ESO on behalf of CTAO
 - Infrastructure implementation planning ongoing; start deployment in 2020
- Final legal entity: ERIC under European Union law; Phase I application submitted to EC in March 2019
- Implementation milestones under discussion in Council



Conclusions / Outlook

CTA-South



CTA-North



Now we will build it!