20th MAGIC anniversary

Photo by Chiara Righi


BRIBON

Astronomers review options after fire ravages gamma array

[MUNICH] **Astronomers are assessing the damage caused by a fire that raged last week through the site of the High-Energy Gamma Ray Array (HEGRA) at La Palma in the Canary Islands (pictured right), only months before it was due to start operating at full capacity.**

The array, a collaborative project run by laboratories in Germany, Spain and Armenia, detects and analyses cosmic rays and gamma rays hitting the Earth, and searches for galactic and extragalactic gamma-ray sources.

The fire appears to have been connected with the burning of scrub during landscaping activities in the national park in which HEGRA is situated. National park regulations stipulate that the site may not be cleared of scrub, and the tinder-dry gorse bushes burning between the detectors caused most of the damage.

HEGRA comprises a 200-square-metre chequerboard system of gamma-ray detectors, known as Cherenkov counters. These are punctuated by six imaging Cherenkov telescopes which are the most sensitive ground-based gamma-ray detectors in the world.

HEGRA

instruments' sensitive electronics by hydrochloride vapours released from burning plastic may be revealed later, according to Heinrich Völk, a director at the Max Planck Institute for Nuclear Research in Heidelberg, and a spokesman for the project.

Völk says the observatory was saved from complete destruction by scientists based at the site, who tried to bring the fire under control with extinguishers before the fire brigade arrived, as well as by a fortuitous change in wind direction.

In its various stages of completion,

HEGRA scientists are still able to work with the undamaged detectors and telescopes, but at greatly reduced sensitivity and efficiency. They are discussing possible compensation with insurance agencies. But because of laws restricting insurance cover of equipment bought with public money, the instruments' total value is not covered.

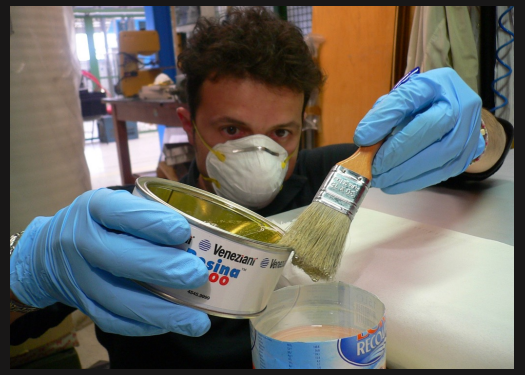
Also, as Völk points out, money is not the only problem when replacing damaged instruments. "They are not off the shelf," he points out. Laboratory staff who built them are not necessarily available to rebuild them.

Simultaneous Multiwavelength Observations of Markarian 421 During Outburst

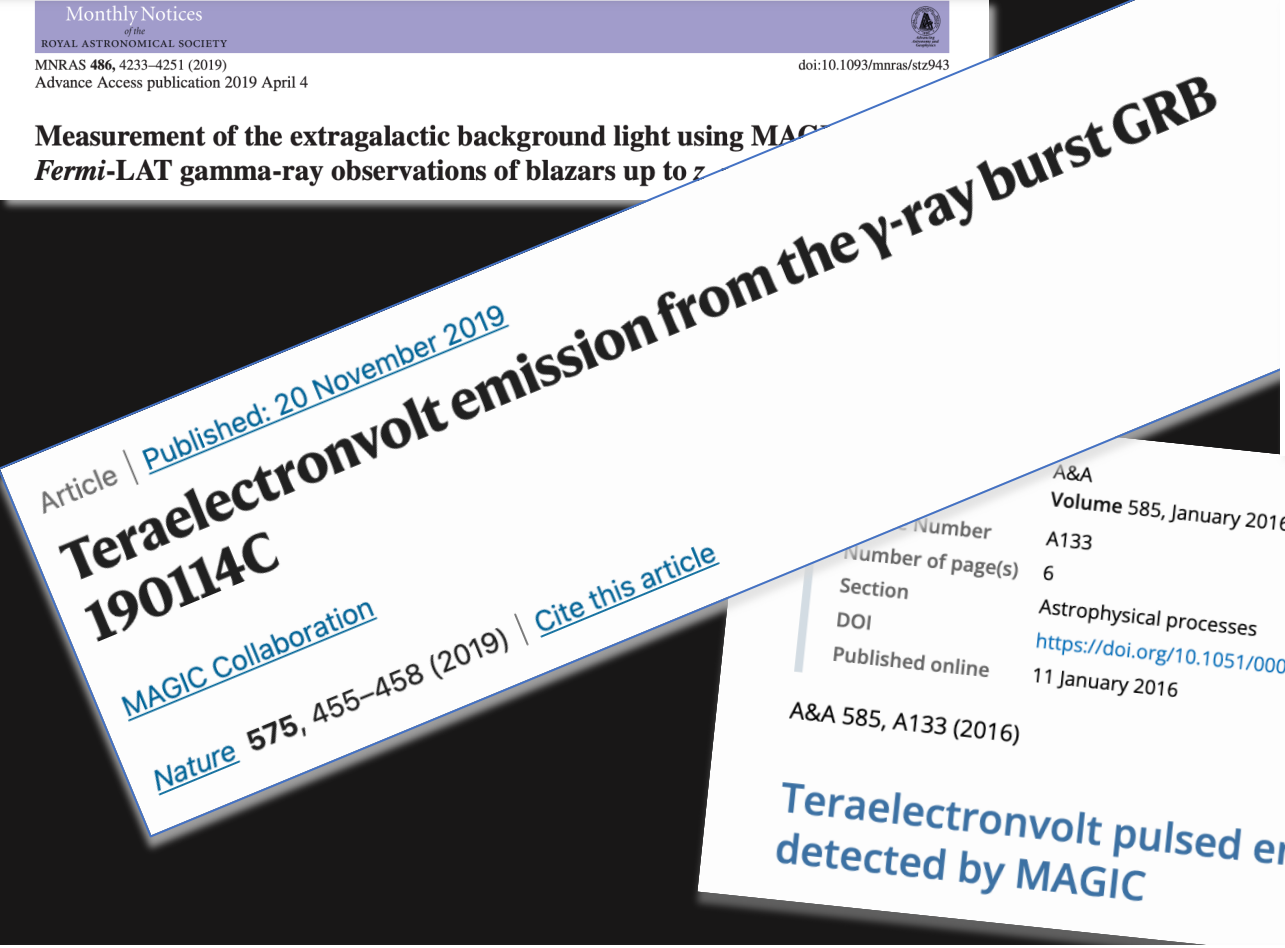
V. A. Acciari[1], E. Aliu[17], T. Aune[2], M. Beilicke[3], W. Benbow[1], M. Böttcher[4], S. M. Bradbury[5], J. H. Buckley[3], V. Bugaev[3], Y. Butt[6], A. Cannon[7], O. Celik[8], A. Cesarini[9], Y. C. Chow[8], L. Ciupik[10], P. Cogan[11], P. Colin[12], W. Cui[13*], R. Dickherber[3], C. Duke[15], A. D. Falcone[30], S. J. Fegan[8], J. P. Finley[13], G. Finnegan[12], P. Fortin[16], L. Fortson[10], A. Furniss[2], D. Gall[13*], G. H. Gillanders[9], J. Grube[7], R. Guenette[11], G. Gyuk[10], D. Hanna[11], J. Holder[17], D. Horan[18], C. M. Hui[12], T. B. Humensky[19], P. Kaaret[20], N. Karlsson[10], M. Kertzman[21], D. Kieda[12], J. Kildea[1], A. Konopelko[22], H. Krawczynski[3], F. Krennrich[23], M. J. Lang[9], S. LeBohec[12], G. Maier[11], A. McCann[11], J. Millis[24], P. Moriarty[25], R. A. Ong[8], A. N. Otte[2], D. Pandel[20], J. S. Perkins[1], A. Pichel[26], M. Pohl[23], J. Quinn[7], K. Ragan[11], L. C. Reyes[27], P. T. Reynolds[28], E. Roache[1], H. J. Rose[5], M. Schroedter[23], G. H. Sembroski[13], A. W. Smith[29], D. Steele[10], S. P. Swordy[19], M. Theiling[1], J. A. Toner[9], A. Varlotta[13], S. Vincent[12], S. P. Wakely[19], J. E. Ward[7], T. C. Weekes[1], A. Weinstein[8], T. Weisgarber[19], D. A. Williams[2], S. Wissel[19], B. Zitzer[13]
(The VERITAS Collaboration),
I. de la Calle Perez[31], A. Ibarra[31], and P. Rodriguez[31]
and

ABSTRACT

We report on the results of two coordinated multiwavelength campaigns that focused on the blazar Markarian 421 during its 2006 and 2008 outbursts. These campaigns obtained UV and X-ray data using the *XMM-Newton* satellite, while the gamma-ray data were obtained utilizing three imaging atmospheric Cerenkov telescopes, the *Whipple* 10m telescope and *VERITAS*, both based in Arizona, as well as the *MAGIC* telescope, based on La Palma in the Canary Islands. The coordinated effort between the gamma-


Venezian


MAGIC-I first movement



Letter | Published: 14 April 2022

Proton acceleration in thermonuclear nova explosions revealed by gamma rays

V. A. Acciari, S. Ansoldi, L. A. Antonelli, A. Arbet Engels, M. Artero, K. Asano, D. Baack, A. Babić, A. Baquero, U. Barres de Almeida, J. A. Barrio, I. Batković, J. Becerra González, W. Bednarek, L. Bellizzi, E. Bernardini, M. Bernardos, A. Berti, J. Besenrieder, W. Bhattacharyya, C. Bigongiari, A. Biland, O. Blanch, H. Bökenkamp, … P. Valisa + Show authors

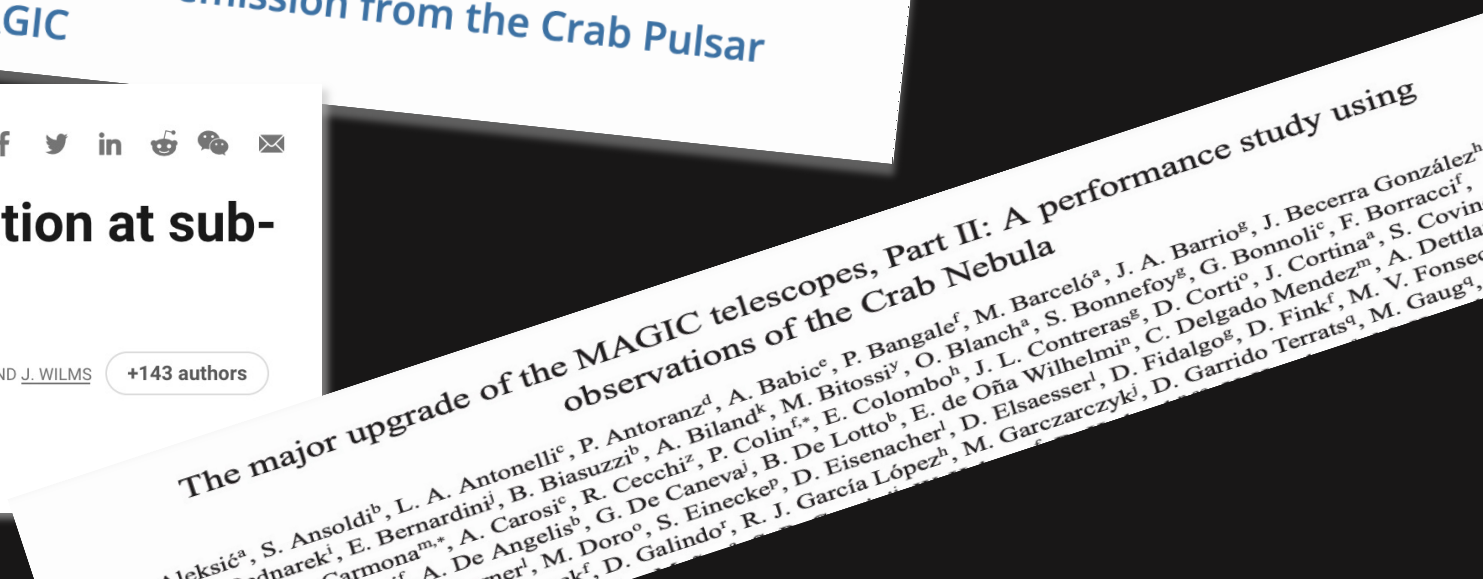
Nature Astronomy **6**, 689–697 (2022) | Cite this article

RESEARCH ARTICLE

Black hole lightning due to particle acceleration at sub-horizon scales

J. ALEKSIĆ, S. ANSOLDI, L. A. ANTONELLI, P. ANTORANZ, A. BABIC, P. BANGALE, J. A. BARRIO, J. BECERRA GONZÁLEZ, W. BEDNAREK, [...], AND J. WILMS +143 authors
Authors Info & Affiliations

SCIENCE · 28 Nov 2014 · Vol 346, Issue 6213 · pp. 1080-1084 · DOI: 10.1126/science.1256183




CTA
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CTA OBSERVATORY
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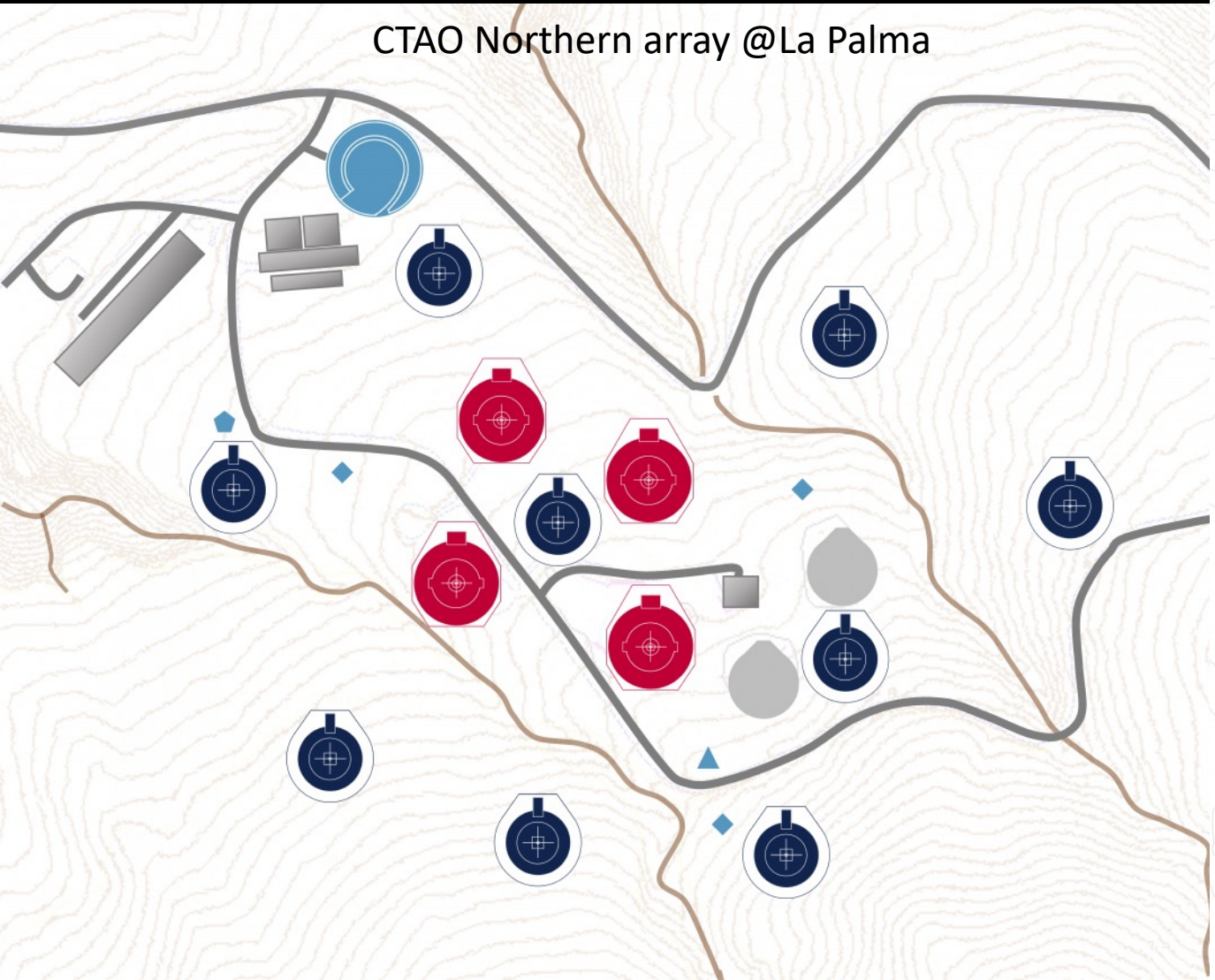
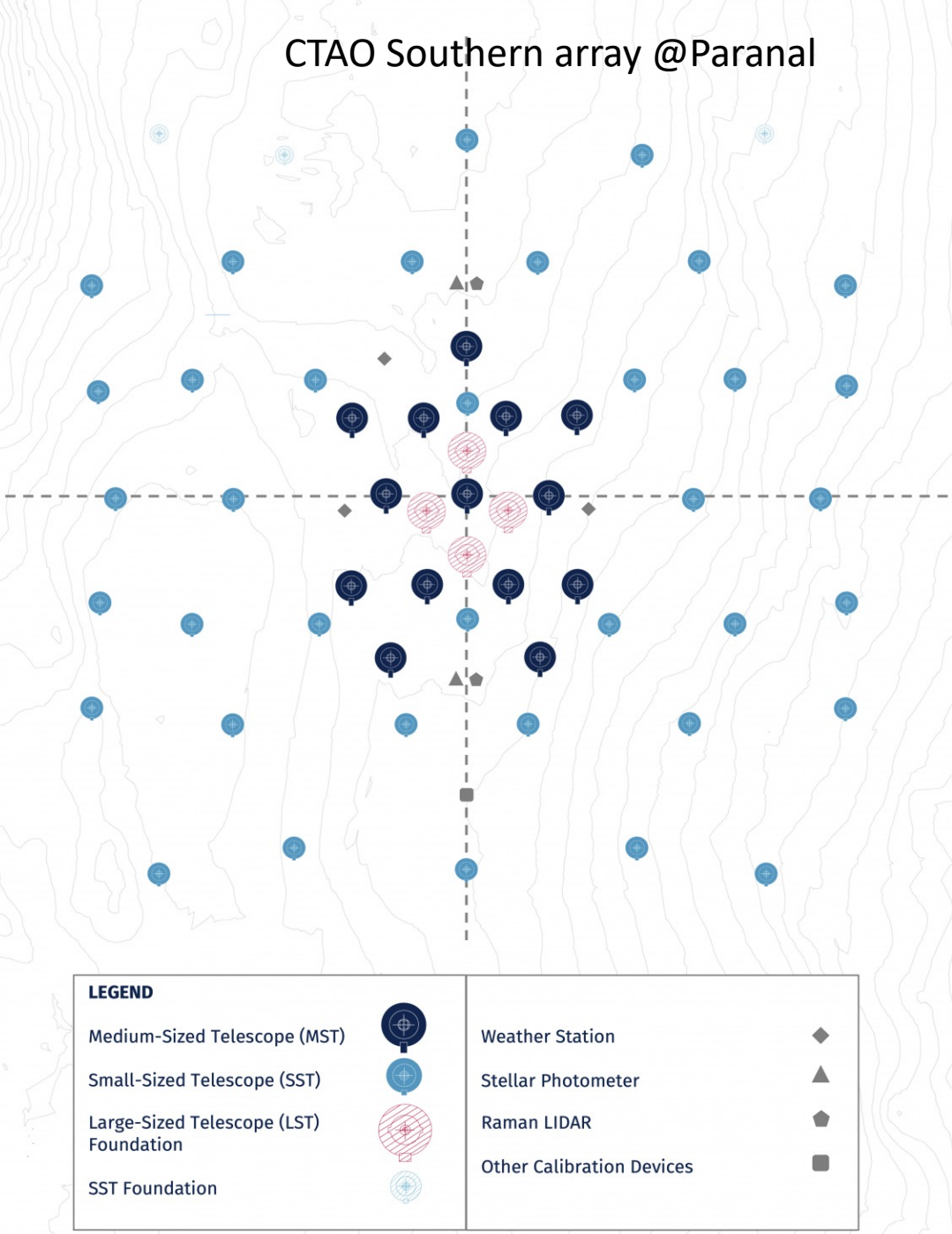
NEW YORK STOCK EXCHANGE

CTAO: a unique observatory

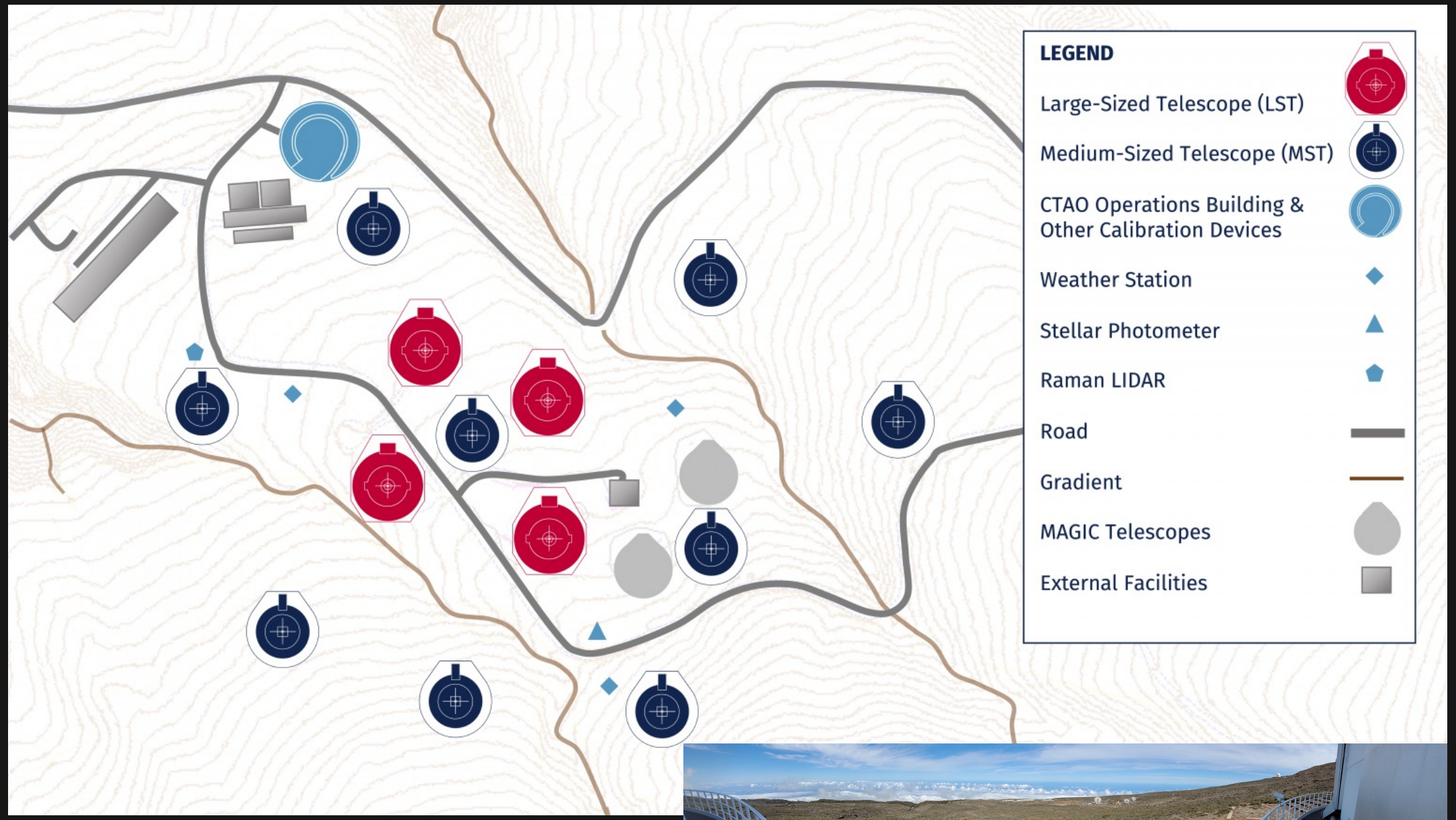
CTAO Northern array @La Palma



CTAO Southern array @Paranal

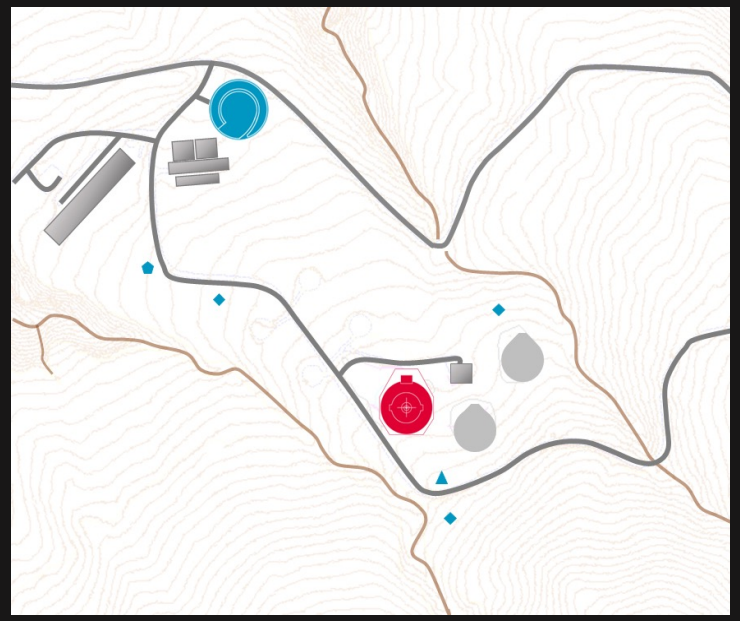


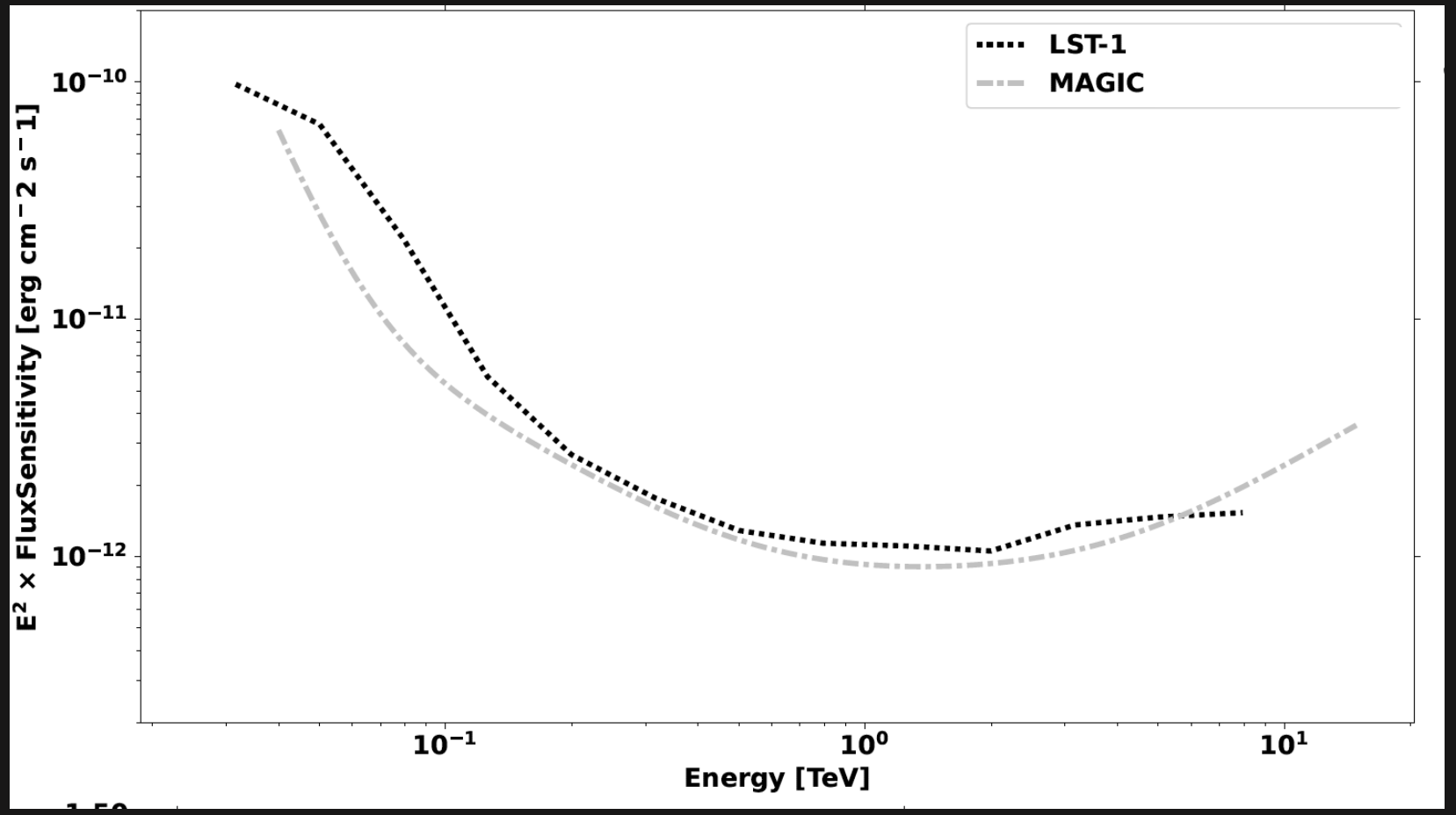
The CTAO Northern array: Alpha Configuration



+ 2 illuminators: likely at the NOT and at the GCT

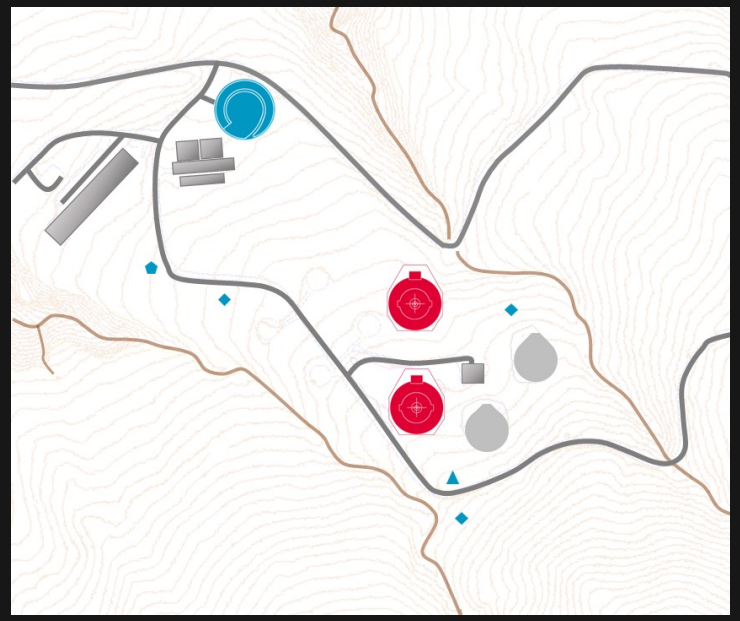
CSVN-00 config:
LSTN-01

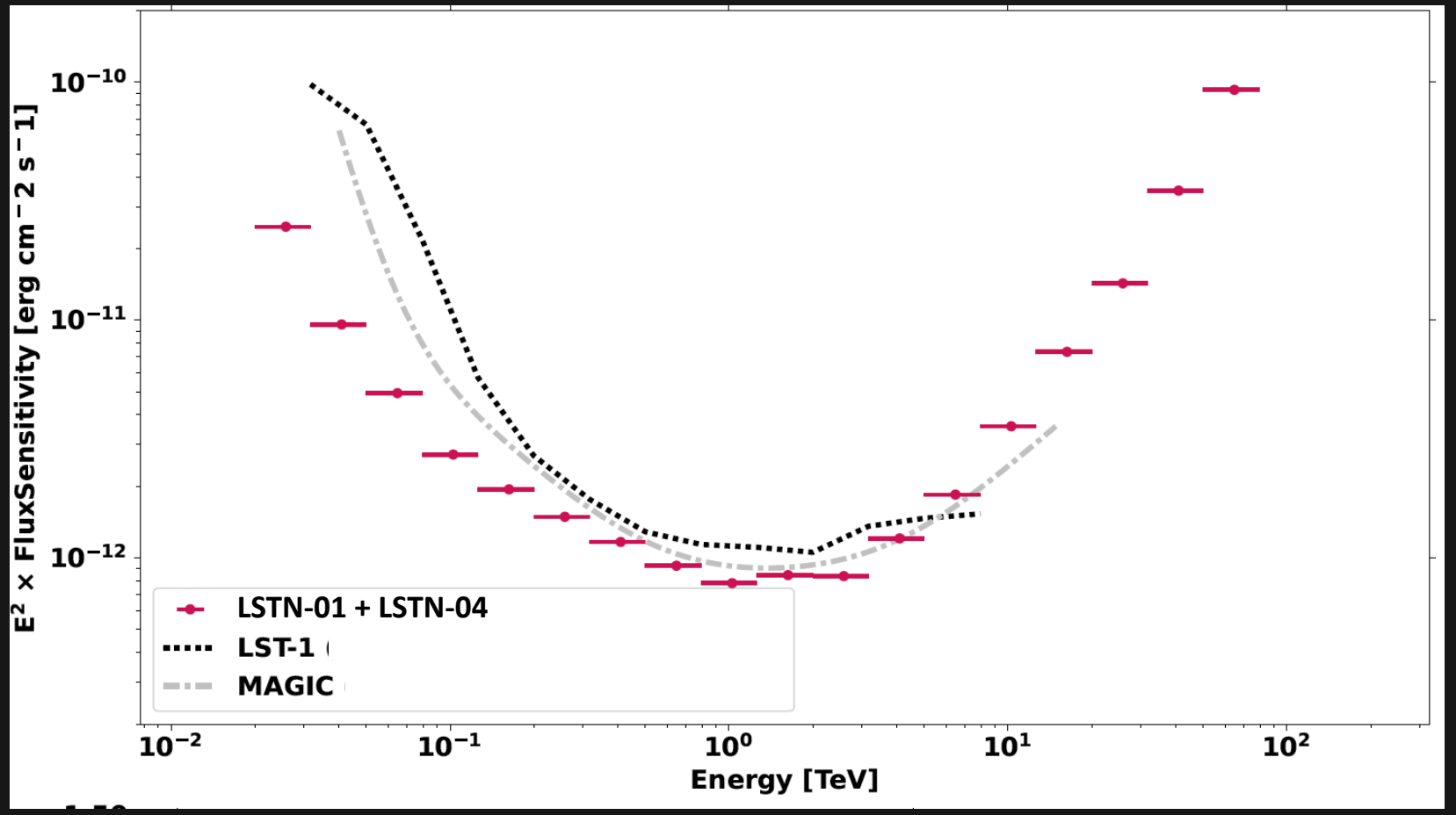




* MAGIC: 10.1016/j.astropartphys.2015.02.005
* LST-1: 10.48550/arXiv.2306.12960

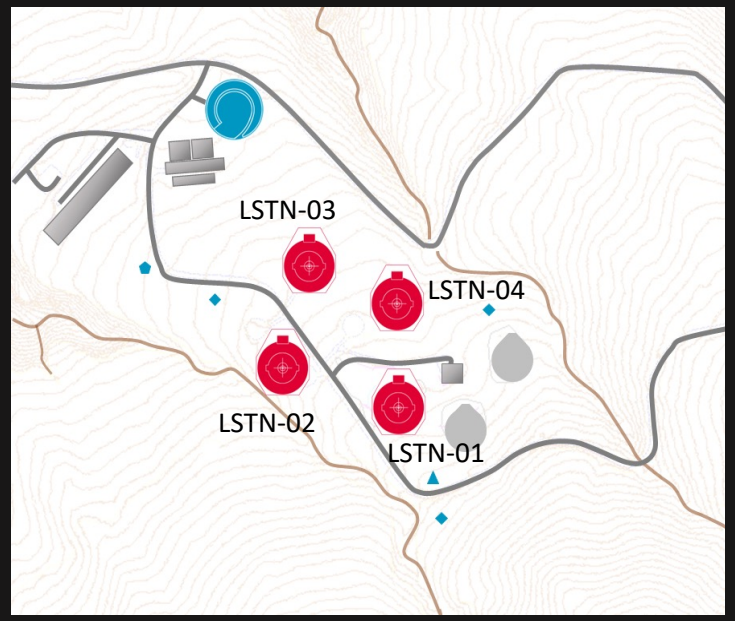
CSVN-01 config:
LSTN-01 + LSTN-04

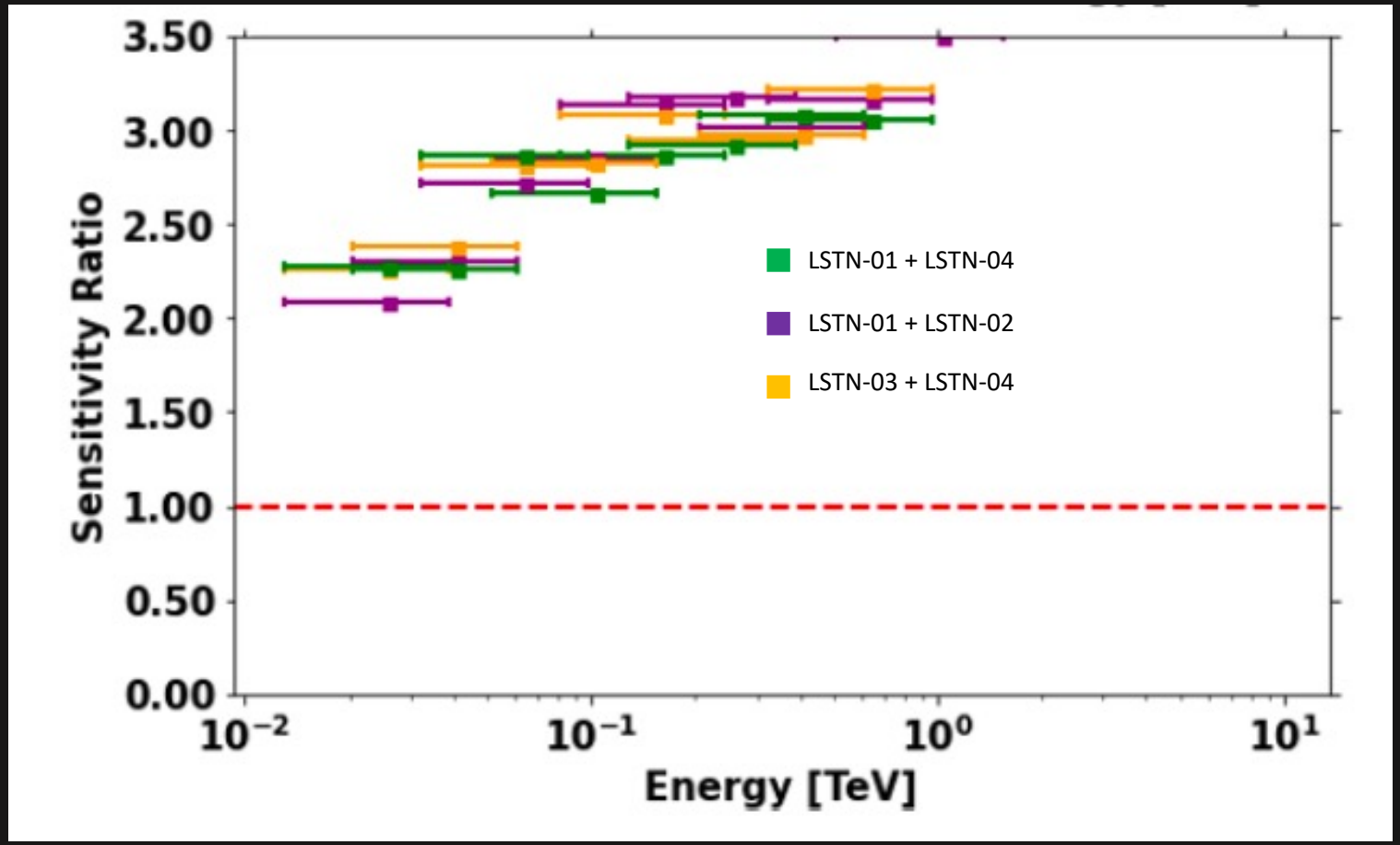




Hereafter PRELIMINARY: First sensitivity curves obtained with pyirf from DL2 simulated data produced with EvtDisplay

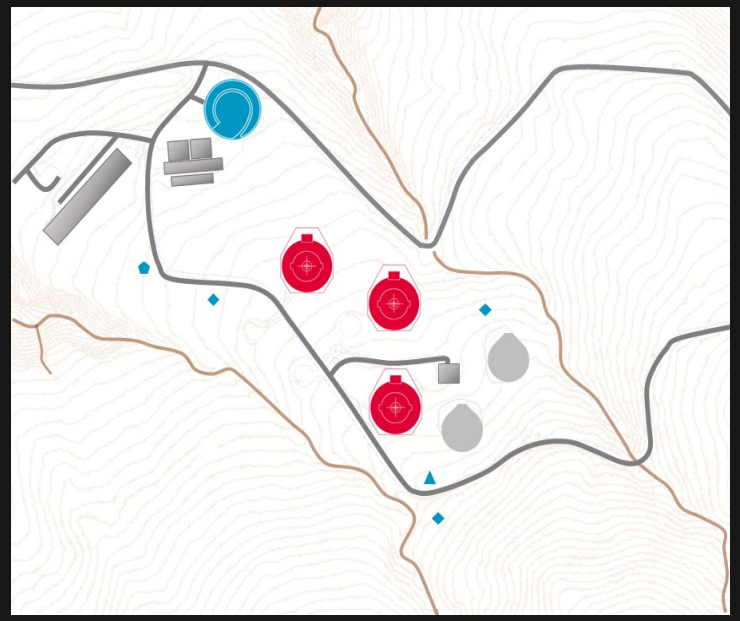
CSVN-01x config:
2 LSTs combinations

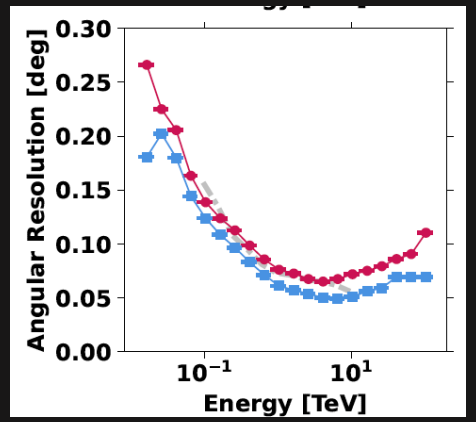


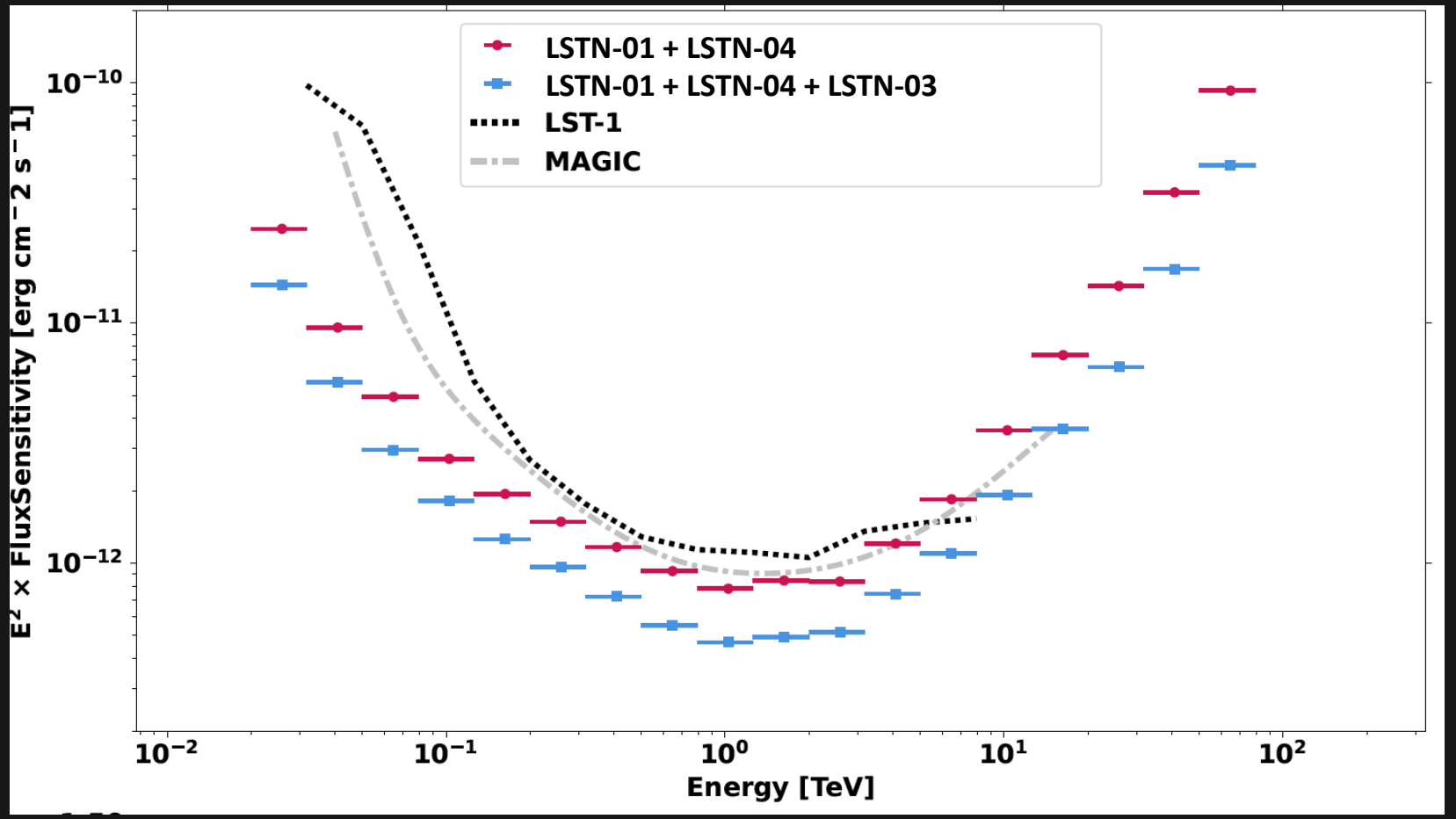


Credits to J. Laguna Miralles

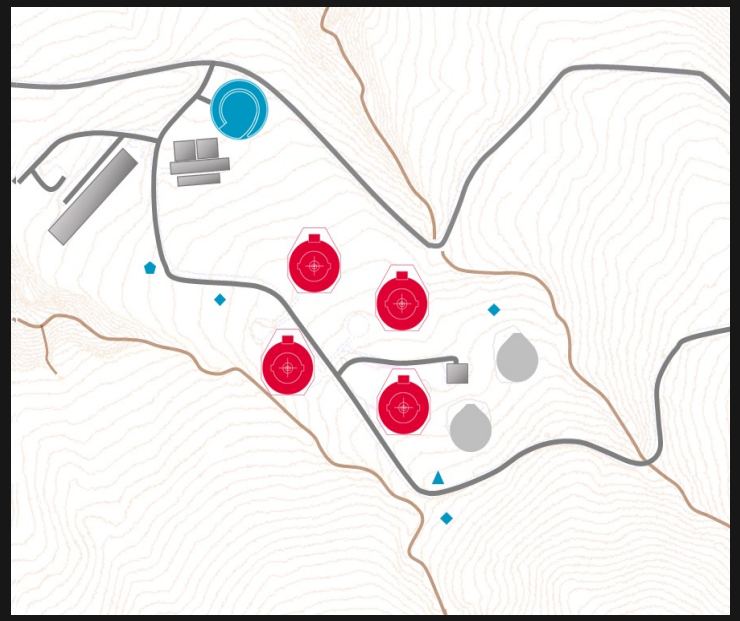
CSVN-02 config:
LSTN-01 + LSTN-04
+ LSTN-03

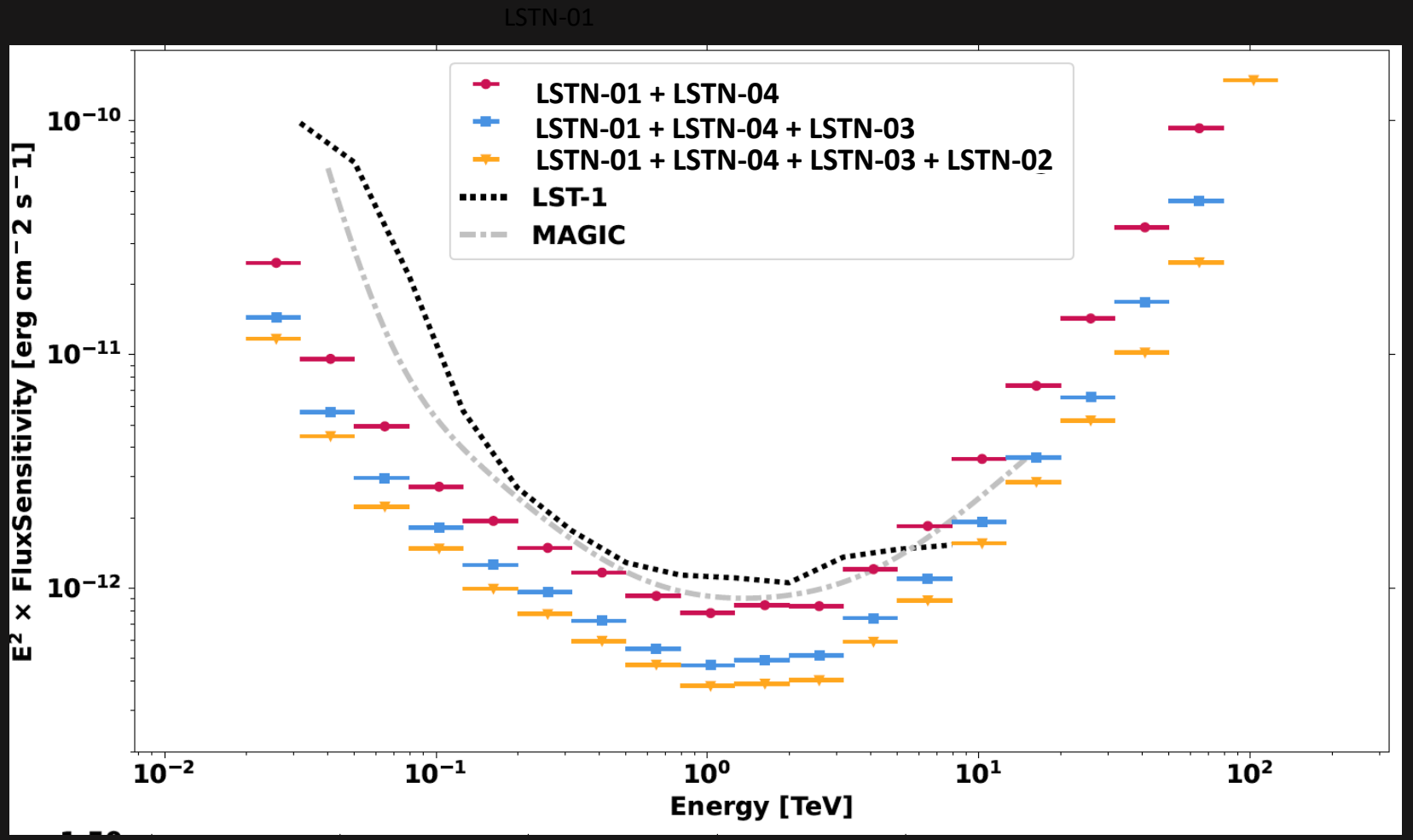




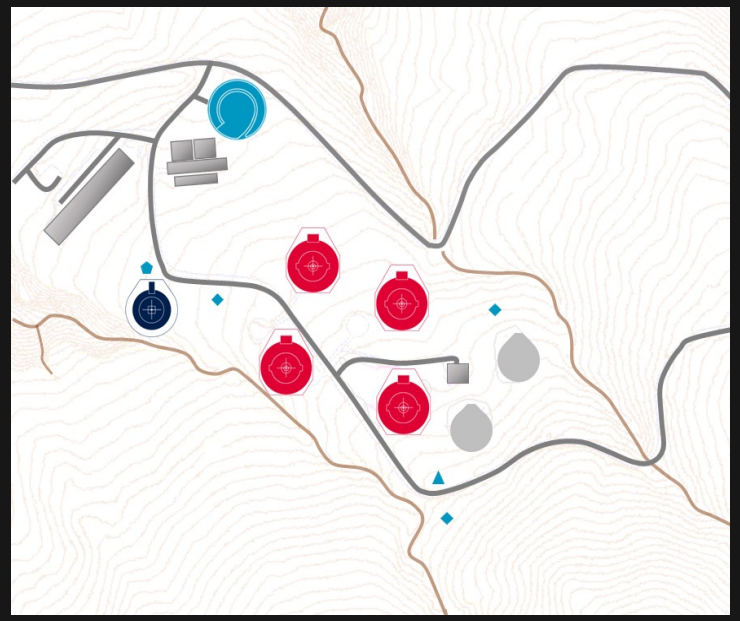


CSVN-03 config:
LSTN-01 + LSTN-04
+ LSTN-03 + LSTN-02



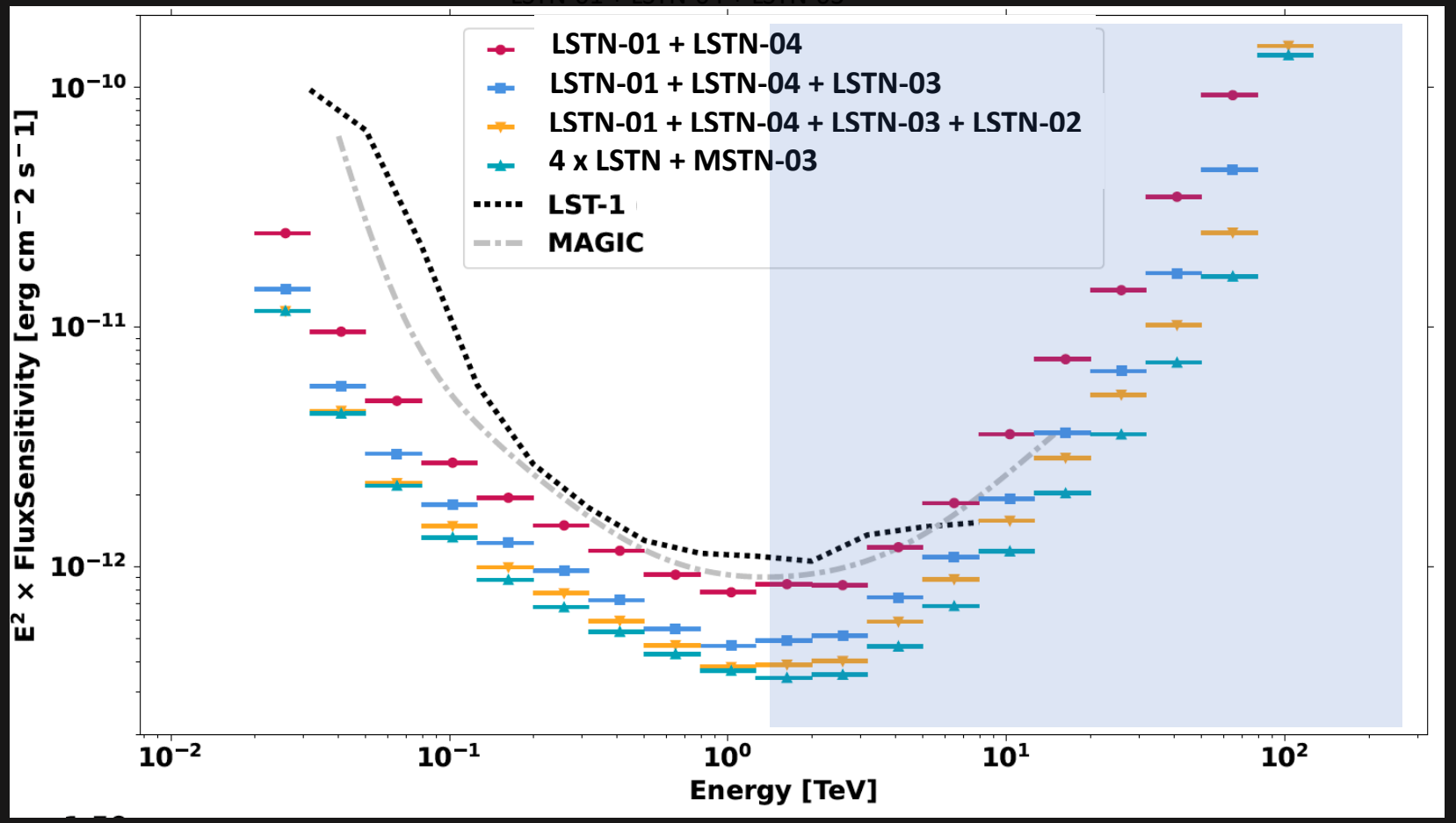


CSVN-04 config:
4 x LSTN + MSTN-03

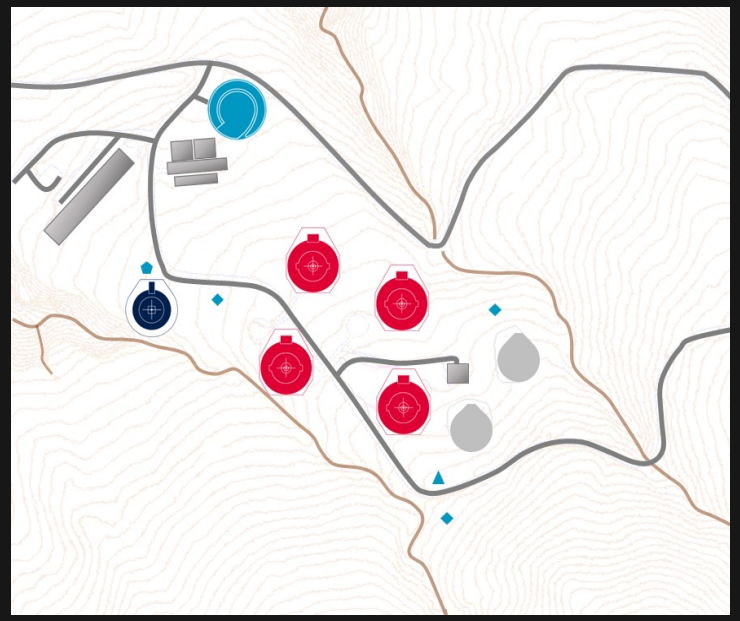


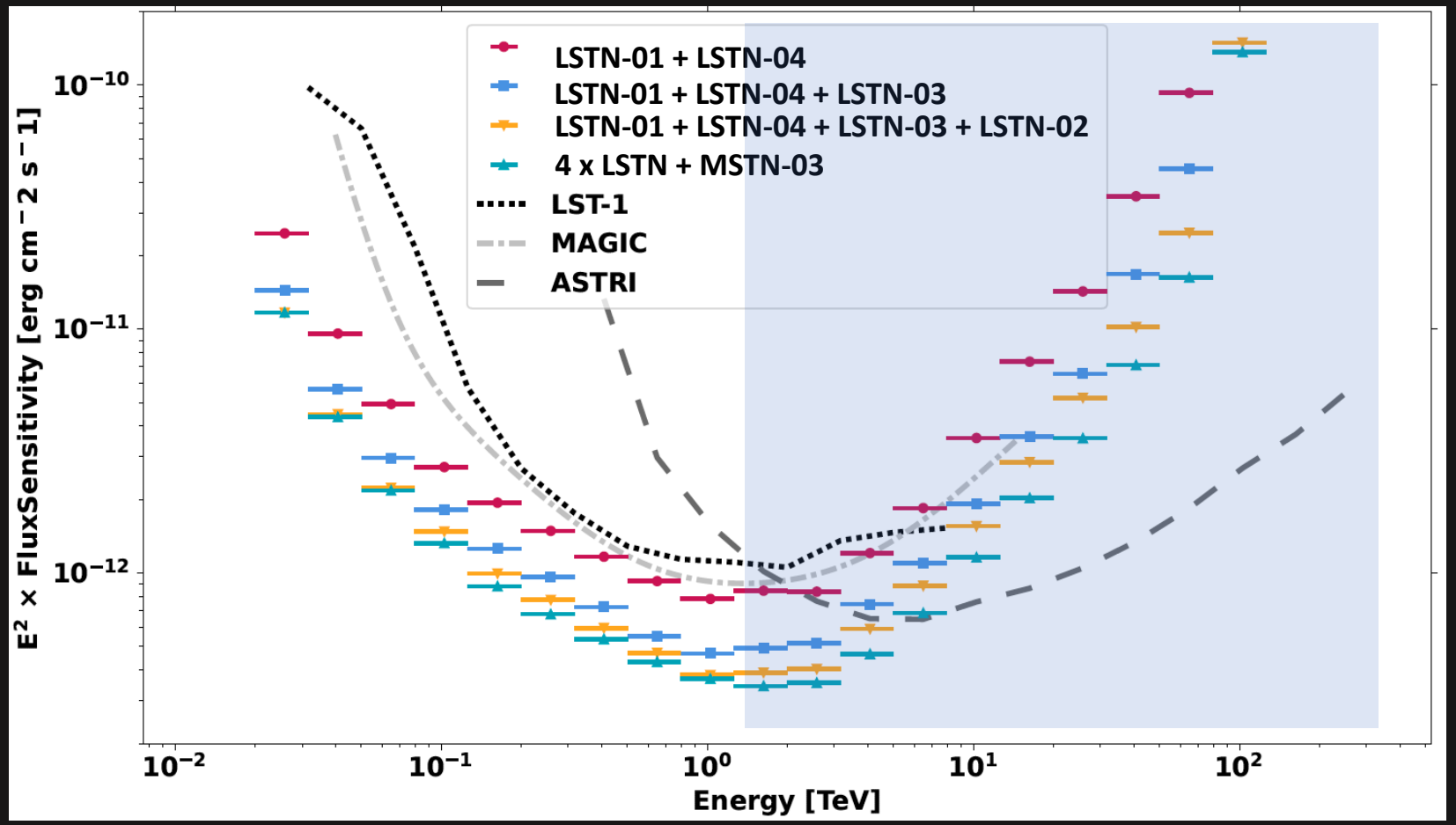
LSTN-01 + LSTN-04

LSTN-01 + LSTN-04 + LSTN-03



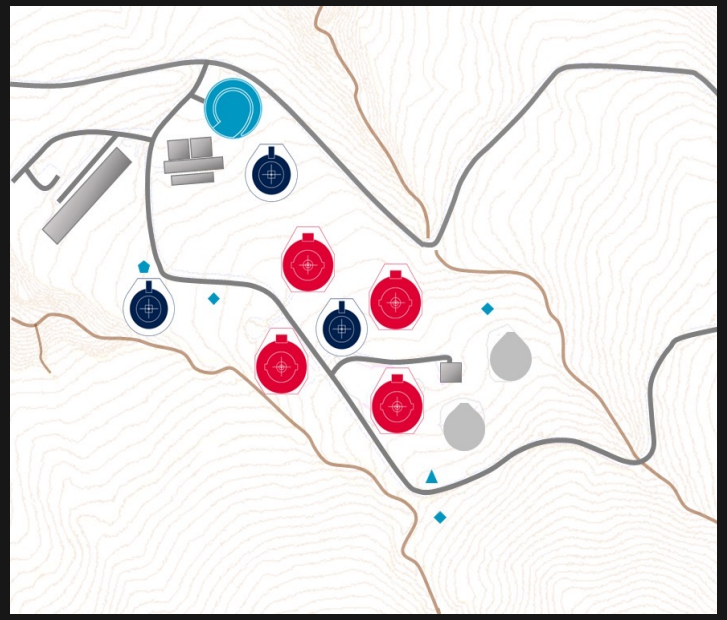
CSVN-04 config:
4 x LSTN + MSTN-03

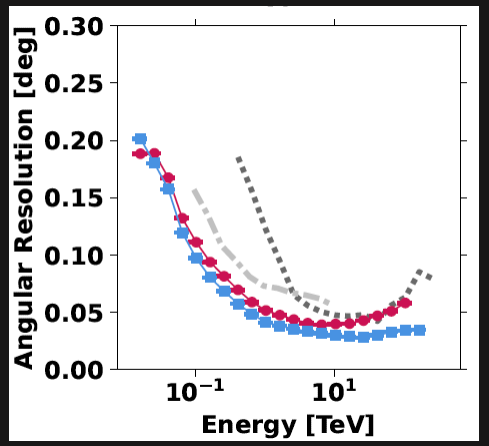


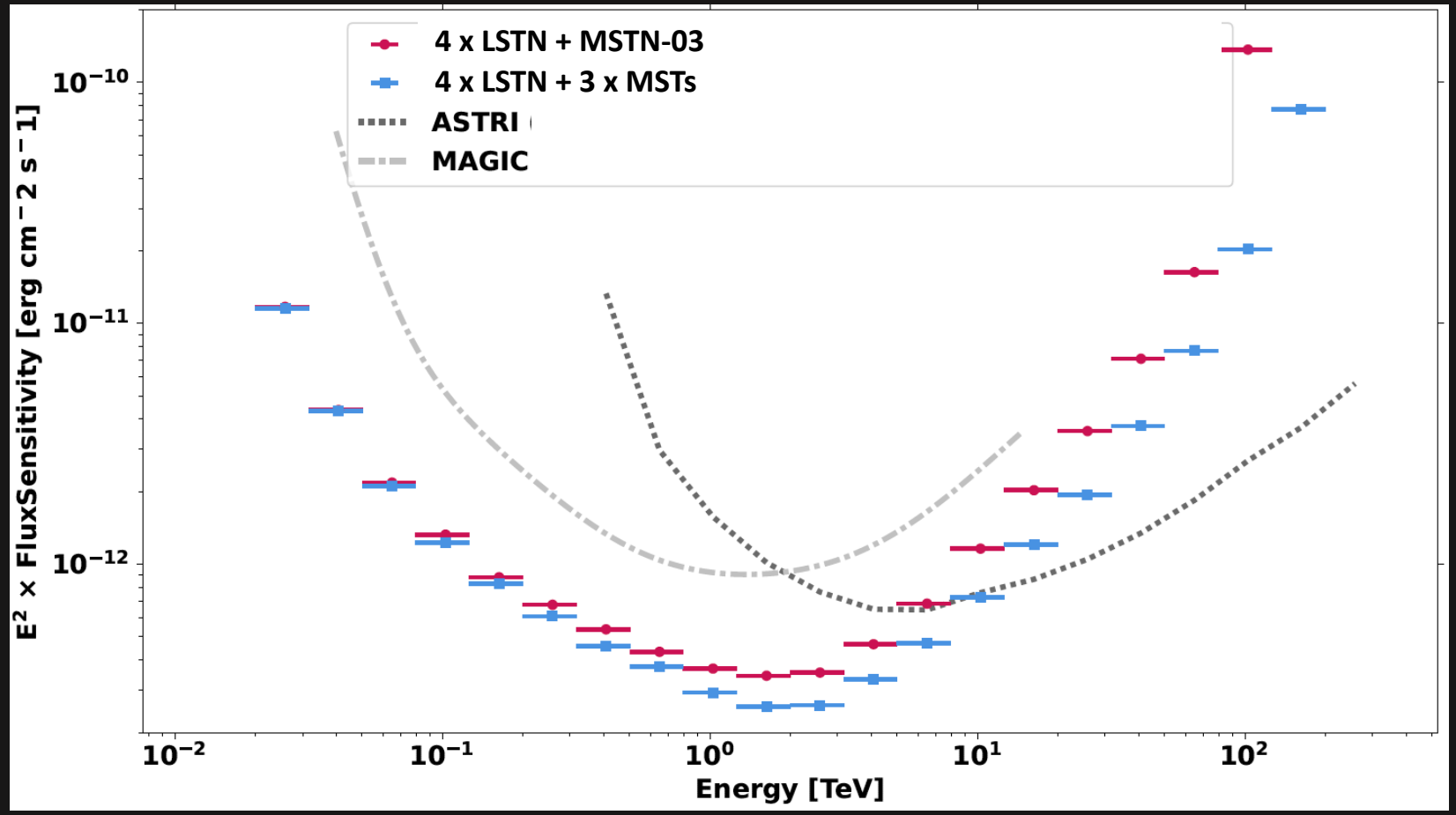


* ASTRI-MiniArray:: 10.1016/j.jheap.2022.05.005

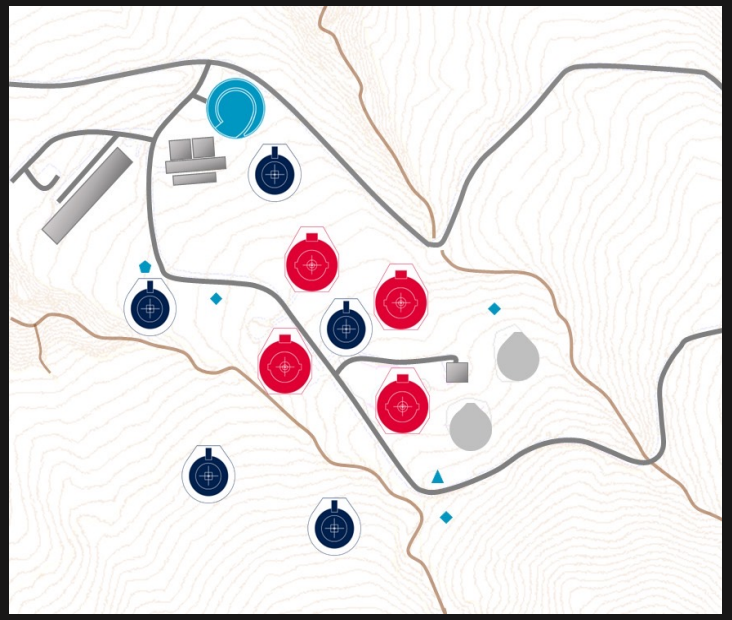
CSVN-06 config:
4 x LSTN + MSTN-03
+ 2 more MSTs

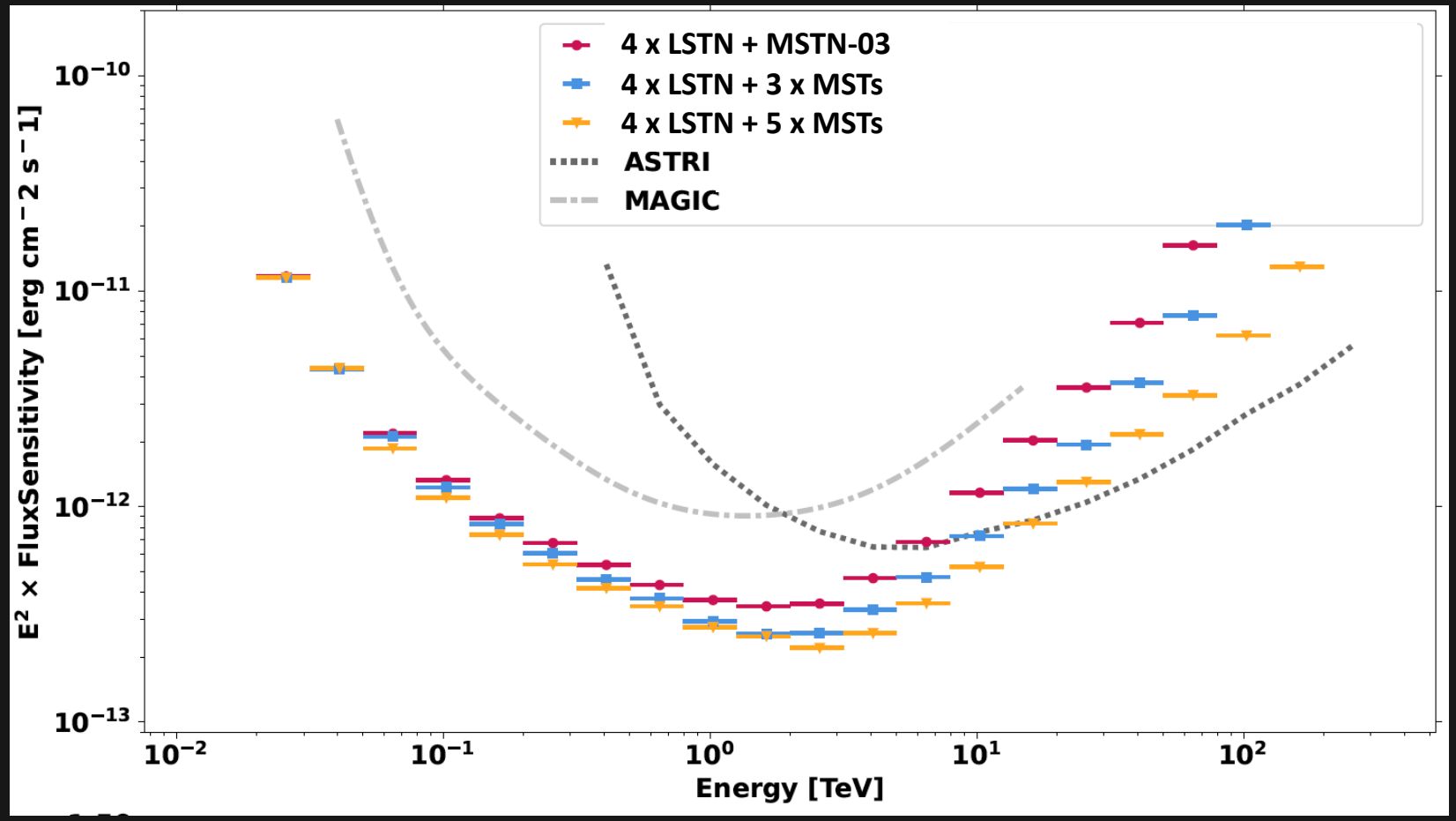




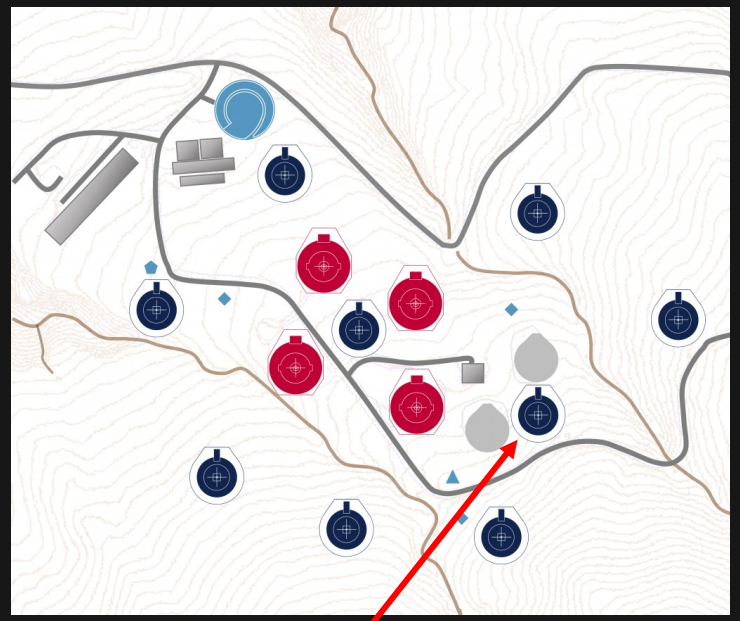


CSVN-06 config:
4 x LSTN + MSTN-03
+ 4 more MSTs

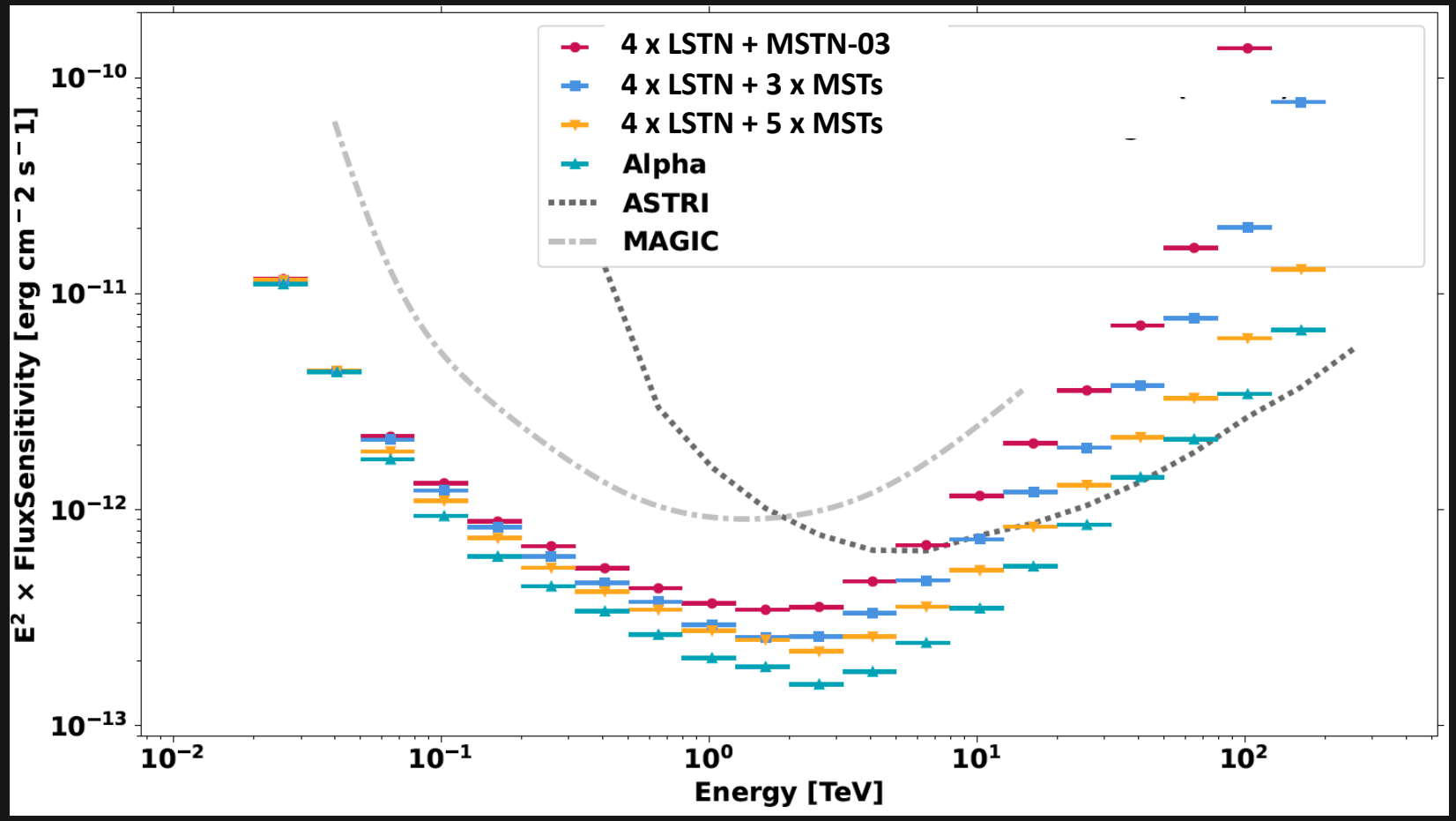




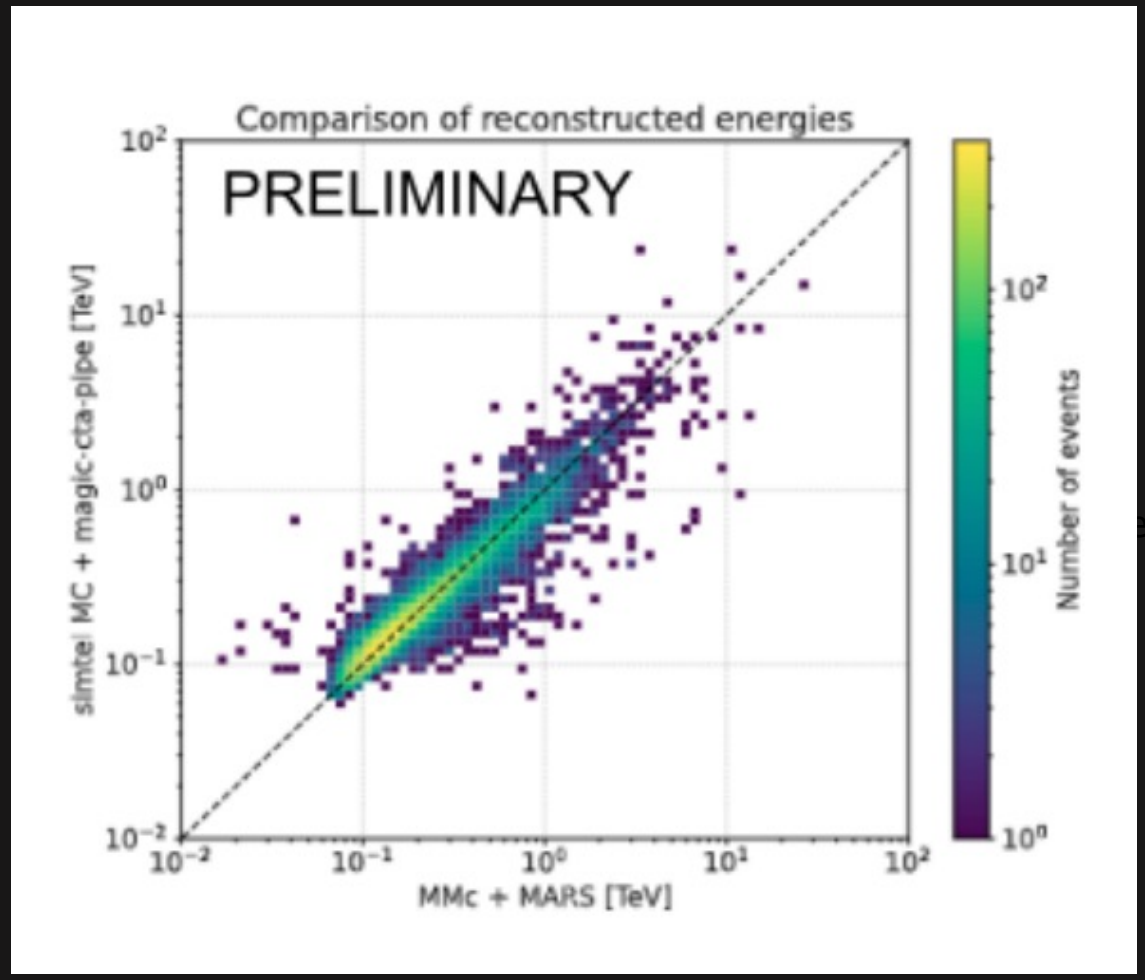
Alpha configuration



the last one



MAGIC – CTAO telescopes

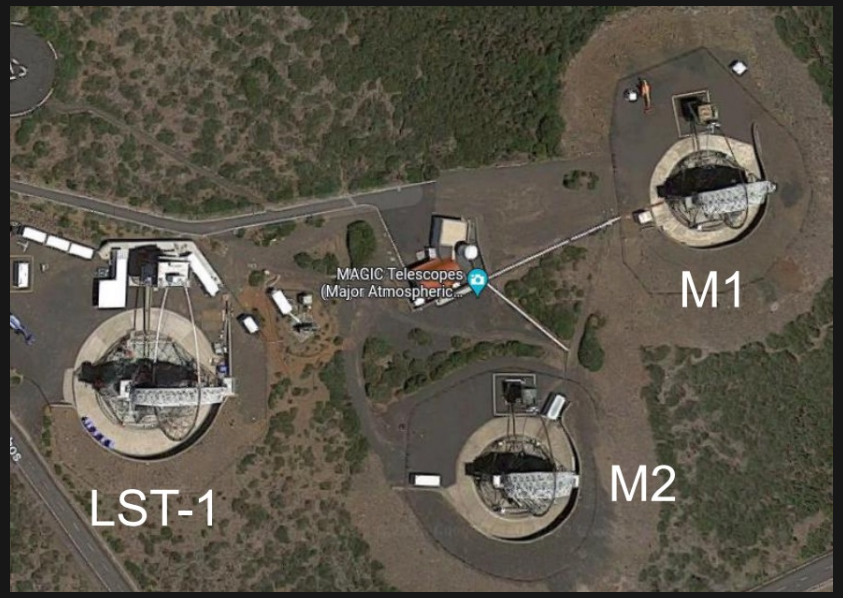


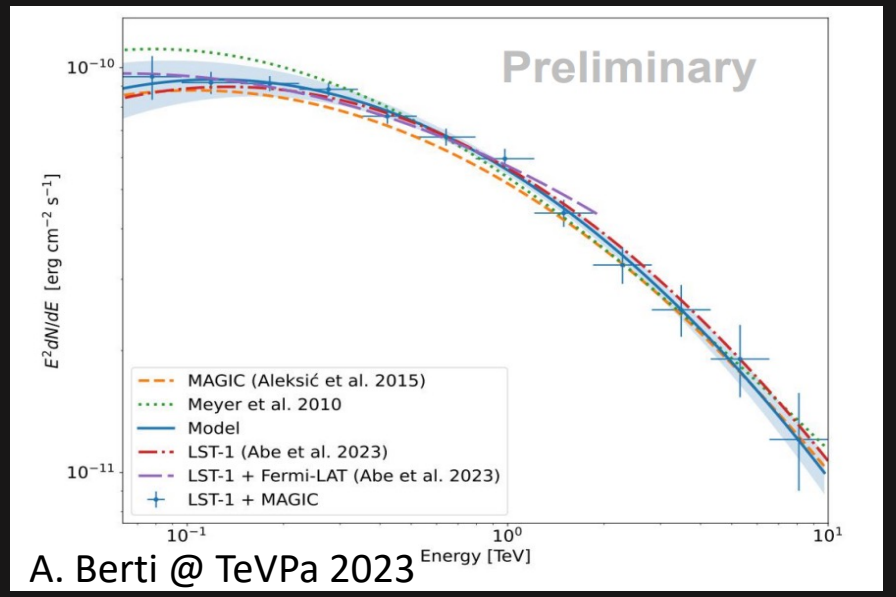
Di Pierro et al 2023

Validation of the Simulation pipeline

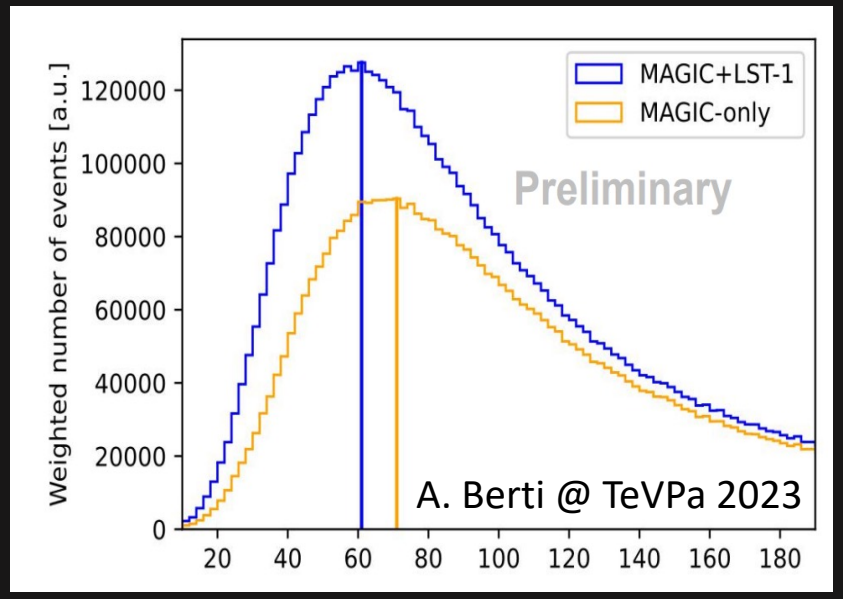
Joint observational programs LST1 - MAGIC

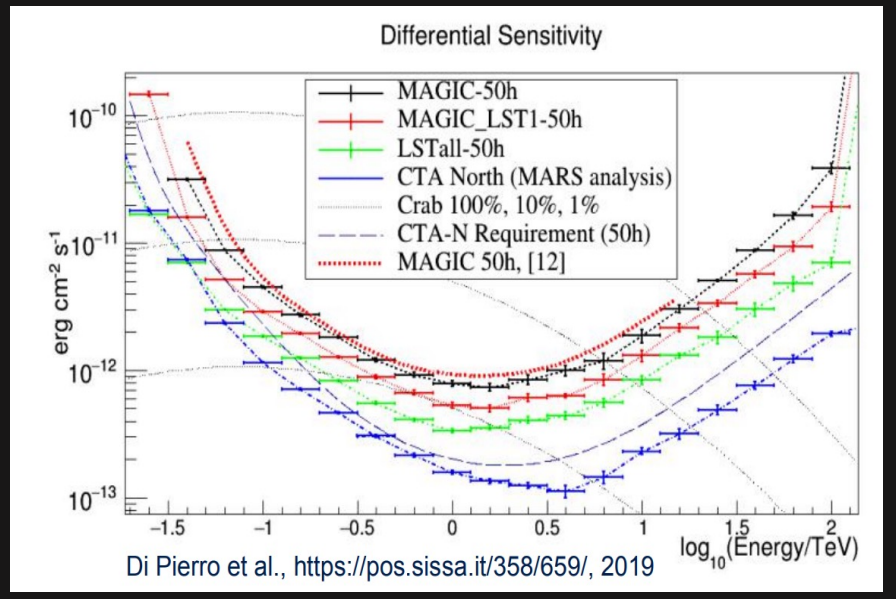
Credits to MAGIC + LST coll





A. Berti @ TeVPa 2023





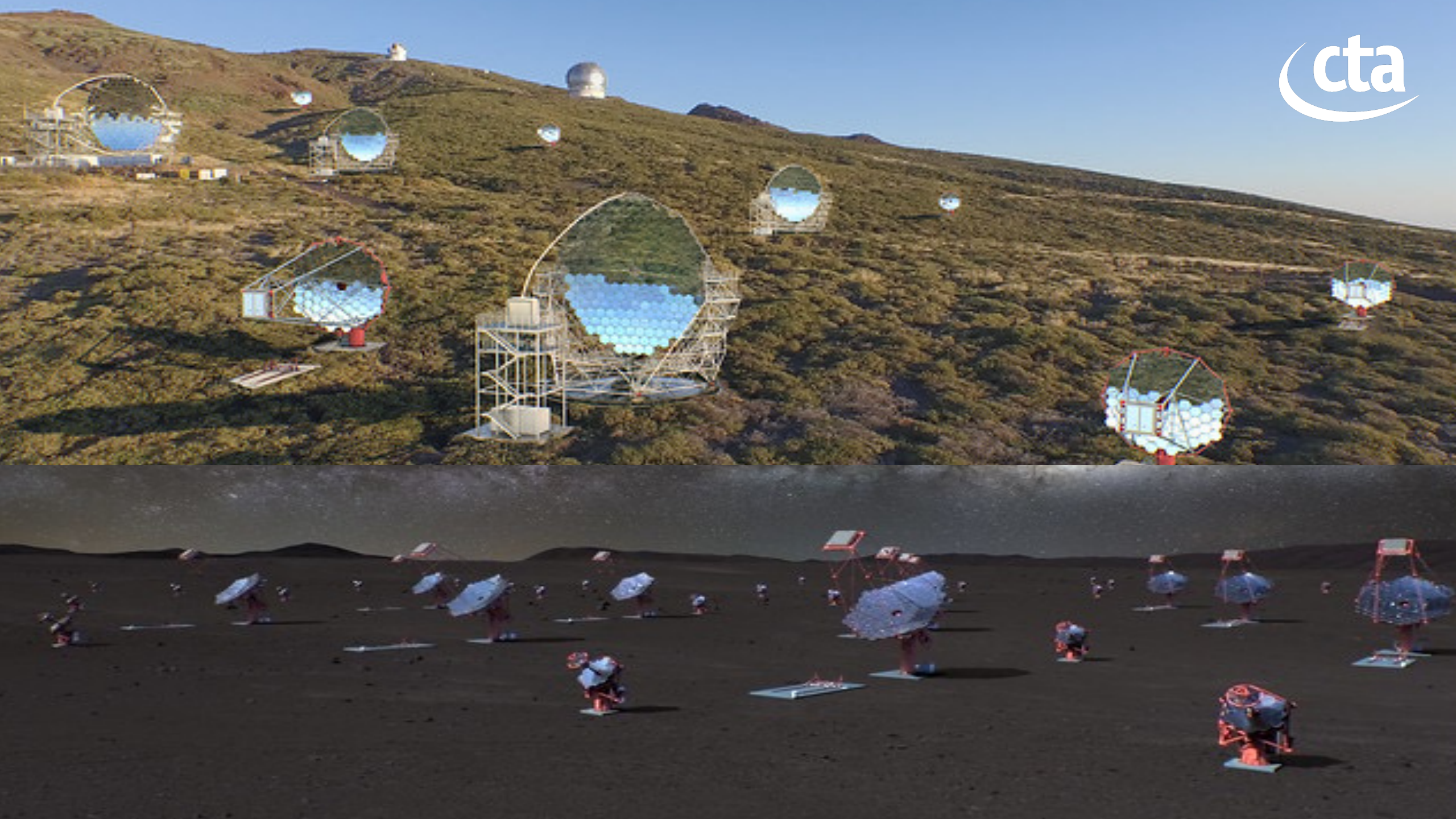
Di Pierro et al., https://pos.sissa.it/358/659/, 2019

Joint analysis with ASTRI-MiniArray

Credits to R. Terrier for the gammapy team

PRELIMINARY

not only transients…


cta

It would not have possible without him!

Photo by Chiara Righi