

Technical Operations



JIVE

Joint Institute for VLBI
ERIC

Current hardware

0.8 100 Gbps

19 FlexP

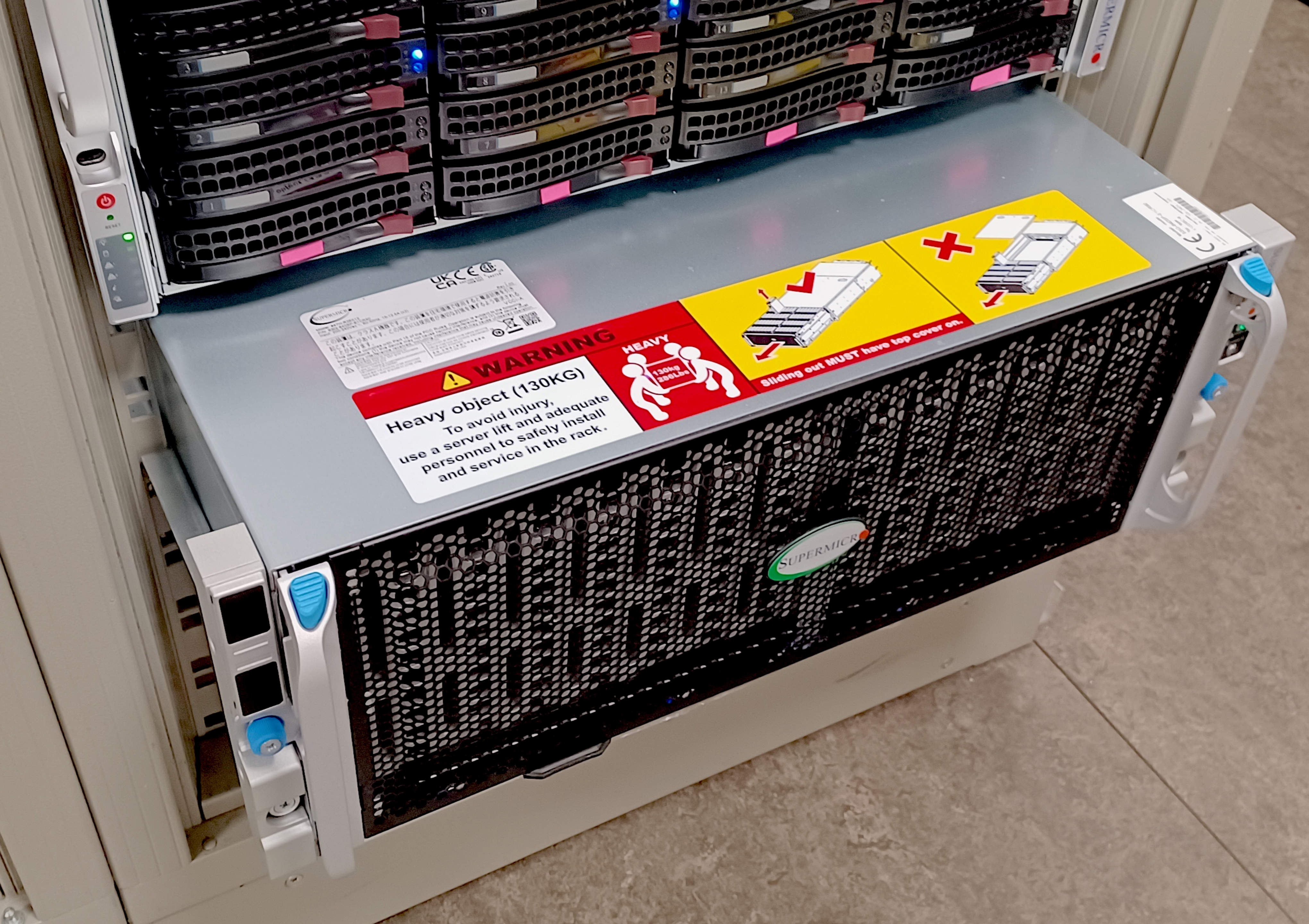
4

NO

LINK5

1012 SFXCcores

No changes?



F18 FlexBuff 18

FlexBuf18 (a.k.a. *PetaBuff*)

96-disk chassis

- chassis+80 HDDs by On, Sr, Mc, Nt

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- 10x 18 TB HDDs donated by KASI

FlexBuf18 (a.k.a. *PetaBuff*)

96-disk chassis

- chassis+80 HDDs by On, Sr, Mc, Nt
- 10x 18 TB HDDs donated by KASI
 - July 2023
 - 6 installed as extra pool on **fb18**
 - adds 77 TB net capacity
 - 1078 TB* in total in **fb18** now

FlexBuf7a

0.8 100 Gbps

19 FlexBuff =

4 Mark6

25 Mark5

Westerbork:
- replaced FlexBuff
- doubled the storage

From Jan 2023 TOG

FlexBuf7a

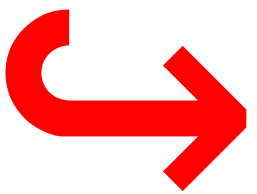
replace old WSRT FlexBuf7

- new chassis+disks
- 8 TB => 18 TB HDDs
 - Western Digital DC HC550
- into production early Dec 2022



Monday 13 Feb 2023 (~68 days later)

15:59 "possible disk problem with one disk"

16:54 "2nd disk fail in same pool"
 level to Critical
(potential loss of all data on pool)

Tuesday 14 Feb 2023

09:43 "This is getting out of hand. Its now 16 disks giving problems" (*)

Take machine out of production to prevent loss ...

() 16 disks out of 36*

What the *?

- memory corruption?
 - ↳ nope
- move (some) disks to other chassis
 - ↳ same #FAIL after some time
- issue zfs "scrub" (RAID repair)
 - ↳ no data lost (maybe one scan's data from one station)

What the *?

- errors "disk times out" continue
 - ↳ move data to known-good fb

Next steps:

- mark unit offline
- contact vendor ...

What the *?

- errors "disk times out" continue
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- mark unit offline
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But which vendor?!


Western Digital


SUPERMICR


serverdirect

BOSSERS & CNOSSEN

ASTRON


JIVE

... time passes ...

- email exchanges
- requested to run tools
- create + submit logs/diagnostics
- .. (time, energy, frustration)
- receive batch replacement HDDs
OF THE SAME TYPE

21 July 2023

- Receive a new firmware!
- Problems solved?

21 July 2023

- Receive a new firmware!
- Problems solved?
did not install on *all* drives ...

The drives with type number WUH721816ALE6L4 will take the new firmware, but the drives with type number WUH721816ALE6L1 do not.

From the WD HC550 data sheet:

WUH721816ALE6L1: 16 TB SATA 512e SED*

WUH721816ALE6L4: 16 TB SATA 512e Base(SE)

According to the upgrade manual, the 870 firmware should work for both the base (SE) and the SED drive. But the SED drives refuse to install the firmware.

18 August 2023

The drives with type number **WUH721816ALE6L4** will take the new firmware, but the drives with type number **WUH721816ALE6L1** do not.

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21 August 2023

- Receive proper firmware!

24 August 2023

- filesystems rebuilding
- unit back in use:
 - as read-only first

present day

- in production use ~2 months
- want to see it go past that mark
before signing off

present day

Huge thanks to
Paul Boven
Wybren Buijs!

New EVN Feedback Tool



JIVE

Joint Institute for VLBI
ERIC

EVN Feedback:

- Stations provide feedback
 - by EVN session/experiment
- PI's, JIVE support scientists use feedback
 - possibility to modify feedback

network. The TOG is also the body which implements technical and operational upgrades across the network.

The chairman of the TOG is [Sergio Poppi](#), SRT/INAF-OAC.

The vice-chairman of the TOG is [Marjolein Verkouter](#) (JIVE, The Netherlands).

The [EVNtech E-mail exploder](#), is the main way Technical and Operational information is shared and communicated within the EVN.

TOG-meetings

- Minutes from previous [EVN TOG meetings](#).
- The next TOG meeting will be held in Torun, Poland, [December 13/14, 2023](#)
- The last TOG meeting was held in Bonn, Germany, [January 24-25, 2023](#)

Reliability, performance and technical information of the EVN

- [Network monitoring and feedback reports](#)
- [EVN Feedback Pages \(documentation\)](#)
- [The TOG Wiki pages](#). Please contact [Walter Alef](#) for an account.
- [The EVN Status Table](#)
- [FS/Mark5 status at EVN stations](#)
- [The Permanent Action Items](#) - a code of practice adopted by the EVN w.r.t. all logistical matters (tape shipment, deposition of logs etc).

EVN schedule

- [EVN schedule](#)

Other information

- [VLBA feedback pages](#) (Telescope performance via sniffer plots, by Experiment)

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Open "https://www.evlbi.org/article/feedback-system" in a new tab

<https://www.evlbi.org/TOG>

services.jive.eu/top/Feedback/

JIVE MT - Home RADIOBLOCKS - Home iptables - Fai... - Server Fault JIVE EXPs SFXC Real-Time Fringe Plot Overview - ...REDMINE OSU

EVN feedback tool

Year	Session
2023	2023-2
2023	2023-1
2022	2022-3
2022	2022-2
2022	2022-1

<https://services.jive.eu/top/Feedback/>

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JIVE MT - Home RADIOBLOCKS - Home iptables - Fai...- Server Fault JIVE EXPs SFXC Real-Time Fringe Plot Overview - ...REDMINE OSU

EVN feedback tool

PI	Experiment	Wavelength
JIVE	N23C2	6.0
An	EA069A	6.0
Bhandari	EB100A	6.0
Hovatta	EH042A	6.0
XW.Shu	ES107	6.0
Gabanyi	EG125	6.0
Giarratana	GG087A	6.0
JIVE	N23M1	5.0
Kobak	EK052A	5.0
Kobak	EK052B	5.0

<https://services.jive.eu/top/Feedback/session/2023/2>

EVN feedback tool

Feedback for EB100A

Friend	Site	Result	Problem	
Jonathan Quick	Hartebeesthoek	Success	, , , , , , , , , , ,	No known problems.
Roberts	Irbene	Minor failures	, , , , , , , , , , ,	Observation started with scan 0156
Sebastián Pérez	Yebes	Success	, , , , , , , , , , ,	No Known problems.
Giuseppe Maccaferri	Medicina	Success	, , , , , , , RFI, , , , ,	None
Jun Yang	Onsala	Minor failures	, , , , , , , , , , ,	Noticed many transient and undesired of
Cristina Garcia Miro	Yebes	Success	, , , , , HIGH, , , , , , , ,	Bad weather from 146/14:00 till 146/16:0
Salvo Buttaccio	Noto	Failure	, , , , , , ANT, , , , , ,	None
Uwe	Effelsberg	Success	, , , , , , , , , , ,	Antenna stopped tracking from about 9:4
Paweł Wolak	Torun	Success		None

<https://services.jive.eu/top/Feedback/experiment/EB100A>

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<https://www.evlbi.org/TOG>

Home

Feedback System

A new system for station experiment feedback has been implemented. Feedback can be added through the **EVN Mattermost** via the command `/feedback` (for the most recent session) or (e.g.) `/feedback 2023/2` for Session 2 of 2023.

A form should pop up to fill in the details, as shown below. For now, the Mattermost interface is write-only; feedback can be reviewed [here](#).

Currently there is no way for sites to edit their feedback; please email **Bob Campbell** to request edits. We are working on this!

Station Feedback

Feedback for 2023 session 1

Experiment *

Friend *

des_small_jive

Site *

<https://www.evlbi.org/article/feedback-system>

present day

Thanks to
Des Small!

Projects

Projects: PRESENT



Horizon2020
European Union Funding
for Research & Innovation

start: 1 Mar 2021
end: 28 Feb 2025
see: Bob Eldering



**OPTICON
RadioNet
Pilot**

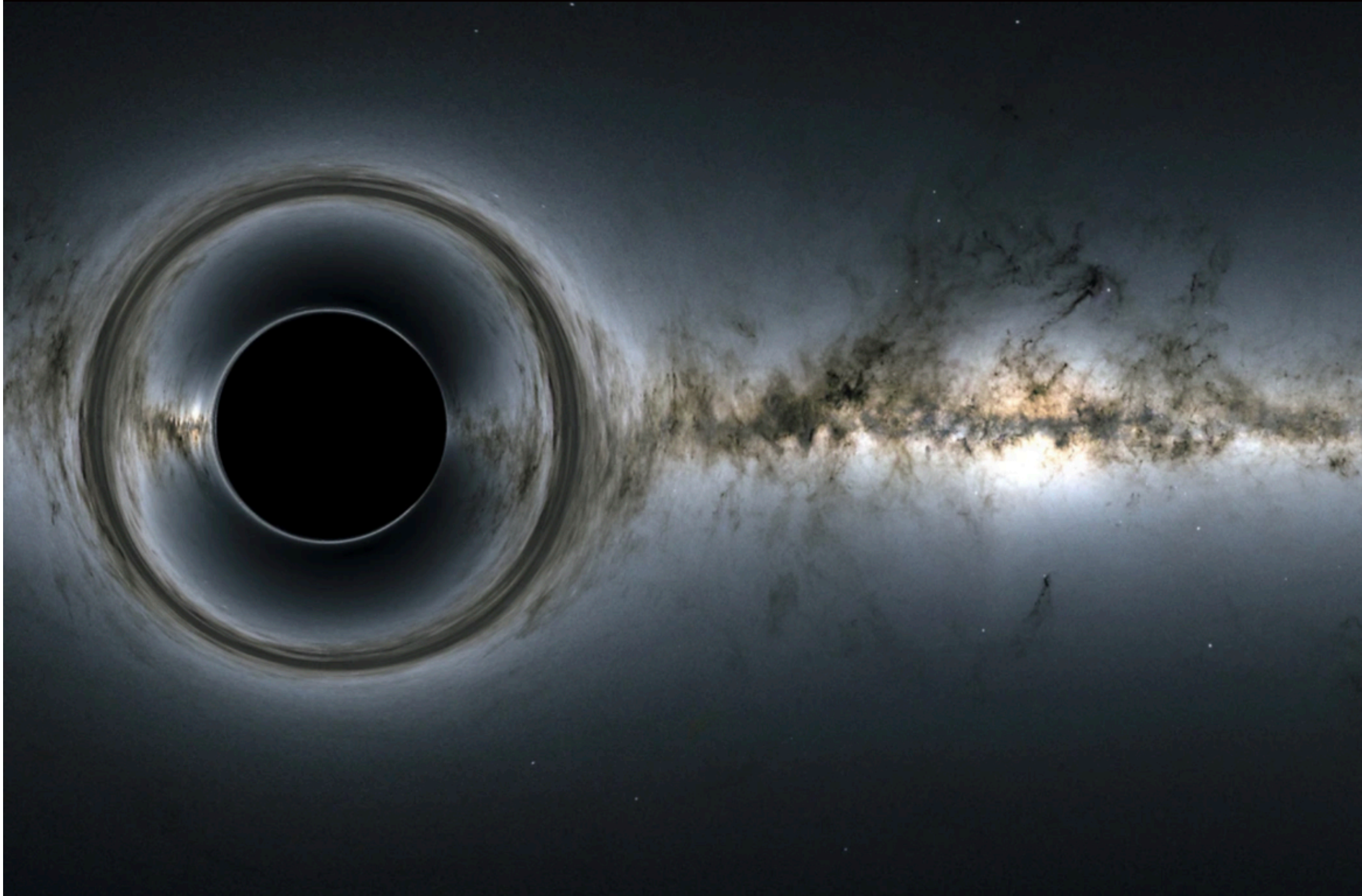
WP3: Seamless performance

- JA2.2 multi wavelength/facility time domain astronomy
- Prototype "EVN" plugin for TOM Toolkit (Bob Eldering)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004719.



Black Hole TOM 2.0



(Image courtesy of NASA/ESA/Gaia/DPAC)

Latest Comments

No comments yet.

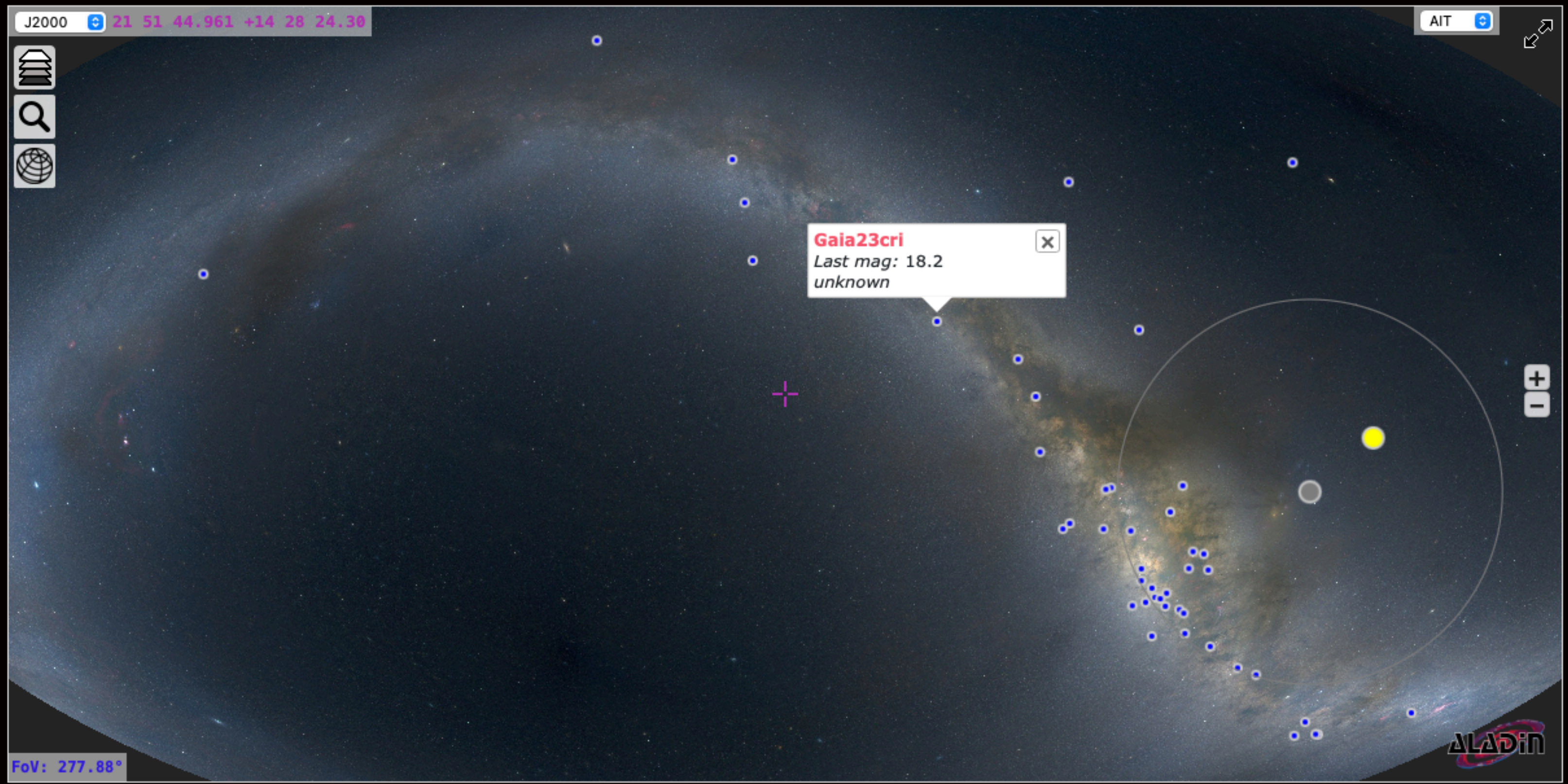
Latest Targets

ID	Created
----	---------

No targets. [Create a target.](#)

<https://bh-tom2.astrolabs.pl/>

51 Targets [Create Targets](#) [Export Filtered Targets](#)

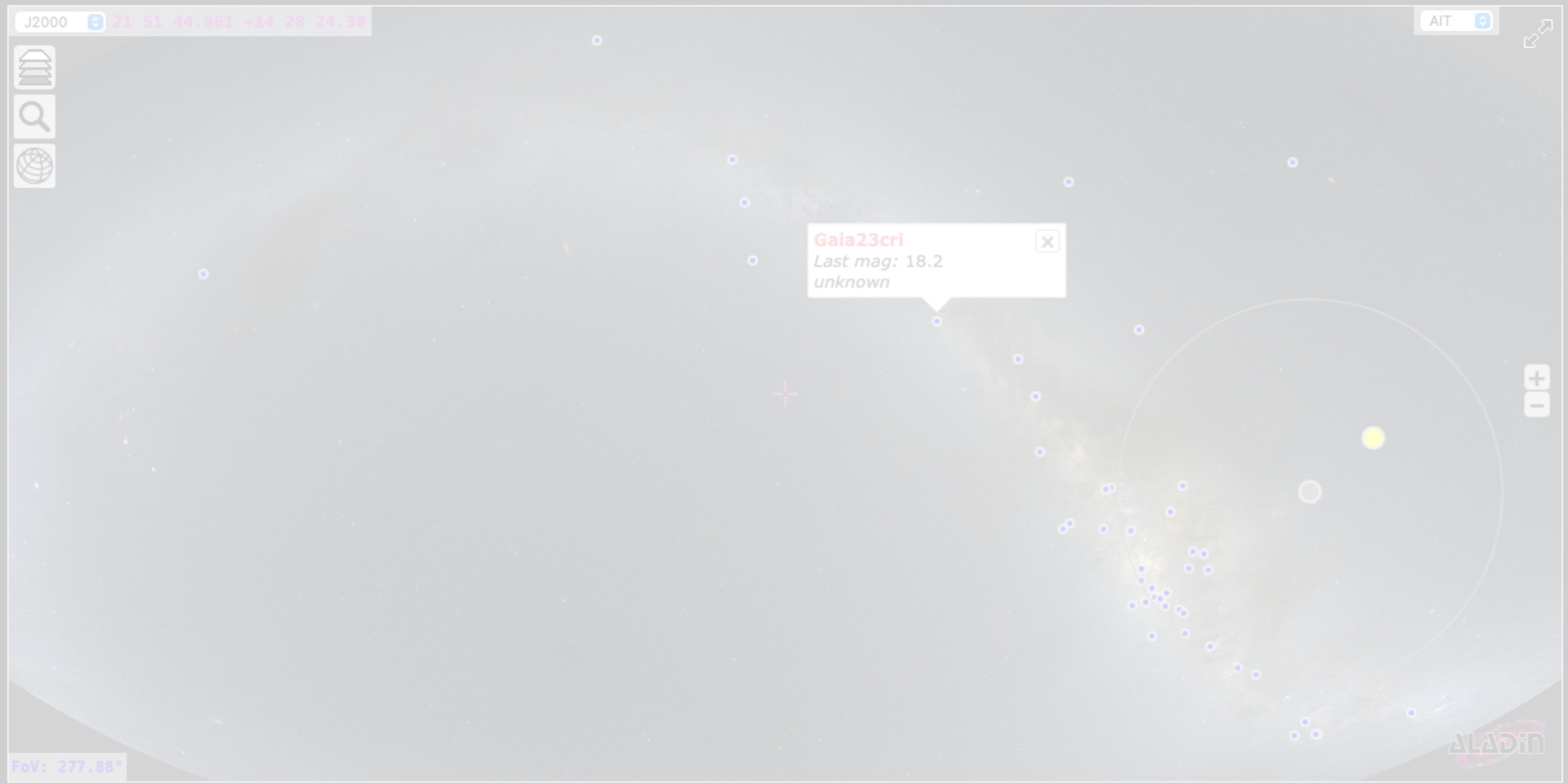


Add/Remove from grouping [Add](#) [Move](#) [Remove](#)

Show entries

Names	RA	Dec	Nobs	Last Gmag	Last Filter	Importance	Created	Priority	Sun	Class
Gaia21fkl	07:46:28.378	-21:52:32.016	4757	14.5	I(GaiaSP)	1.0	2023-10-03 02:10:39	0.0	102	Microlensing Event
Gaia23ckg	17:43:04.003	-35:15:32.400	377	17.9	~G	1.0	2023-10-25 17:10:19	7.5	38	Microlensing Event
B1721+343	17:23:20.809	+34:17:58.480	1520	15.4	~G	1.0	2023-11-13 15:11:28	95.5	61	Quasar(QSO)

51 Targets [Create Targets](#) [Export Filtered Targets](#)



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Show 10 entries

Names	RA	Dec	Nobs	Last Gmag	Last Filter	Importance	Created	Priority	Sun	Class
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51 Targets [Create Targets](#) [Export Filtered Targets](#)

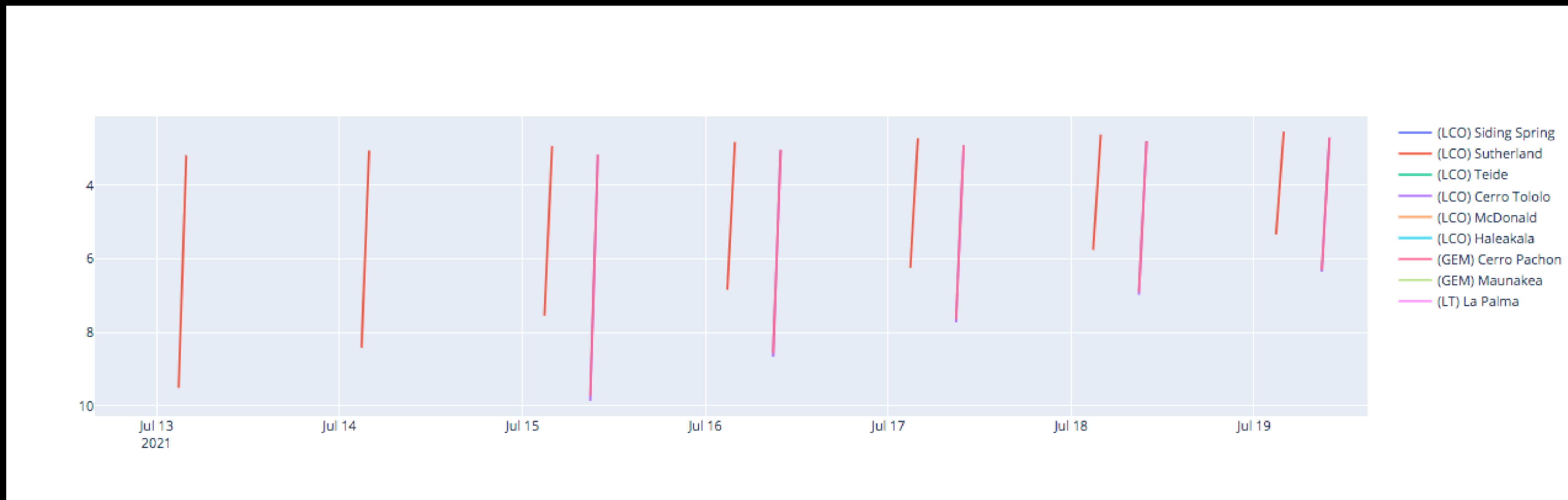


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Names	RA	Dec	Nobs	Last Gmag	Last Filter	Importance	Created	Priority	Sun	Class
<input type="checkbox"/> Gaia21fkl	07:46:28.378	-21:52:32.016	1757	14.5	I(GaiaSP)	1.0	2023-10-03 02:10:39	0.0	102	Microlensing Event
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Submit an observation to LCO



Names	Gaia20fnr
Target Type	SIDEREAL
Right Ascension	90.267 06:01:4.080
Declination	-18.9677 -18:58:3.720
Epoch	2000.0
Galactic Longitude	224.87750824442153
Galactic Latitude	-19.372360970063426
gaia_alert_name	Gaia20fnr

Imaging
Spectroscopy

Name*	Filter*
<input type="text"/>	Bessell-U ▼
Proposal*	Instrument type*
Follow-up of Astrophysical Transients (continuation) (SUI) ▼	1.0 meter Sinistro ▼
Intra Proposal Priority (IPP factor)*	Exposure count*
<input type="text"/>	<input type="text"/>
<small>Value between 0.5 to 2.0. More information about Intra Proposal Priority (IPP).</small>	Exposure time*
<input type="text"/>	<input type="text"/>

EVN into BH Tom

localhost:8000/targets/2/
Targets Alerts Observations Data Users

M31

There are 0 observations with unknown status.

Update Target Delete Target

Names	M31
Target Type	SIDEREAL
Right Ascension	10.6847

Observe Observations Manage Data M: Spectroscopy

Observe LCO GEM SOAR LT EVN

Apply an observation template
Observation template*

.../tom/facilities/lco.py
/soar.py
/evn.py

webserver running TOM e.g.
<https://localhost:8000/>

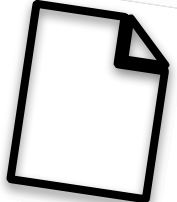
EVN observations db
- status
- data products

Planobs code
- visibility
- sensitivity
- diag plots

pySCHED scheduling
- basic schedule
- auto calib select
- BUT non-optimal ...

server running EVN backend
<https://tom-backend.jive.eu/>



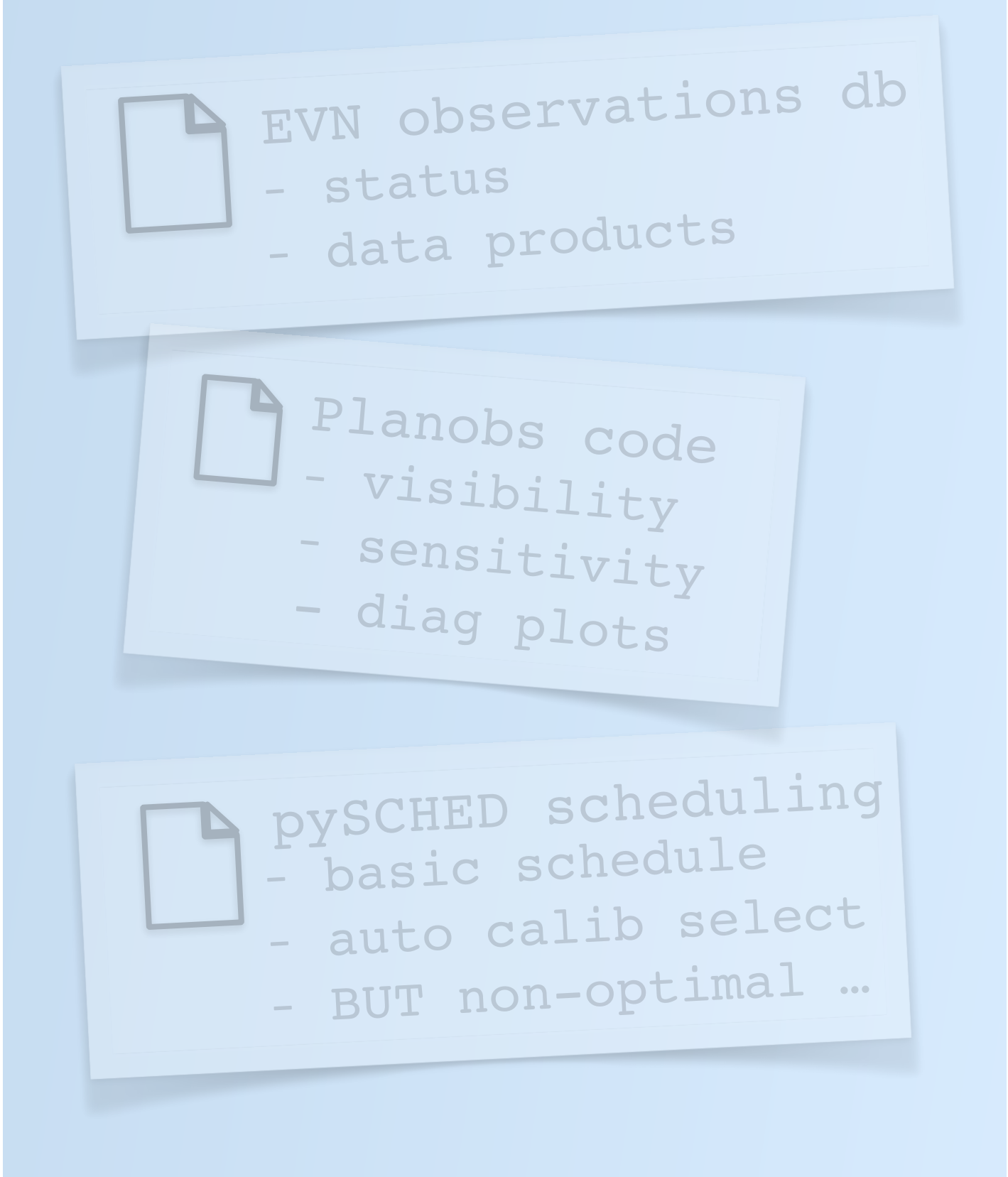
 **EVN observing time**

- allocated?
- all time used?
- targets approved?
- other constraints?



.../tom/facilities/lco.py
/soar.py
/evn.py

webserver running TOM e.g.
<https://localhost:8000/>



EVN observations db

- status
- data products

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OAuth2 Webservice

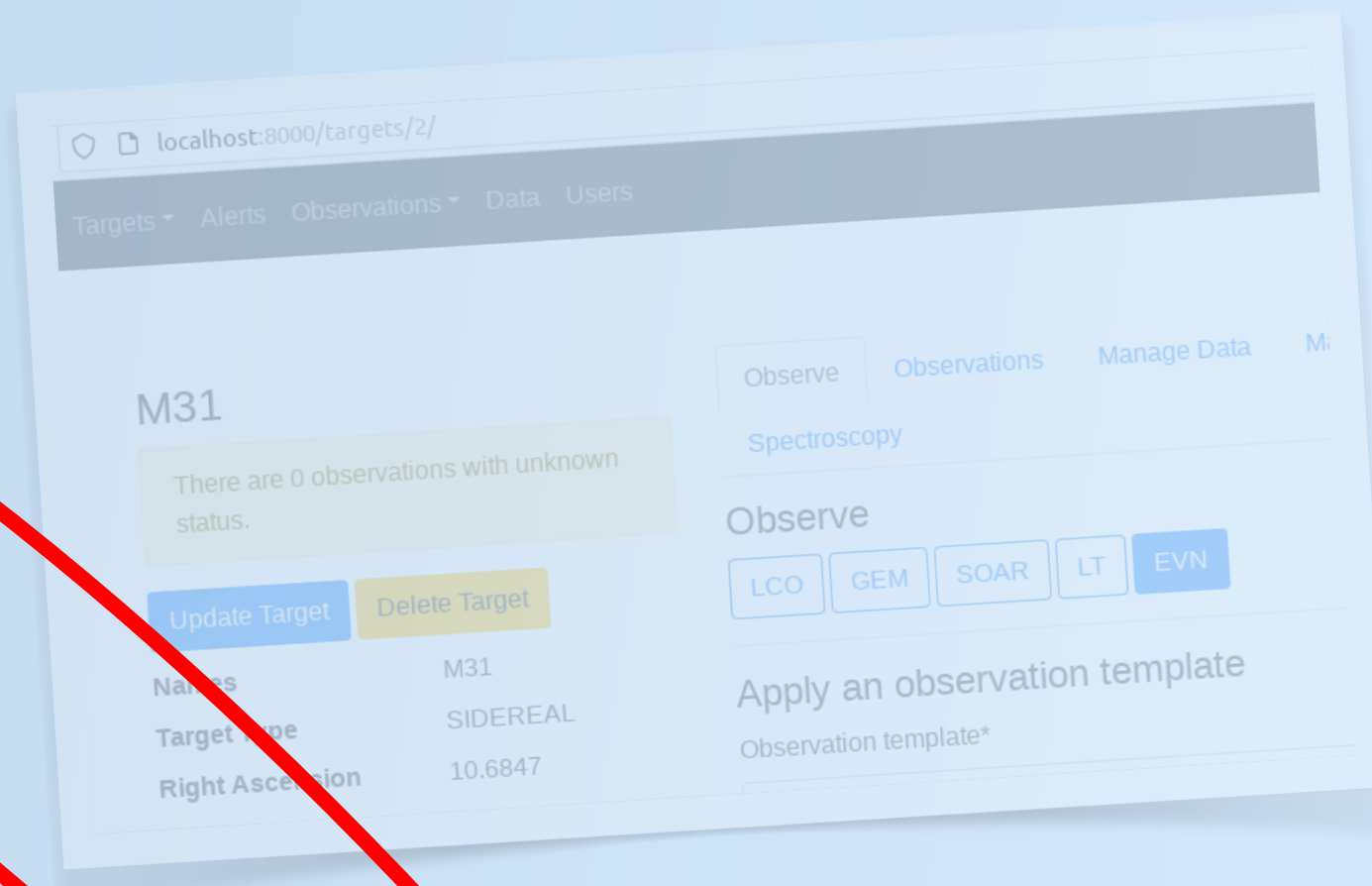
- authorization from BHTOM to Northstar
- RESTful API for plugin: check proposal details

Northstar database

- dedicated db interface

<https://proposal.jive.eu/>

link to proposal database



localhost:8000/targets/2/

Targets Alerts Observations Data Users

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Update Target Delete Target

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Observe Observations Manage Data M...

Spectroscopy

Observe

LCO GEM SOAR LT EVN

Apply an observation template

Observation template*

.../facilities/lco.py
/soar.py
/evn-*oauth2.py*

webserver running TOM e.g.
<https://localhost:8000/>

- EVN observations db
 - status
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- Planobs code
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 - sensitivity
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 - BUT non-optimal ...

server running EVN backend
<https://tom-backend.jive.eu/>

Projects: Current



Horizon2020
European Union Funding
for Research & Innovation

start: 1 Mar 2023

end: 28 Feb 2027

see: Aard/Mark/
Ilse/Des

RADIO

BLOCKS

WP4: Data transport and correlation

- Develop modules for GPU VLBI correlation (Mark Kettenis, Aard Keimpema)
- VDIF decoding, delay tracking, coherent dedispersion, ...

WP5: Data processing toolkit for advanced radio astronomy

- fringeFit task ported to Python Dask* framework (Des Small)
- Simulations for optimising calibration and parameter extraction (Ilse v Bemmel)

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101093934.



WP4 JIVE Planning

Not binding!



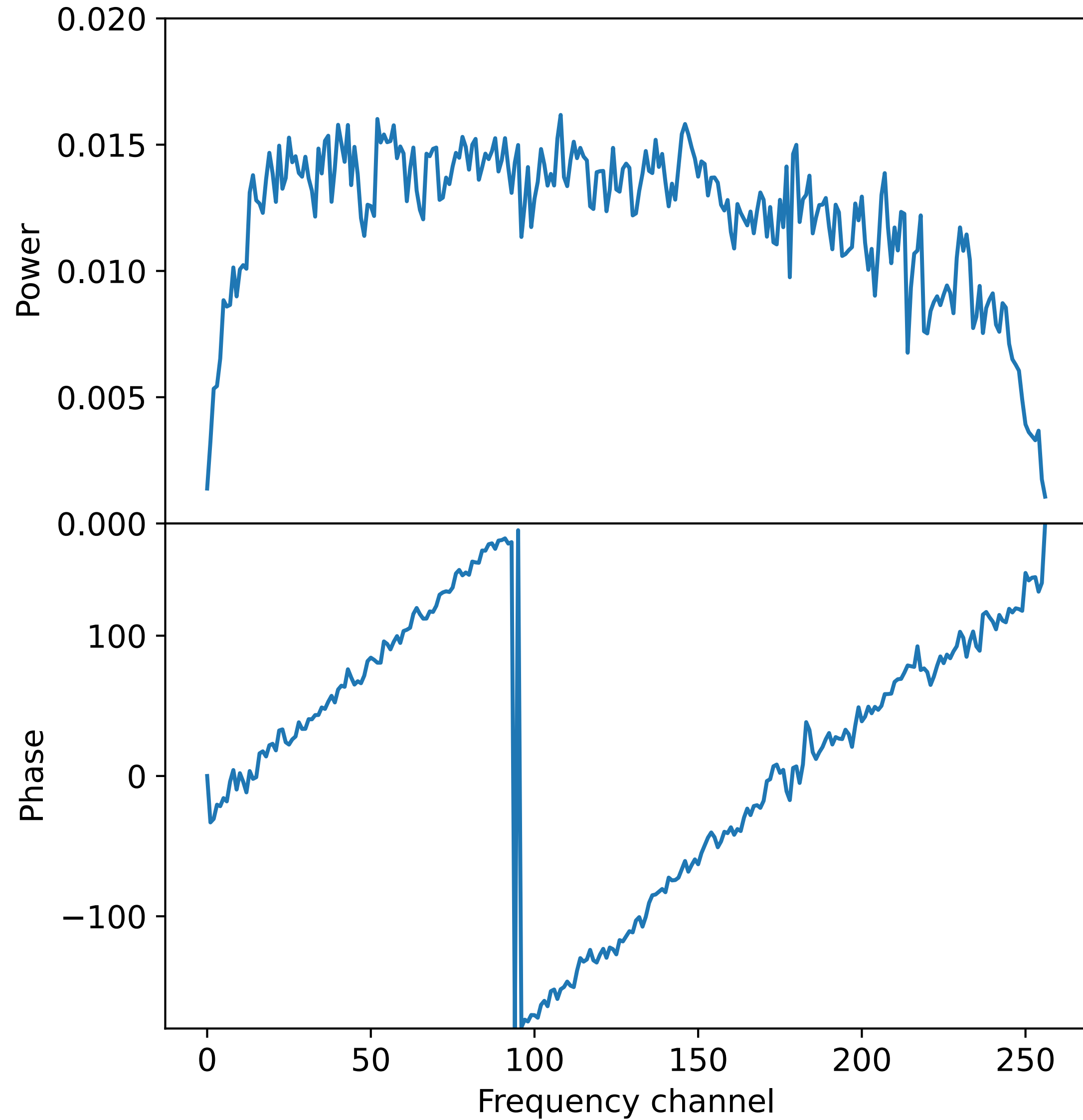
Description	Time	Manpower
Delay module	- Jul 2024	Aard
VDIF decoding/channelisation + data transport	- Jul 2024	Mark
Basic end-to-end VLBI correlation (integrate JIVE modules with TC correlator)	Jul 2024 - Jul 2025	Aard, Mark
Define benchmark for VLBI correlator (M18)	Aug 2025	Aard, Mark
Coherent de-dispersion module (D4.5)	Aug 2025 - Feb 2026	Aard
Multiple Phase Center module (D4.5) (VLBI "beam forming")	Aug 2025 - Feb 2026	Mark
Advanced end-to-end VLBI correlation (Integrate de-dispersion and MPC modules)	Feb 2026 - Nov 2026	Aard, Mark
Benchmarking, Reporting	Nov 2026 - Feb 2027	Aard, Mark, Marjolein

GPU-based "sfxc"

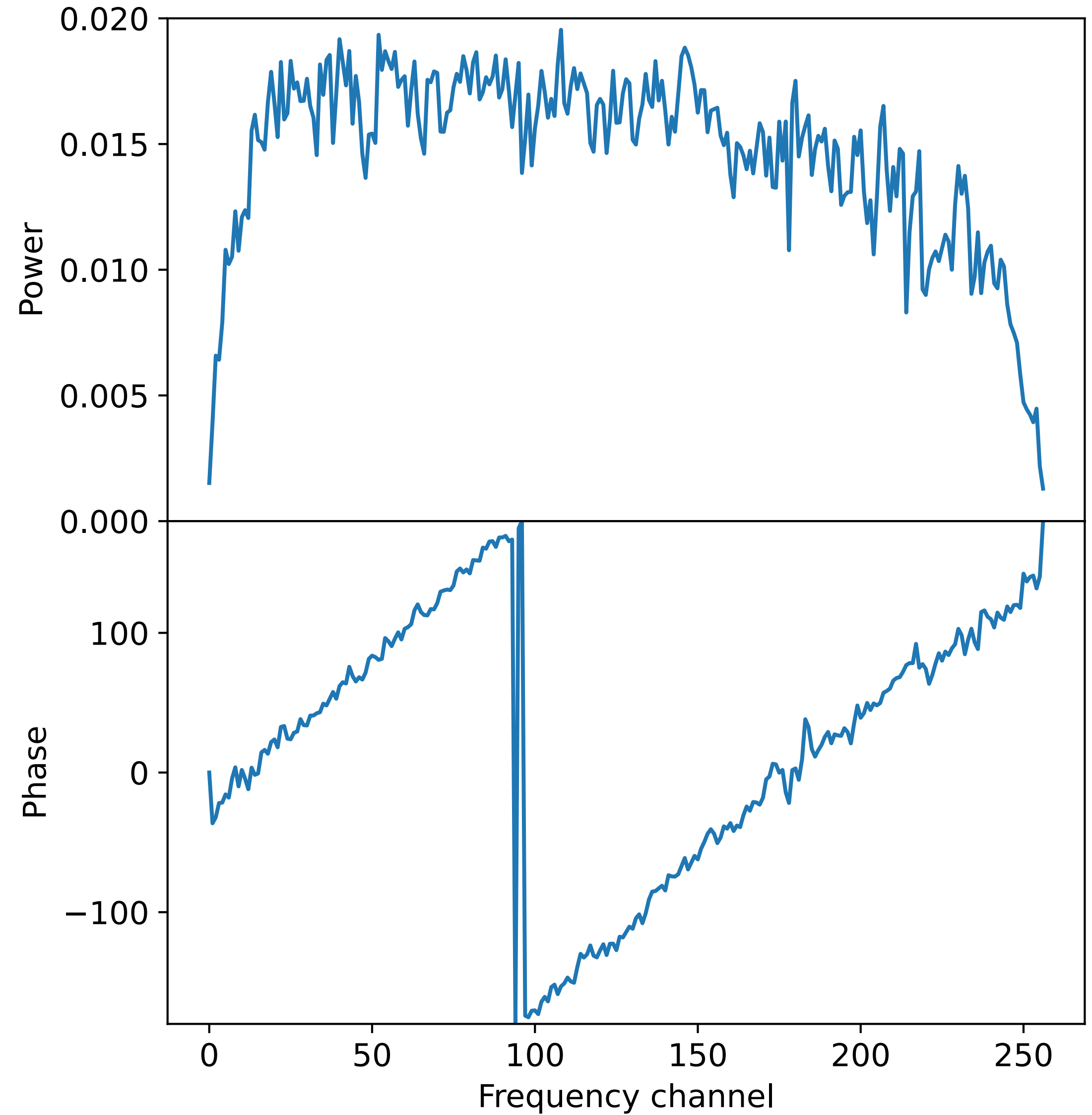
- faster VDIF dechannelisation, use newer assembly instruction
- new data reader-to-GPU-correlator distribution
- "toy" GPU-based correlator implements on GPU:
 - unpacking samples to floating point
 - corner turn
 - SFXC delay compensation (integer + fractional)
 - correlation
 - integrate correlated spectra into one visibility

Effelsberg - Onsala

GPU



SFXC



NME / 3C395 / 32 MHz / 1sec

WP5/T3 Simulations

Several packages available:

November meeting in Dwingeloo on down-select

Cristina GM joined the team (thanks @Ys)!

After that work towards:

- understand calibration + effects a-priori
- impact of adding a (very) sensitive antenna in the southern hemisphere

- continued maintenance pySCHEM
- CASA/casacore improvements
 - EOP correction
 - definition for PCAL table
 - **importfitsidi** updates to handle old VLBA data

Thanks !