

Cherenkov Telescope Array Observatory (CTAO) 計画：全体報告 (28)

LST-1

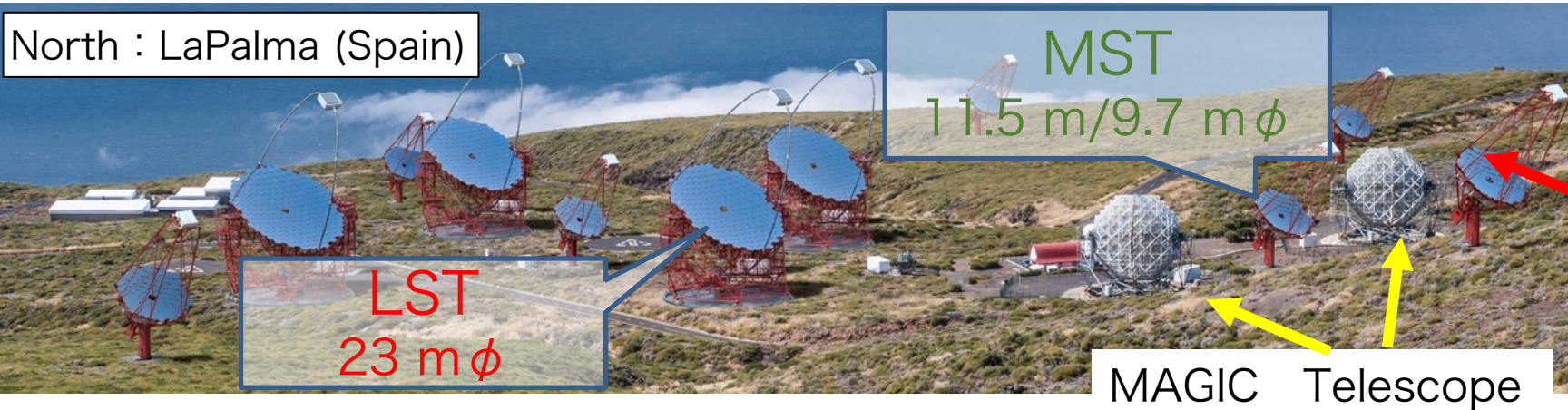
LST-4

LST-2

LST-3

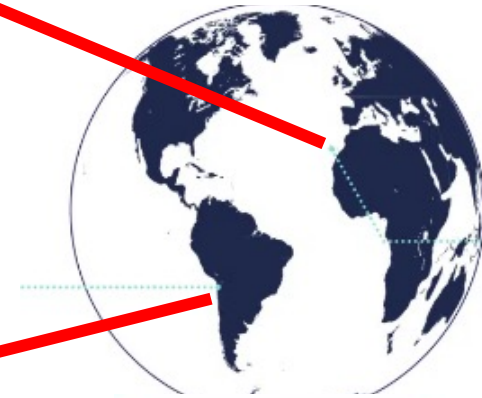
齋藤隆之、窪秀利、手嶋政廣、戸谷友則、野崎誠也、吉越
貴紀(東京大)、野田浩司(千葉大)、吉田龍生(茨城大)、井岡
邦仁(京都大)、田島宏康(名古屋大)、山本常夏(甲南大)、
他CTA Consortium

North : LaPalma (Spain)

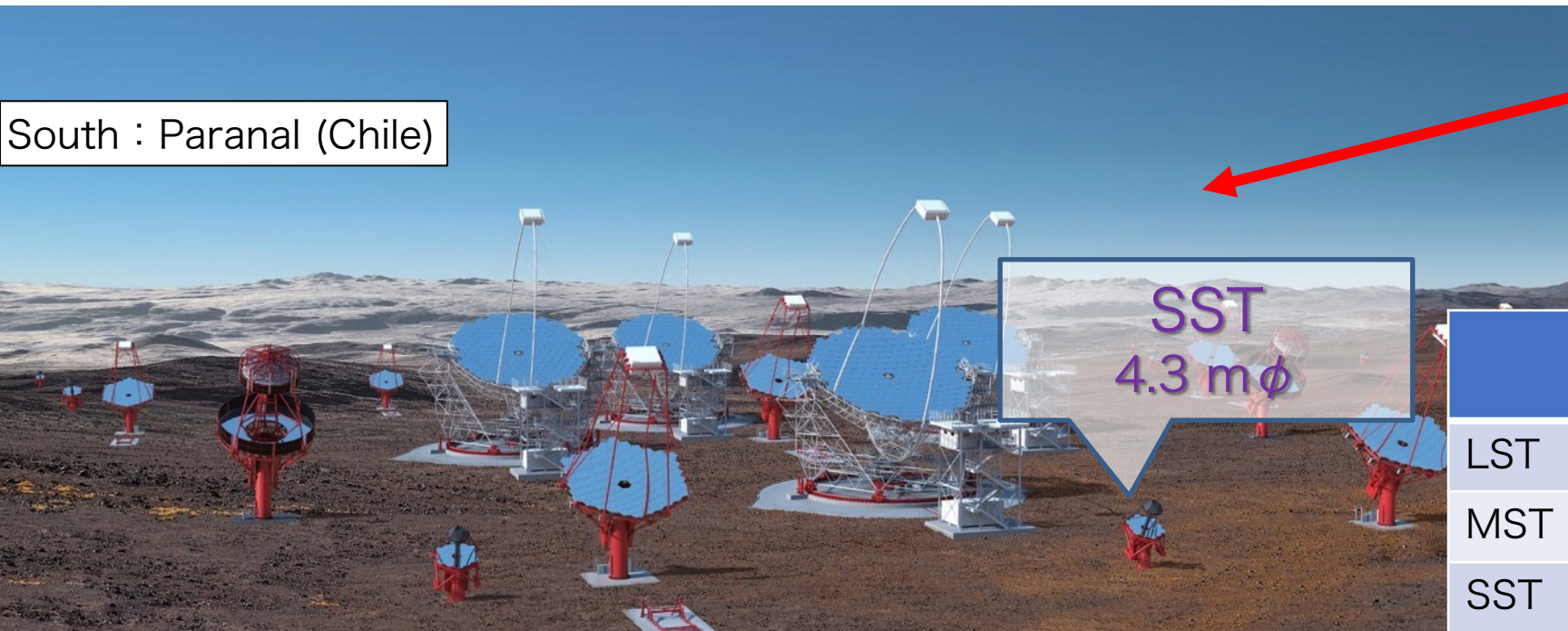


North

Array Coordinates 0.5 km x 0.5 km
Latitude: 28° 45' 43.7904" North
Longitude: 17° 53' 31.218" West



South : Paranal (Chile)

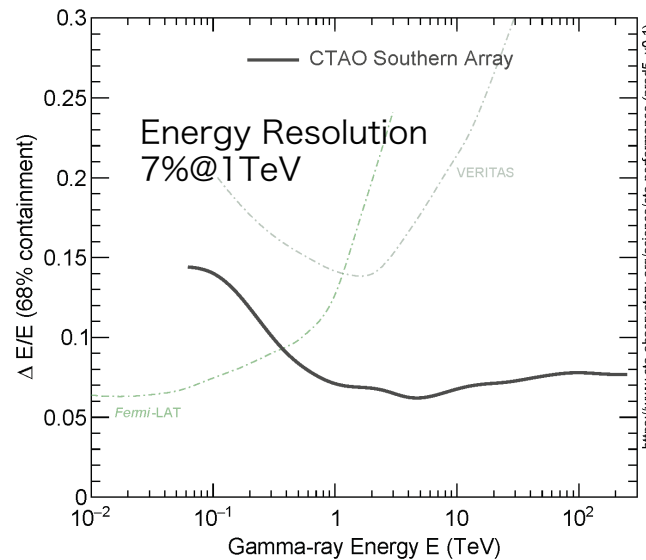
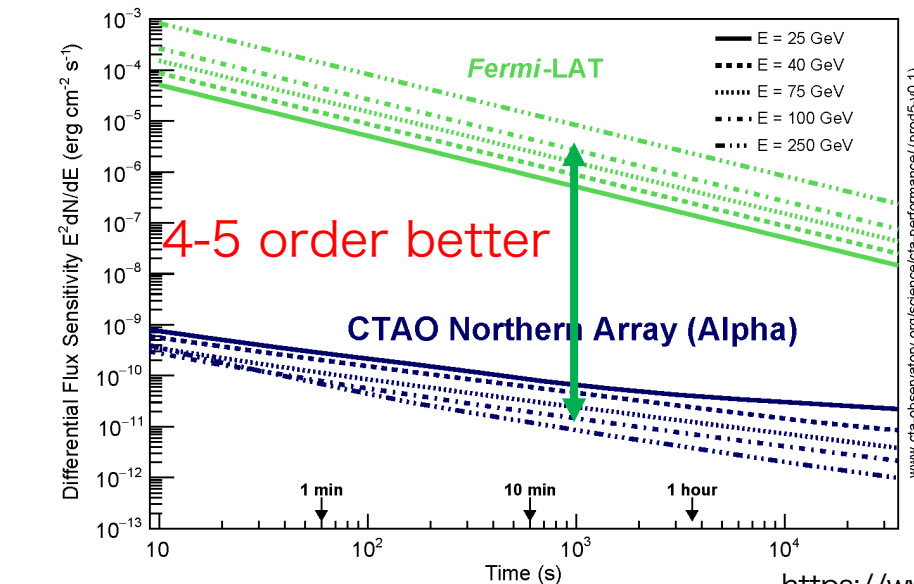
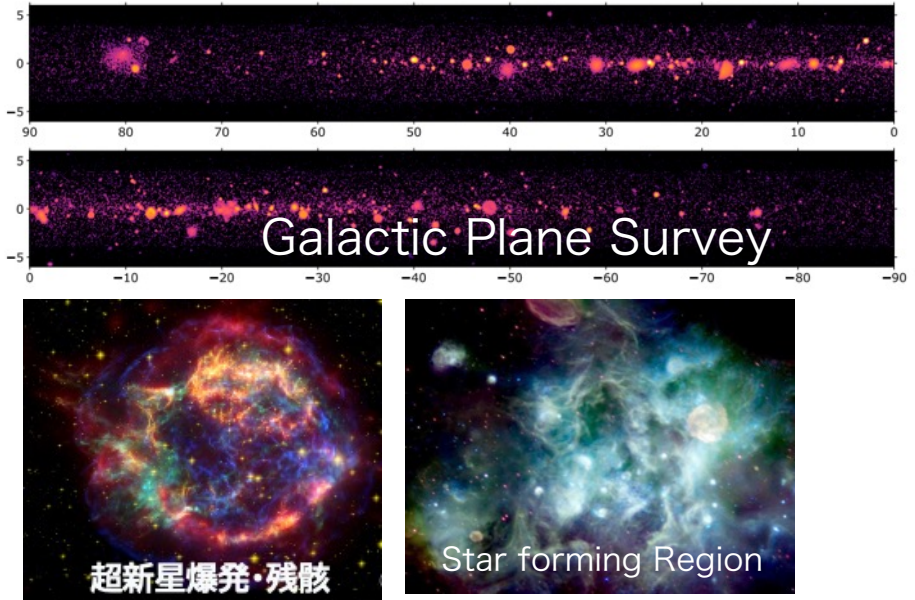
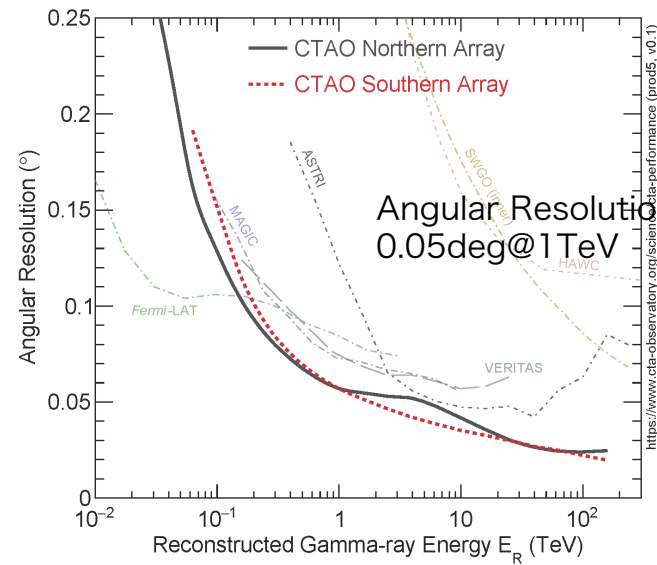
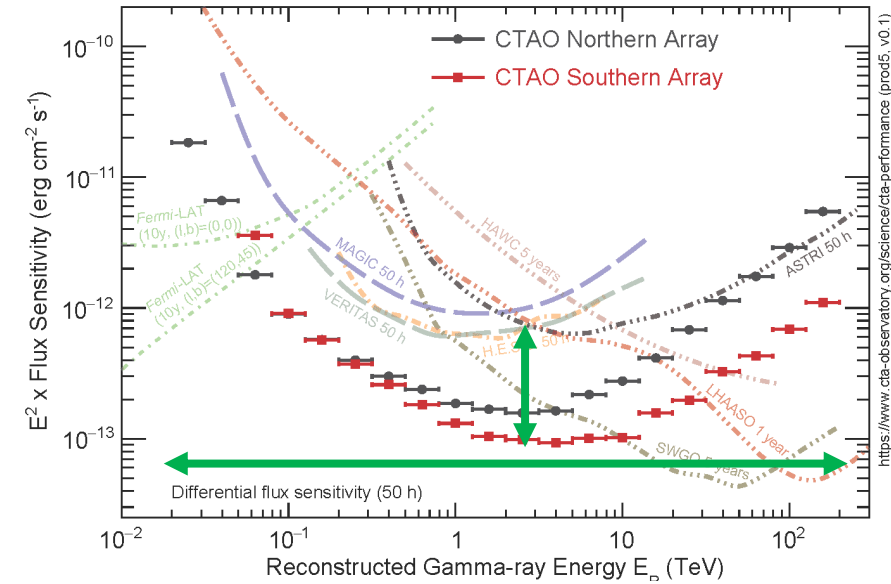


South

Array Coordinates 2 km x 2 km
Latitude: 24° 41' 0.34" South
Longitude: 70° 18' 58.84" West

	#tel (N)	#tel (S)	Energy [TeV]	FoV [deg]
LST	4	2→4	0.02 - 3	4.5
MST	9→15	14→25	0.08 - 50	7.5
SST	0	42→70	1 - 300	10.5

"Alpha" Configuration Operation starts in ~2030.



CTAO

CTAO Consortium

25か国

>1500名





2025年1月7日 CTAO ERIC発足
(European Research Infrastructure Consortium)
EU法に基づく法人、税制優遇

CTA-Japan 127名

青山大	大林花織, 佐藤優理, 田中周太, 山崎了, 吉田篤正	東大宇宙線研	浅野勝晃, 阿部正太郎, 栗井恭輔, 糸川拓海, 猪目祐介, 大石理子, 大岡秀行, 大谷恵生, 窪秀利, 齋藤隆之, 武石隆治, 手嶋政廣, 戸村友宣, 野崎誠也, バクスター ジョシュア 稜, 橋山和明, 吉越貴紀, Y. Chai, D. Hadasch, D. Mazin, M. Strzys, I. Vovk, P. K. H. Yeung
茨城大	片桐秀明, 柳田昭平, 吉田龍生		
宇宙研	鈴木 寛大, 林克洋		
大阪大	井上芳幸, 藤原立樹, 松本浩典		共同研究員：岡知彦, 櫻井駿介, 広谷幸一, 深見哲志, 村瀬孔大, K. S. Cheng, X. Cui, D. C. Y. Hui, A. K. Kong, P. Majumdar, J. Takata, T. P. H. Tam, W. Tian, L. Wan
神奈川大	辻直美		
北里大	村石浩	東北大	當真賢二, 石崎渉
岐阜大	佐野栄俊	徳島大	折戸玲子
九州大	稻田知大	名大理	立原研悟, 早川貴敬, 福井康雄, 山本宏昭
京大基研	井岡邦仁	名大ISEE	安藤大地, 奥村暁, 重谷優斗, 河原崎琉, 高橋光成, 田島宏康, S. Bang
京大理	鶴剛, 寺内健太, 李兆衡		
熊本大	高橋慶太郎	広大先理工	今澤遼, 榎木大修, 木坂将大, 須田祐介, 高橋弘充, 仲野悟帆, 橋爪大樹, 深沢泰司, A. Roy
KEK	田中真伸		
甲南大	井上剛志, 田中孝明, 千川道幸, 溝手雅也, 山本常夏	広大宇科セ	水野恒史
国立天文台	郡和範	宮崎大	森浩二
埼玉大	勝田哲, 清本拓人, 寺田幸功	山形大	郡司修一, 門叶冬樹, 中森健之
仙台高専	加賀谷美佳, 林航平	山梨学院大	内藤統也, 原敏
千葉大	井上進, 小林志鳳, 野田浩司	横浜国大	廣島渚
東海大	阿部和希, 韓 天舒, 櫛田淳子, 佐藤雄輝, 西嶋恭司, 姚屹	理研	長瀧重博, M. Barkov, G. Ferrand, H. He, E. R. Owen, D. Warren
東大理	大平豊, 立石大, 戸谷友則, 馬場彩	立教大	内山泰伸, 澤田真理, 林田将明
東京都立大	川中宣太, 藤田裕	早稲田大	片岡淳

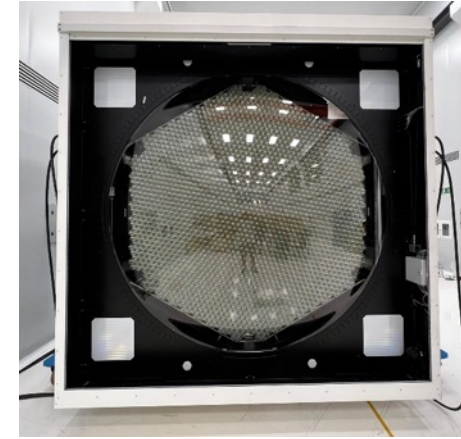
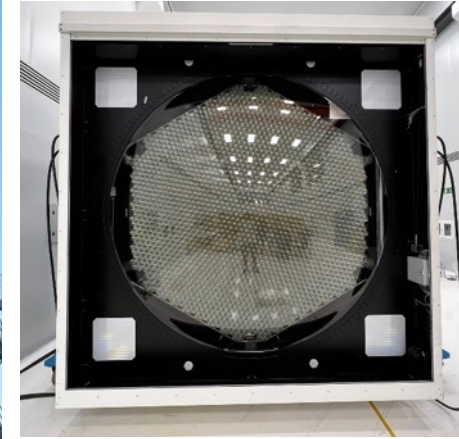
LST-1

Operational
Since 2020

LST-3

LST-2

LST-4

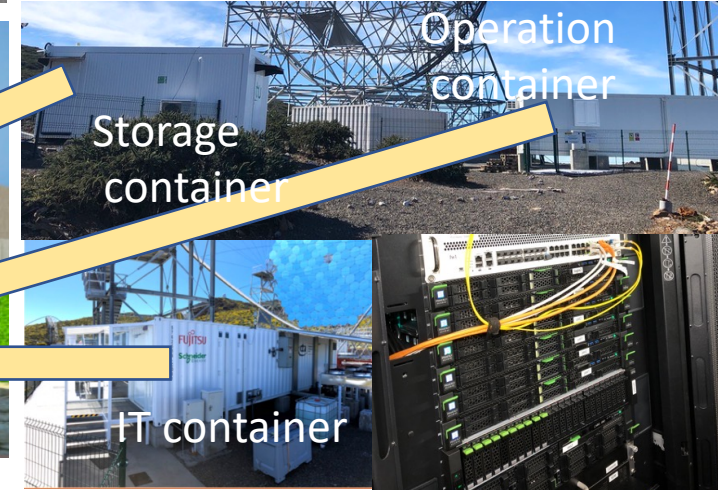


Camera 2 & 3 @Tenerife

Schedule

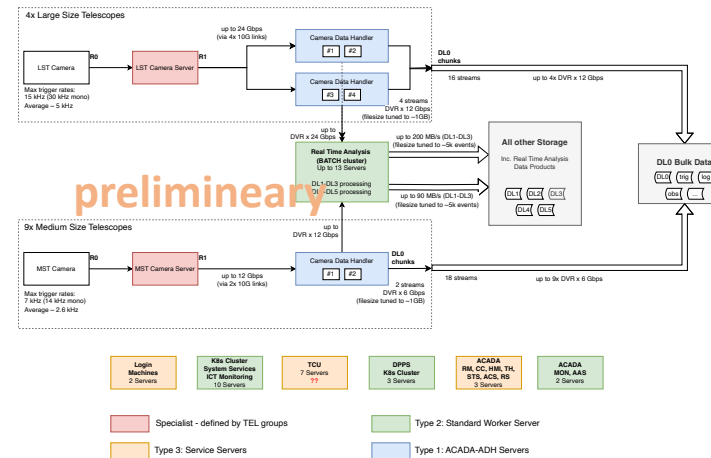
	Arch	Mirror	Camera
LST1	operational		
LST2	25/6 done	25/8 done	26/06
LST3	24/1 done	25/5 done	26/03
LST4	24/8 done	24/12 done	25/5 done

4-LST array obs. starts in 2026



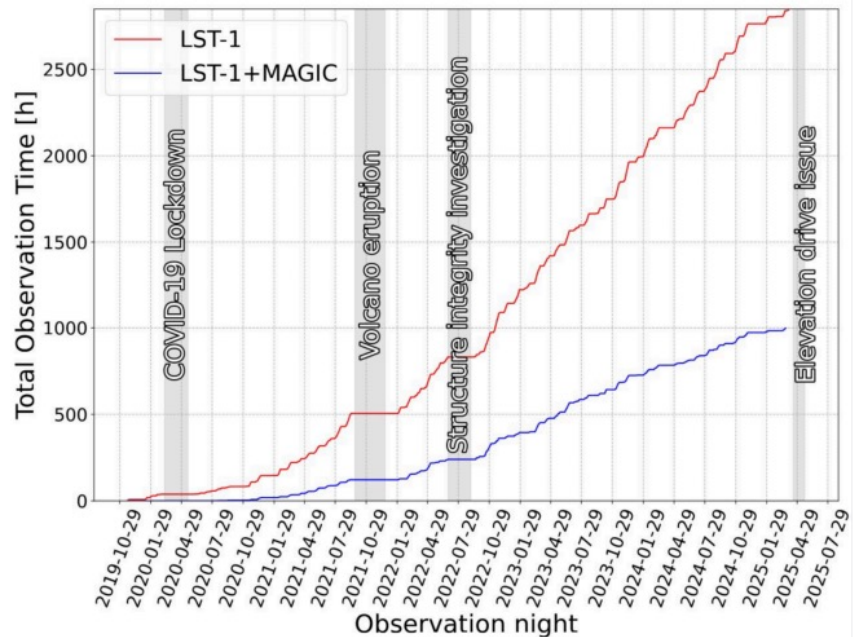
Operation Building

- Workshop, Operation Room, Storage room and IT center etc.
- Spec of the IT center is being studied based on the experience in the last years.
 - Online data process and data taking should not interfere each other.
 - No need of large local storage.
- Expected to be completed in 2028.



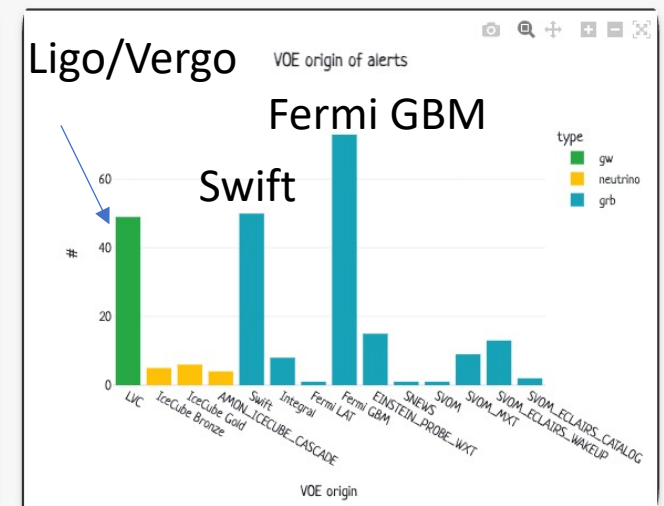
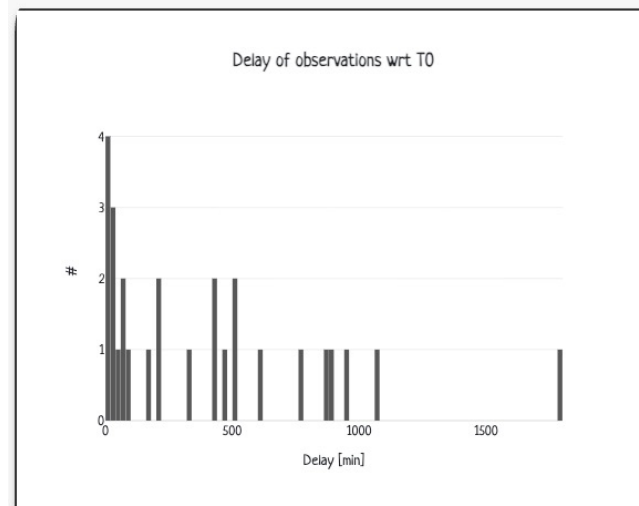


- More than 2800 hours since 2020
 - 30-40% of the time with MAGIC-Joint



LST Transient Statistics

Total	GRBs	GWs	Neutrinos
237 # total alerts	173 # total alerts	49 # total alerts	15 # total alerts
27 # observed alerts	25 # observed alerts	2 # observed alerts	0 # observed alerts
54.2h observed	50.8h observed	3.3h observed	0.0h observed



- Automatic Reaction on alerts
- No detection so far

ATEL On

Patreon
Mastodon
X

The Astronomer's Telegram

Post | Search | Policies
Credential | Feeds | Email

29 Aug 2025; 07:30 UT

This space for free for your conference.

VIII Workshop
on Robotic Autonomous
Observatories

Oct. 6 - 10, 2025 Spain

Thanks to Patrons, The Astronomer's Telegram is free to read, free to publish and always will be. Thank you.

[Previous | Next]

First detection of flaring very-high-energy gamma-ray emission from PKS 1725+123 with the MAGIC and LST-1 telescopes

ATel #17344; David Paneque (Max Planck Institute for Physics), Masahiro Teshima (Max Planck Institute for Physics), Ryuji Takeishi (Institute for Cosmic Ray Research, University of Tokyo), Seiya Nozaki (Institute for Cosmic Ray Research, University of Tokyo), Mathilde Croissonnier (IFAE Barcelona), Yusuke Suda (Hiroshima University), Axel Arbet-Engels (Max Planck Institute for Physics) and Jorge Otero Santos (INFN Padova) on behalf of the MAGIC and LST CTAO collaborations

on 19 Aug 2025; 21:31 UT

Credential Certification: Axel Arbet-Engels (arbet@mpp.mpg.de)

Subjects: Gamma Ray, TeV, VHE, AGN, Blazar

Referred to by ATel #: 17345, 17346, 17356

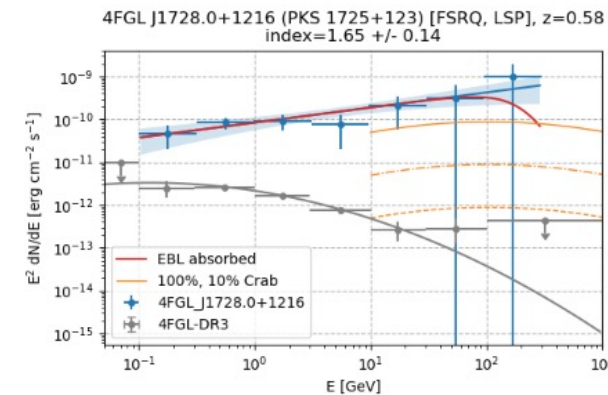
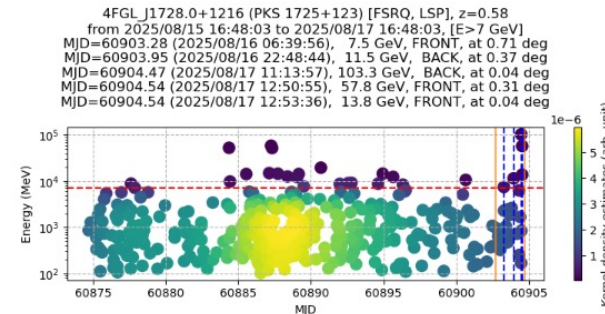
X Post

The MAGIC and CTAO LST Collaborations report the first detection of very-high-energy (VHE; $E > 100$ GeV) gamma-ray emission from PKS 1725+123 (R.A. 262.02938 deg, Dec. 12.26097 deg, J2000.0). The preliminary analysis of the MAGIC data taken on the night of 2025/08/18 to 2025/08/19 resulted in the detection of PKS 1725+123 with a statistical significance of more than 5 standard deviations after about 2 hours of observations. The LST-1 telescope observed simultaneously, and a preliminary analysis of the LST-1 data further reveals a detection at the level of 5 standard deviations.

Related	
17356	High-Frequency Radio Flaring of the FSRQ PKS 1725+123
17346	Detection of very-high-energy gamma-ray emission from the FSRQ PKS 1725+123 with H.E.S.S.
17345	Historical optical light maximum of the FSRQ PKS 1725+123
17344	First detection of flaring very-high-energy gamma-ray emission from PKS 1725+123 with the MAGIC and LST-1 telescopes
17316	Fermi-LAT detection of renewed gamma-ray activity from the FSRQ PKS 1725+123
17127	Historical NIR light maximum of the FSRQ PKS 1725+123
17094	Fermi-LAT detection of enhanced gamma-ray activity from the FSRQ PKS 1725+123 and the unassociated gamma-ray source 4FGL J0406.2+0639
6240	A Recent NIR Flare of the QSO PKS1725+123
4201	NIR brightening of the QSO PKS1725+123

Flaschep results for 20250817_195328

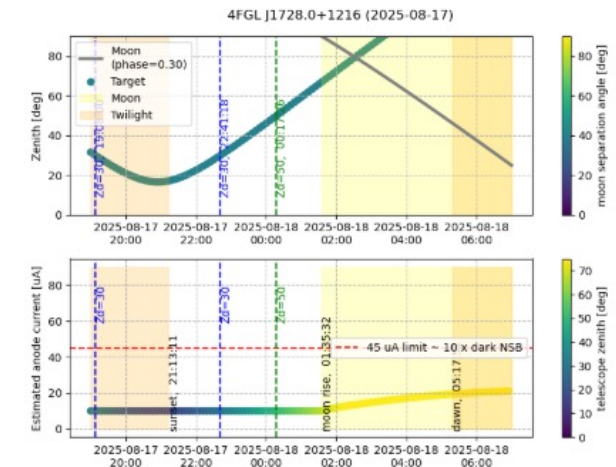
results of Flaschep 4FGL_J1728.0+1216 (PKS 1725+123)



Too observation based on Fermi-LAT public data

developped by S. Nozaki et al.

- Automatically analysing Fermi-LAT data every day.
- Searching for Flaring AGN.
- When the extrapolated flux is promissing and observational conditions (Zenith, Moon) are fine, observation is triggered.



• **Brightest of All Time (BOAT) GRB.**



図1：ガンマ線バーストの想像図
中心のエンジンであるブラックホールから超高速の粒子流「ジェット」が吹き出ている様子。(Credit: 東京大学宇宙線研究所/若林昌博)

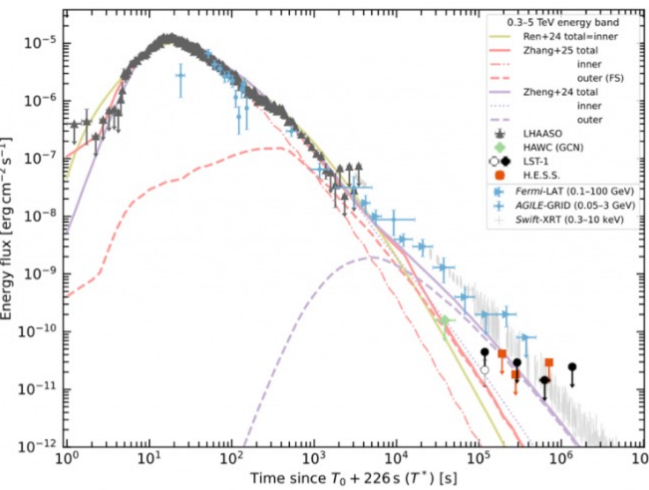


図3：GRB 221009Aの光度曲線
右下の黒丸・白丸がLST-1による結果。その他の点は他の実験による観測結果。線はいくつかの理論予測モデルを示しており、理論によってはLST-1の結果と矛盾することがわかる。

- First GRB detection with LST (4 σ)
- Explained with “Sheeth” model.
- Accepted in ApJ Letter *ApJL* **988** L42 (2025)
- Press release <https://www.icrr.u-tokyo.ac.jp/news/16737>

• **Geminga**

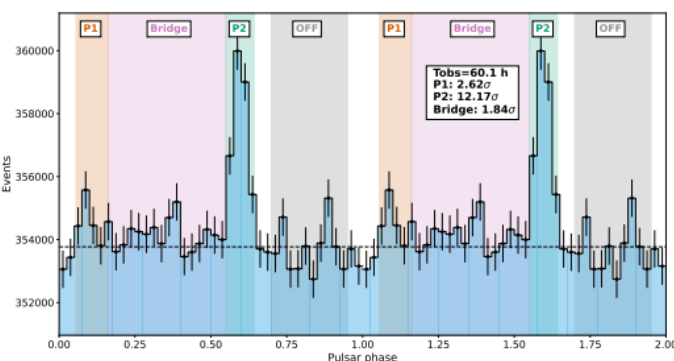
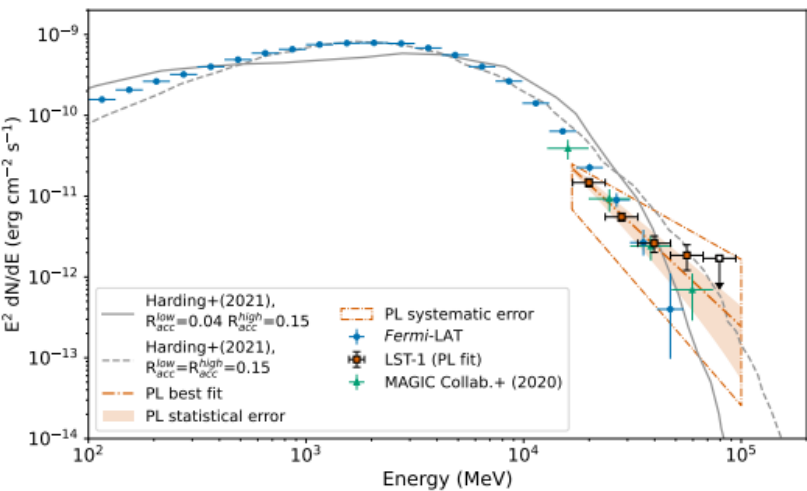
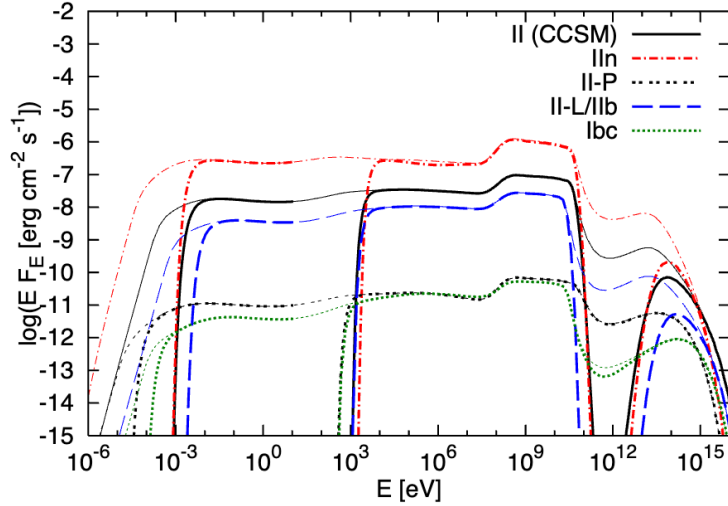
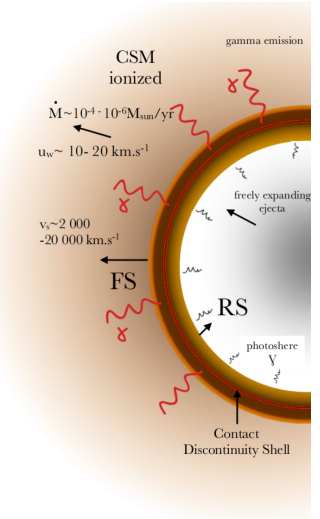


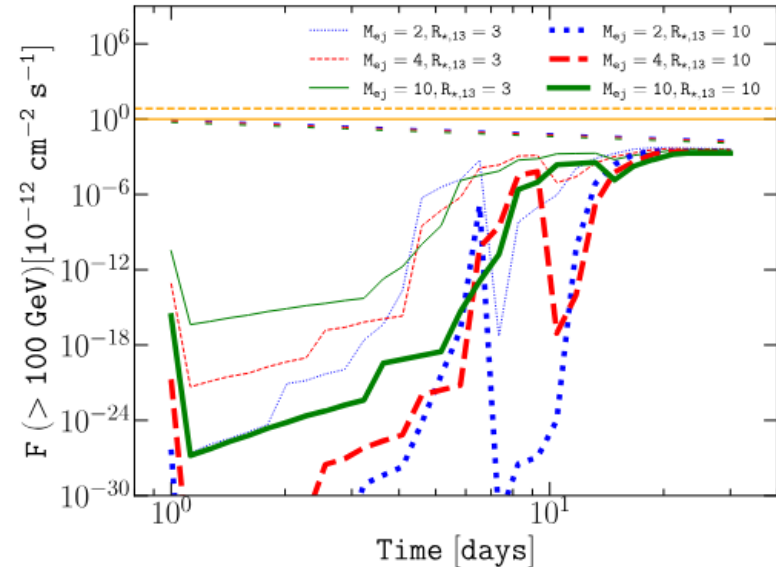
Fig. 1. Phaseogram of the LST-1 observations of the Geminga shown over two rotational periods, with no cut in energy. The different phase regions (P1, P2, Bridge and background, or OFF) are highlighted in the plot. The average level of the background counts is reported as the horizontal dashed line. We also show the Li&Ma significance of both peaks and the inter-peak region and the total observation time.



- Clear P2 detection
- Hint on P1
- Synchrotron + Shchro-curvature model (by Harding) describe the SED well.
- Accepted in A&A **698**, A283 (2025)
- See a dedicated talk by P. YEUNG (コンパクト天体, 9日)



K. Murase, Phys. Rev. D 109, 2024



P. Cristofari, MNRAS 2021

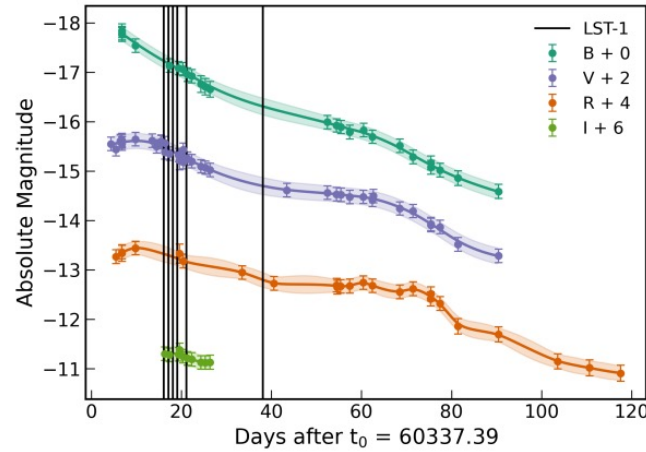


Fig. 3. Public photometry of SN 2024bch (filled points). We used observations in the four filters *B*, *V*, *R*, and *I*. An offset is added to the data points for a better visualization. Solid lines are the result of GP interpolation obtained with CASTOR (see the main text). The uncertainties of the interpolated lines are shown as shaded contours. The vertical solid black lines show the LST-1 observation windows.

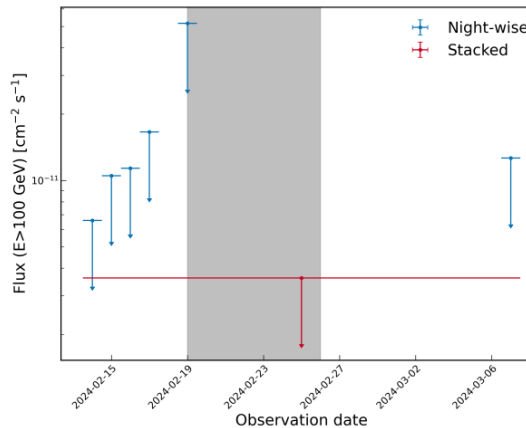
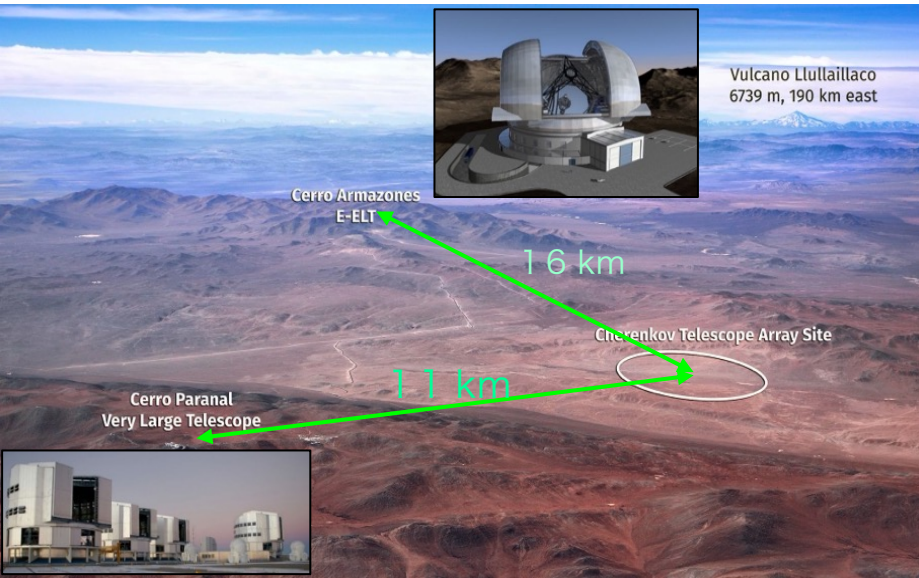
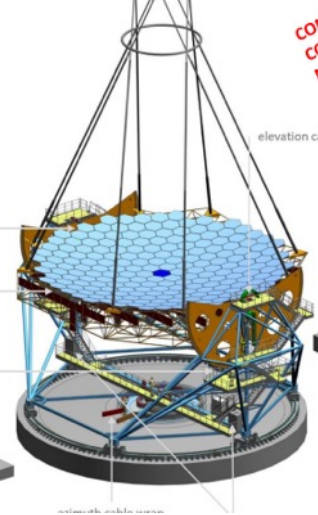


Fig. 2. ULs for the gamma-ray light curves of SN 2024bch, computed between 100 GeV and 10 TeV. We compare the night-wise ULs (blue) with the integrated UL, obtained by stacking all results together (red). The gray-shaded area covers the nights with strong moonlight. ULs are computed with a 2σ confidence level.

- Type IIln-L Supernova, occurred on Jan. 29th, 2024, 20 Mpc away (in NGC 3206)
- Particle acceleration expected in the shock formed in the dense CSM.
- Gamma-rays emissions may rise 10-100 days after the explosion, when internal absorption becomes weak. (Murase, Cristofari).
- LST1 observed it for 6 nights at 20 – 40 days later. No emission has been found above 100 GeV.
- **Accepted in A&A (in press)**



LST South

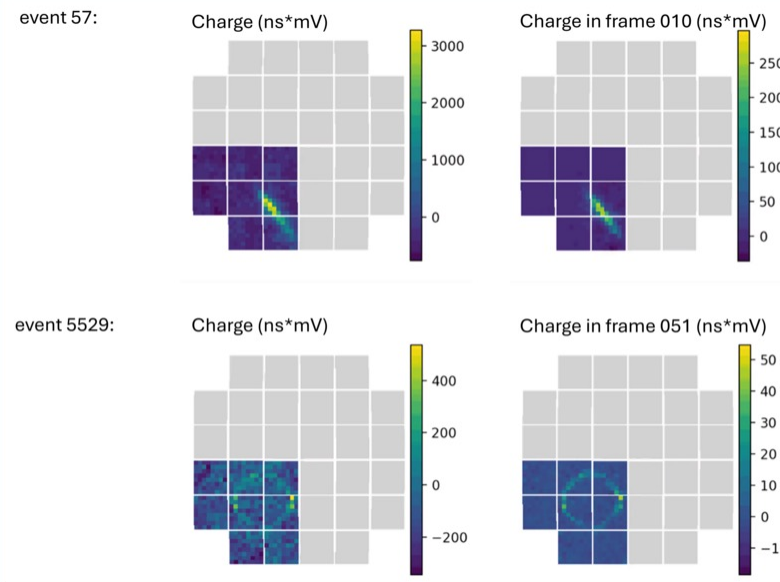


MST camera on HESS



Infrastructure

- Road, power lines, tentative data center will be ready in 2026
- Foundation of 5 SST and 2 MST by in 2026
- Telescope Elements are developed in different places.



SST Camera Test at Tenerife Island

- 1 week in July 2025
- Mounted the 1/4 prototype camera with 512 pixels on one of the ASTRI Mini-array
- Shower image and muon rings were successfully taken

- CTAO is next generation gamma-ray observatory, in both hemispheres.
 - Cosmic Ray origin, BH/NS physics, Cosmology/Basic physics
 - Both arrays (Alpha configuration) will be completed by ~2030
- North Site construction is going well.
 - 4-LST array will start in 2026
- LST-1 is producing lots of scientific results
 - Recent ones include BOAT GRB, Geminga, PKS 1725, SN 2024bch etc
 - Automatic Transient follow-up observation is on going
- South Site is also progressing well.
 - Starting from Infrastructure.
 - SST Camera test at Tenerife was successfully performed in July.