

A wide FoV telescopes and 3U satellites converted for GW counterpart (SSA to GW counterpart)

Kanthanakorn NOYSENA
1-4 July 2024
IPHC, Strasbourg, France



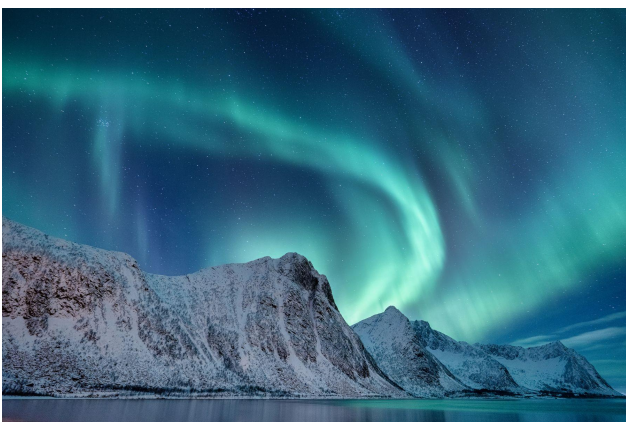
อุทยานดาราศาสตร์สิรินธร
Princess Sirindhorn
AstroPark



National Astronomical Research Institute of Thailand (Public organization)



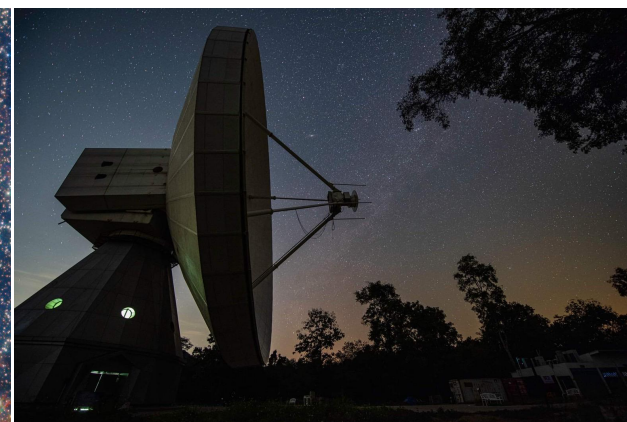
Budget: 500M - 1000M baht, Staff: ~300 (Researcher ~ 60 and Engineer ~ 100, Age ~ 34)



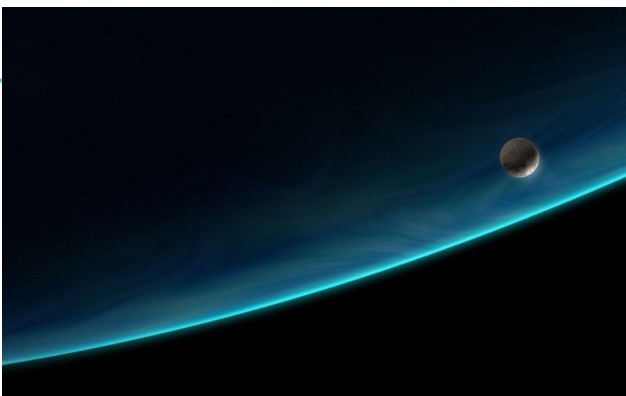
Space Weather and Earth's Climate



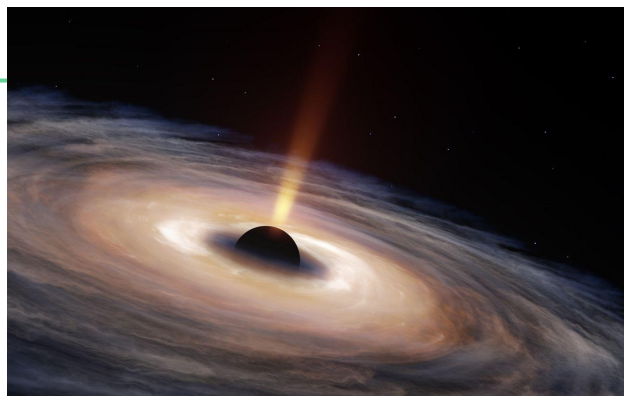
Stellar Astrophysics



Radio Astrophysics Research



Exoplanet and Life beyond Solar System



Cosmology and High-energy Astrophysics



Astronomy History and Heritage



🇹🇭 ∅ 2.4 meters
 🇹🇭 ∅ 1 meters
 🏠 ∅ 0.7 meterst
 🏠 ∅ 0.4 meters
 📡 ∅ 40 meters
 📡 ∅ 13 meters



Effelsberg Radio Telescope
(100-m)



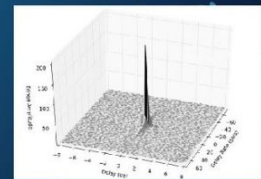
~8,500 km



Thai National Radio Telescope
(40-m)

ก้าวไปอีกขั้น! กล้องโทรทรรศน์วิทยุแห่งชาติ เชื่อมต่อกับกล้องของเยอรมนี ด้วยเทคนิค VLBI สำเร็จเป็นครั้งแรก

www.NARIT.or.th



ภาพสัญญาณแทรกสอดระย-โกลครั้งแรกของไทย

The GOTO network



GOTO-North, La Palma



GOTO-South, Siding Spring

88 sq.deg instantaneous coverage each and in total 10,000 sq. deg / night

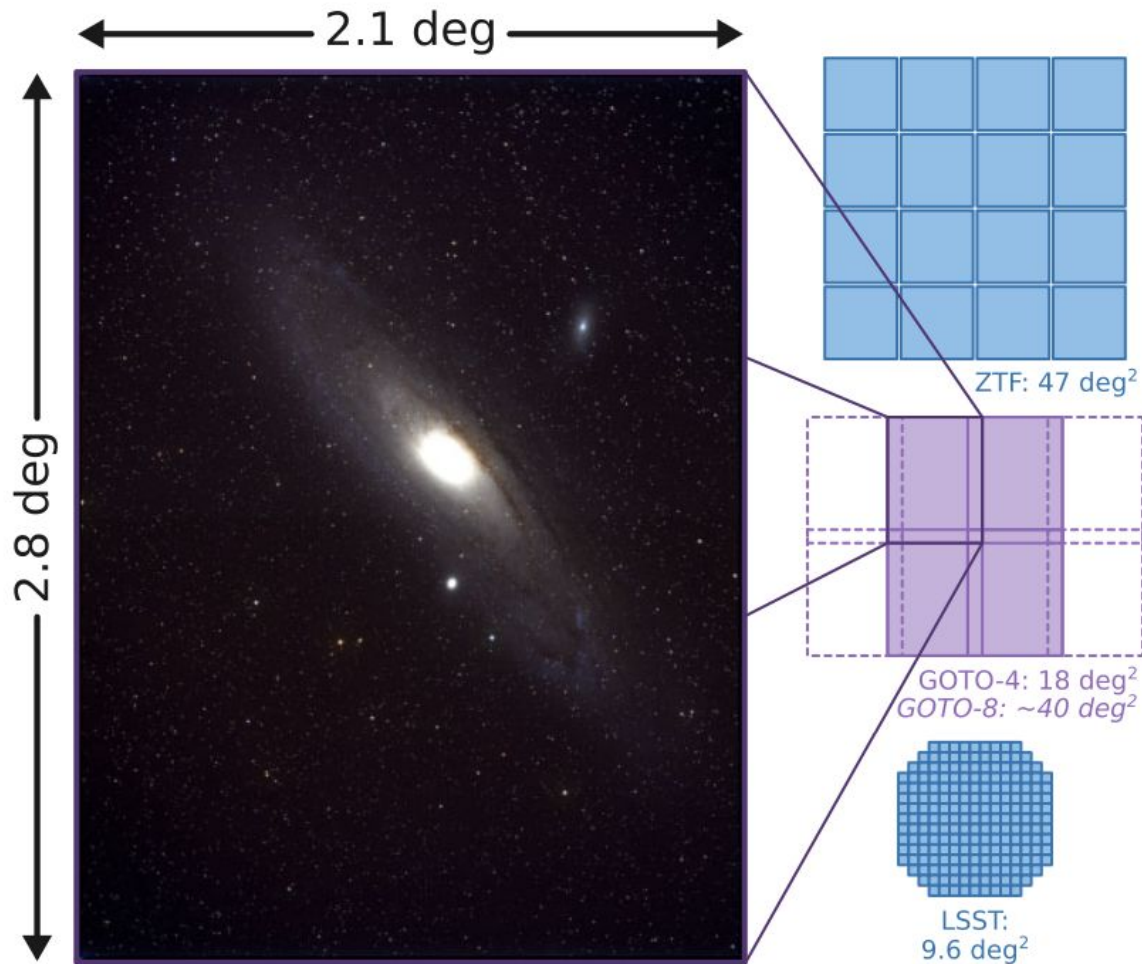
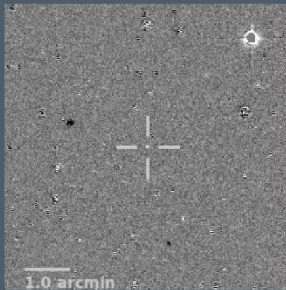
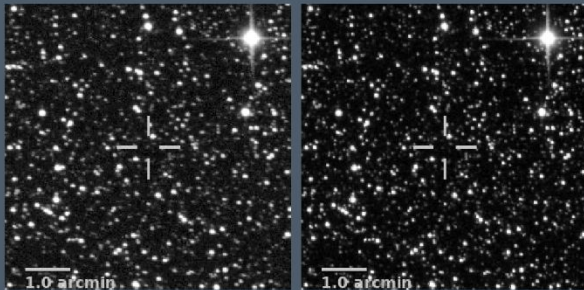




Table 1. GOTO prototype hardware specifications.


| Parameter | Value |
|--------------------------|---------------------------------|
| Site | |
| Latitude | 28°45' 36".2 N |
| Longitude | 17°52' 45".4 W |
| Altitude | 2300 m a.s.l. |
| Dome design | Clamshell |
| Dome diameter | 18 ft (5.5 m) |
| Mount | |
| Mount design | German equatorial (parallactic) |
| Mount slew rate | 4–5 deg s ⁻¹ |
| UTs per mount | 8 (4 filled) |
| Unit telescopes | |
| OTA design | Wynne–Riccardi |
| Primary diameter | 40 cm |
| Primary conic constant | -1.5 |
| Secondary diameter | 19 cm (short axis) |
| Secondary conic constant | N/A (flat) |
| Corrector diameter | 12 cm |
| Focal ratio | <i>f</i> /2.5 |
| Field of view | 2.1 deg × 2.8 deg |
| Detectors | |
| Detector size | 8304 × 6220 pixels |
| Active region | 8176 × 6132 pixels |
| Pixel size | 6 μm |
| Pixel scale | 1.25 arcsec pixel ⁻¹ |
| Filters | Baader <i>R, G, B, L</i> |
| Gain | 0.53–0.63 e ⁻ /ADU |
| Readout noise | 12 e ⁻ |
| Dark current noise | <0.002 e ⁻ /s |
| Full-well capacity | 40300 e ⁻ |
| Fixed-pattern noise | 0.4-per cent full-well capacity |
| Non-linearity | <0.2 per cent |


GOTO195929.12+212112.22

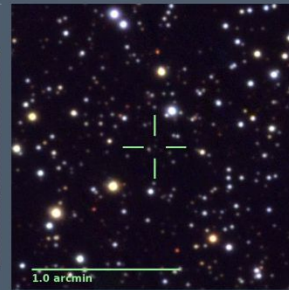
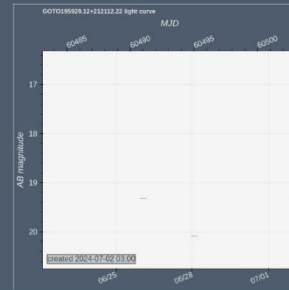


 19:59:29.12,
+21:21:12.22
299.871329, 21.35339

 19.26 ± 0.11 mag (L)
an hour ago

 July 2 2024 02:19:41
an hour ago

 1.00
average 1.00



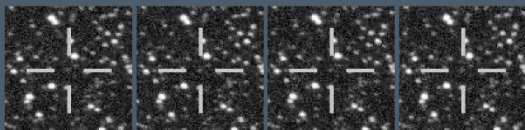
-  stream
-  store
-  junk
-  banish
-  inbox
-  pending





  1 (an hour ago) 

Professor James Moriarty: GOTO195929.12+212112.22 is likely synonymous with a $g=22.76$ mag source in the ps1_stackobjectview_minimal catalog (0.24" away)..

 4 (an hour ago)

discovery in a 4-stacked image in G1-UT7 at pixel position 588.51, 4193.66



- number of difference photometry detections: 1 valid
- galactic coordinates: $l = 59.65$ $b = -4.39$ degrees
- click to view: [image stamps](#)
-  no minor planet within 90.0 arcsec
-  synonymous source match: $g = 22.74$ mag object in the PanSTARRS catalogue (0.14 arcsec away)
-  no brightest nearby star within 60.0 arcsec
-  **TNS match:** AT 2023rvg reported by ATLAS, classification unknown, redshift unknown (0.37 arcsec away)





Thai Robotic Telescope (TRT)

Connects you to the network of telescopes. Whether you're a first-time astronomer or a professional, our easy-to-use yet powerful interface allows you to get the images you need. You simply specify what you want to observe and our telescopes will take the images for you. You can then access the images through our website.



Observing Portal

Log in to your account for access to robotic telescopes.

[→ LOGIN](#)

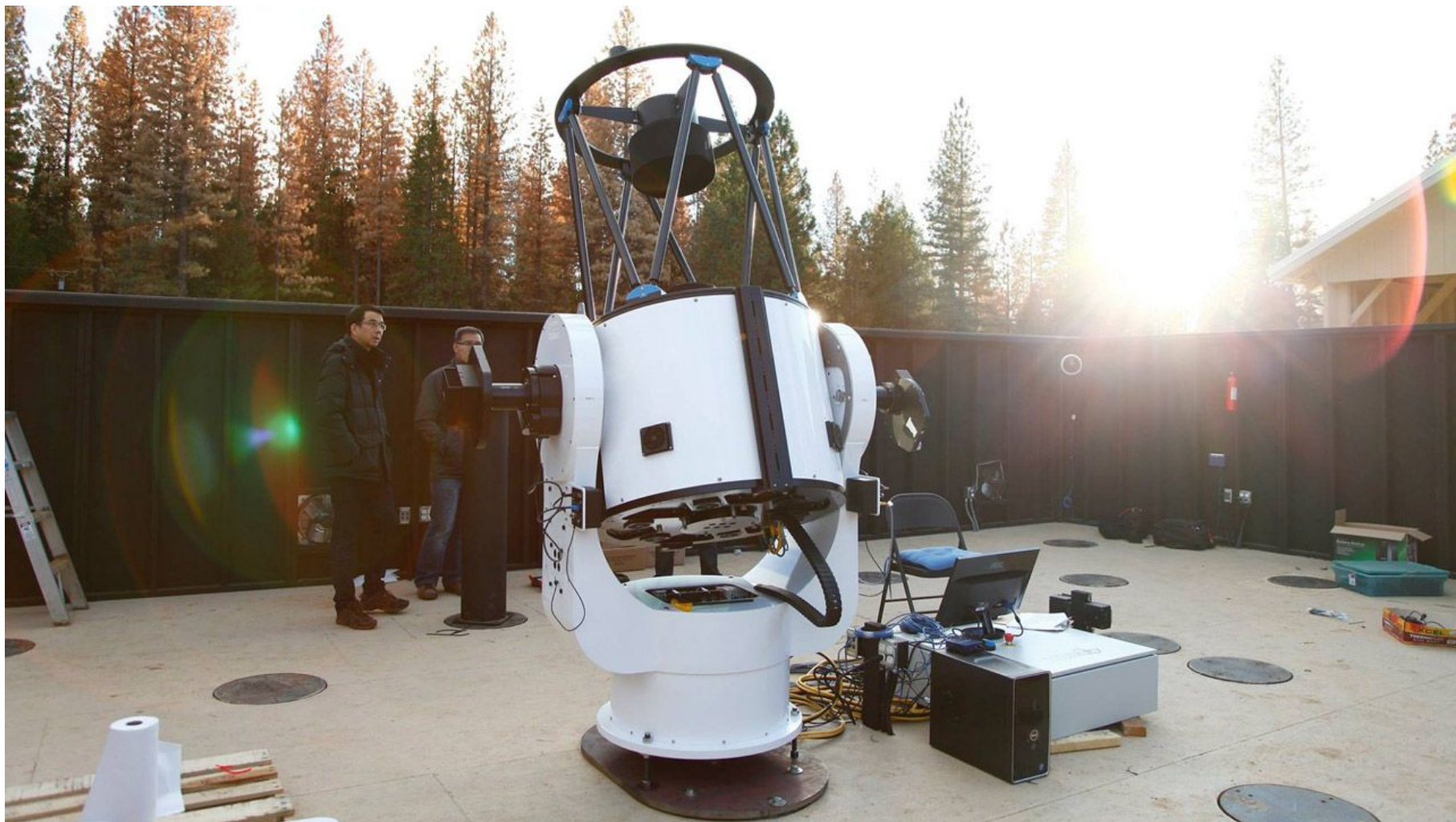
No account yet?

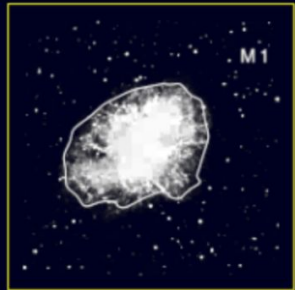
Please sign up below and allow at least 24 hours for your account to be activated before you can start to login to prepare your proposals. If you have any question or problem signing up please send email to proposal@narit.or.th.

[SIGN UP HERE](#)









Planewave - CDK700 - Custom Camera

Planewave - CDK700 - FLI - Proline PL 16803

Equipment Key

As you add equipment to the view, the details will appear below.

Planewave - CDK700 - Custom Camera X

Scope: 700mm / 4531mm

CCD: 0.17° x 0.17°

Barlow/Reducer: None

Binned: 1x1

Planewave - CDK700 - FLI - Proline PL 16803 X

Scope: 700mm / 4531mm

CCD: 0.47° x 0.47°

Barlow/Reducer: None

Binned: 1x1

Save Image...

Share FOV



Add Observation

[Observing Home](#) → [Telescope](#) → Target



Springbrook Observatories (SBO)

Springbrook, Australia

Local: 2024-06-30 00:17:17 UTC: 2024-06-29 13:17:17

| | Evening | Morning |
|-------------------|--------------------|--------------------|
| Sunset / Sunrise | 2024/6/29 07:03:19 | 2024/6/30 20:39:51 |
| Civil Twilight | 2024/6/29 07:29:32 | 2024/6/30 20:13:39 |
| Nautical Twilight | 2024/6/29 07:58:03 | 2024/6/30 19:45:10 |
| Astro. Twilight | 2024/6/29 08:26:45 | 2024/6/30 19:16:30 |

CCD Name

Resolution

Observation name

RA (J2000)

DEC (J2000)

Sub Frame X,Y Enabled

Bin X Bin Y

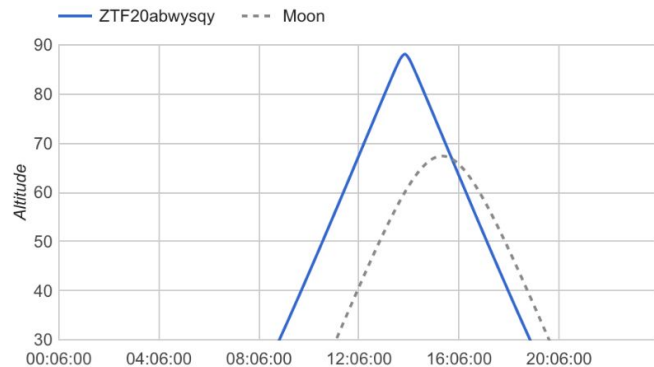
Cadence Interval (hh:mm:ss)

Max Airmass

Dither Pattern Enabled



| | Evening | Morning |
|-------------------|--------------------|--------------------|
| Sunset / Sunrise | 2024/6/29 03:18:54 | 2024/6/30 12:43:56 |
| Civil Twilight | 2024/6/29 03:49:43 | 2024/6/30 12:13:09 |
| Nautical Twilight | 2024/6/29 04:26:19 | 2024/6/30 11:36:35 |
| Astro. Twilight | 2024/6/29 05:08:01 | 2024/6/30 10:54:58 |



RA (J2000)

DEC (J2000)

Sub Frame X,Y Enabled

Bin X Bin Y

Cadence Interval (hh:mm:ss)

Max Airmass

Dither Pattern (arcsec) Enabled

Expiry Date (UTC) Enabled

Observing Period Enabled
Not valid before Not valid after

Position Angle ignore PA

Next



Telescope Queues

[Observing Home](#) → Telescope Queues

Select Telescope

Sierra Remote Observatory (SRO)

View

Need MoU for top Priority!

| ID | PI | Observation | Fixed Time | Priority | Airmass | Cadent | Last Activity (UTC) | Status |
|--------------|----------------------|-------------------|-------------------------------------|----------|---------|--------|---------------------|---------------------------------|
| 240628OOF4_1 | Kanthanakorn Noysena | ZTF20abwysqy | 2025/06/28 00:00 - 2025/07/05 00:00 | 95 | 2 | 0 | 2024-06-28 11:18:59 | TIME-NOTIN-RANGE (82.49°) - 0/1 |
| 240628QM7B_1 | Kanthanakorn Noysena | ZTF20abwysqy | 2025/06/28 00:00 - 2025/07/05 00:00 | 95 | 2 | 0 | 2024-06-28 11:18:44 | CANCELED - 0/1 |
| 24060901QQ_1 | Adipol Phosrisom | 4FGL J2056.4+3142 | 2024/07/02 09:17 - 2024/07/02 10:49 | 92 | 3 | 0 | 2024-06-09 03:58:19 | TIME-NOTIN-RANGE (53.50°) - 0/1 |

Follow-up ⤴

Allocation

Thai Robotic Telescope / TRT - GRANDMA (PI Kanthanakorn Noysena) ▾

Share Data With

GRANDMA ▾

station_name *

SRO ▾

Exposure Time [s]

300

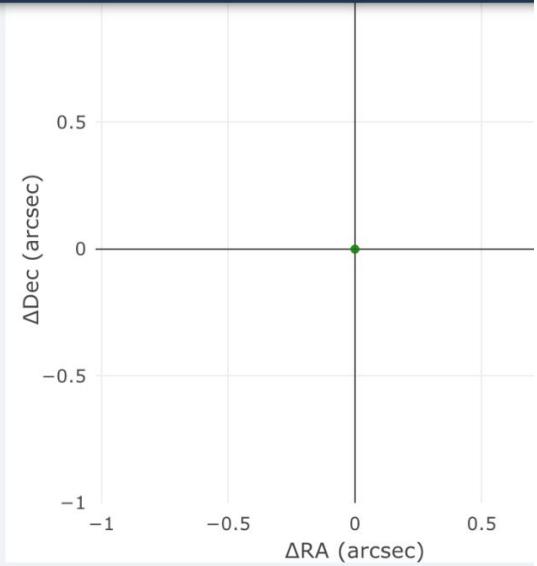
Exposure Counts

1

Start Date (UT) *

29/06/2024 

End Date (UT) *

06/07/2024 

HR Diagram

No color magnitude for this source

External Analysis

No analyses for this source...

TNO Requests

TRT Requests

Requester Group PI start_date end_date Status Modify

yodgor GRANDMA Kanthanakorn Noysena 2024-06-25 2024-06-27 failed to submit DELETED SUBMIT

yodgor GRANDMA Kanthanakorn Noysena 2024-06-25 2024-06-28 failed to submit DELETED SUBMIT

Jump to Page: 1 Rows per page: 10 1-2 of 2

XID 667a897785de4f1cd0b0768f

ID 240625R4H8_1

Observer Kanthanakorn Noysena

Quicklook false

M3 Port 1

Name ZTF24aasrwnv

RA 19:11:55.87

DEC -12:52:01.39

Filter Mode Sequence

Binning 1, 1

X,Y

Search:

Filter text

items per page:

15

Download

| <input type="checkbox"/> | EXPID | Name | Length | Filter | Time Taken | State |
|--------------------------|-------|--------|--------|--------|--------------------------|-------|
| <input type="checkbox"/> | 1 | B_test | 120s | B | 2024-06-25T10:55:29.706Z | |
| <input type="checkbox"/> | 2 | B_test | 120s | B | 2024-06-25T10:57:43.639Z | |
| <input type="checkbox"/> | 3 | B_test | 120s | B | 2024-06-25T10:59:55.618Z | |
| <input type="checkbox"/> | 4 | B_test | 120s | B | 2024-06-25T11:02:06.693Z | |
| <input type="checkbox"/> | 5 | B_test | 120s | B | 2024-06-25T11:04:19.288Z | |

latest

Thailand's Astronomical Data Archive (TADA)

Search Forum

This query interface allows to search and to request observational data taken by NARIT's Observatories.

Target Name M 42

(YYYY-MM-DD)

Circle RA(hms) DEC(dms)

no file selected

Maximum records to return: 500 rows.

[More Options](#)

Query Tool

In the Query a TAP service tab you can learn how to write and execute a query to the NARIT databases.

```
SELECT * FROM rawdvy WHERE q3c_radial_query(obj_ra,obj_dec,83.8220,-5.3911,10) AND (((inst_name like 'Andor_DU934P_BV%') or ((inst_name like 'FLI_ProLine PL16803%')) or ((inst_name like 'AndorTeach_DZ936_BV%')) or ((inst_name like 'LRES%')) or ((inst_name like 'MRES%')))) LIMIT 500
```

TRT DATA ARCHIVE

SIMBAD coordinates for M 42: 05:35:17.29, -05:23:27.9

Query Results

Search returned 62 frames of which the first 500 are reported here.

Show entries

Search results

| <input type="checkbox"/> | Obj Name | FT Header | Type | Observer Name | RA | Dec | Filter | exp (s) | Plan ID | Instrument | Date (UTC) | Site |
|--------------------------|----------|---------------------------------|------|---------------|-----------|----------|--------|---------|---------|---------------------|----------------------------|------|
| <input type="checkbox"/> | V505 Ori | 2022_03_30T09:20:43.013Z_V.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | V | 90 | Z21MMJ | FLI_ProLine PL16803 | 2022-03-30 16:20:44.372+07 | SBO |
| <input type="checkbox"/> | V505 Ori | 2022_03_30T09:22:35.022Z_R.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | B | 120 | Z21MMJ | FLI_ProLine PL16803 | 2022-03-30 16:22:35.952+07 | SBO |
| <input type="checkbox"/> | V505 Ori | 2022_03_30T09:24:55.770Z_R.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | R | 50 | Z21MMJ | FLI_ProLine PL16803 | 2022-03-30 16:24:56.798+07 | SBO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:22:56.631Z_B.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | B | 120 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:22:56.531+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:25:02.066Z_V.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | V | 90 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:25:02.066+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:26:37.307Z_R.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | R | 50 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:26:37.307+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:27:32.991Z_I.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | I | 50 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:27:32.991+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:33:35.573Z_B.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | B | 120 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:33:35.573+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:35:41.164Z_V.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | V | 90 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:35:41.164+07 | SRO |
| <input type="checkbox"/> | V505 Ori | 2022_03_23T03:37:16.352Z_R.fits | RAW | Ram Kesh | 84.613542 | -7.92694 | R | 50 | Z2P8FZ | Andor_DU934P_BV | 2022-03-23 10:37:16.352+07 | SRO |

Showing 1 to 10 of 62 entries

Previous 2 3 4 5 6 7 Next

DATA PRODUCT INFO

Category :

RAW SCIENCE

CALIBRATION

Type

Imaging

All None

- Andor_DU934P_BV / SRO
- FLI_ProLine PL16803 / SBO
- AndorTeach_DZ936_BV / GAO
- ULTRASPEC / TNO
- ARC_4K / TNO
- N/A / GOTO

Spectroscopy

All None

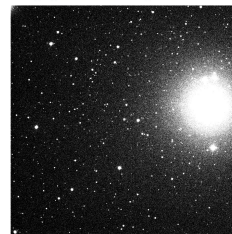
- LRES / TNO
- MRES / TNO
- Slodar / TNO
- Exohspec / TNO
- ESHEL / 1M-TNO

Interferometry

All None

- L-Band / TNRT

2022_03_30T09:20:43.013Z_V.fits



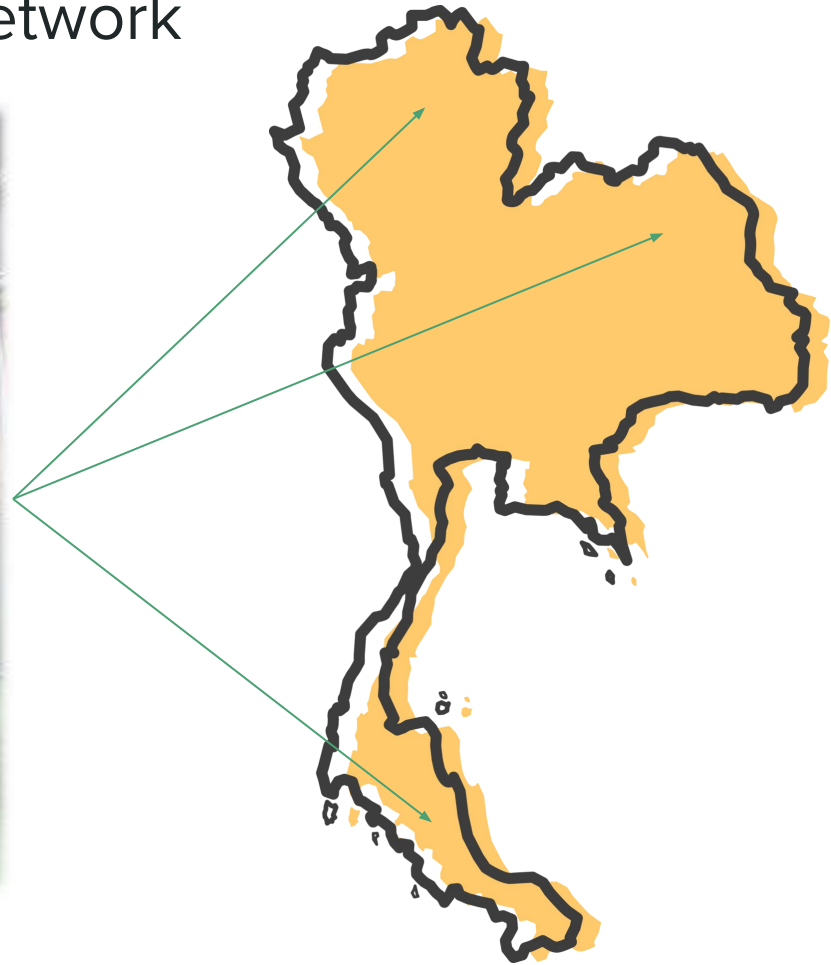
OBJECT V505 Ori
RA (deg) 84.613542
DEC (deg) -7.92694
Night

| Program Information | |
|-----------------------|---------------------------|
| Proposal ID | TRTC098_011 |
| Observer Name | Ram Kesh |
| Program | TRT |
| Observing Information | |
| Instrument | FLI_ProLine PL16803 |
| Category | |
| Type | SBW |
| Plan ID | Z21MMJ |
| Created | 2022-03-30 16:22:22.94+07 |
| Telescope | SBO |
| Instrumental Setup | |
| Exptime (s) | 90 |
| Filter name | V |
| Binning X,Y | 1,1 |
| Focus Pos. (mm) | |
| ETC. | |
| Airmass | 1.34 |
| MJD | 2459668.8894 |
| Seeing (arcsec) | |
| Humidity (%) | |
| Tempo (°C) | |

Data will be available for public in 2025 !

Space Situational Awareness (SSA)

Thai Automated Telescope Network





Celestron - 14" Rowe-Ackermann Schmidt Astrograph - ZWO - ASI290MM/MC/Mini

Celestron - 14" Rowe-Ackermann Schmidt Astrograph - ZWO - ASI2600MM/MC-Pro

Equipment Key

As you add equipment to the view, the details will appear below.

 Celestron - 14" Rowe-Ackermann Schmidt Astrograph - ZWO - ASI290MM/MC/Mini X

Scope: 355.6mm / 790mm CCD: 0.41° x 0.23°

Barlow/Reducer: None Binned: 1x1

 Celestron - 14" Rowe-Ackermann Schmidt Astrograph - ZWO - ASI2600MM/MC-Pro X

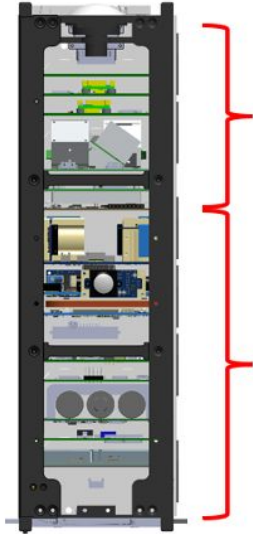
Scope: 355.6mm / 790mm CCD: 1.7° x 1.14°

Barlow/Reducer: None Binned: 1x1

Save Image...

Share FOV

Space Weather Satellites

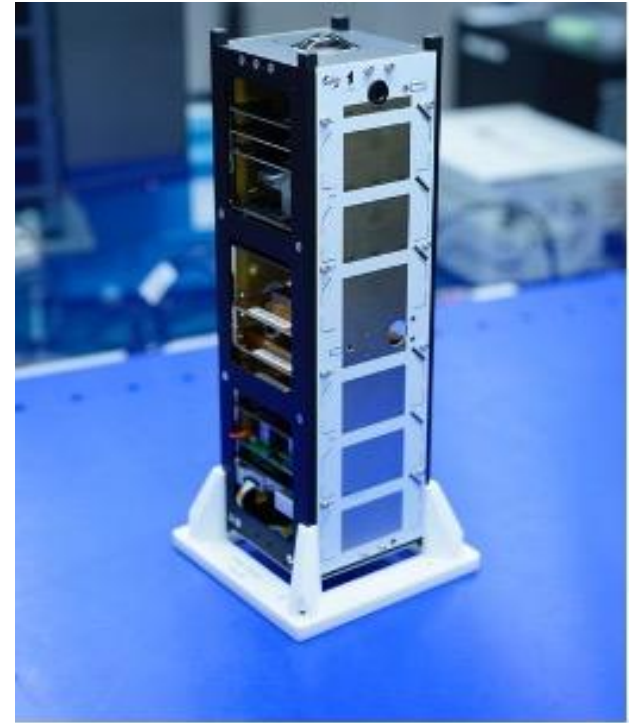


Satellite Payload 1U – 1.5U (10 cm. – 15 cm.)

Electron and Ion detector

Satellite Bus 1.5U – 2U (15 cm. – 20 cm.)

- Electrical Power System
- On-board Computer
- Communication System
- Attitude Determination and Control System



NARITCube-1

Payload: camera, lens zoom and fisheye lens

Thank you
