

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

Antonio Jesús García Segura (IAA-CSIC)

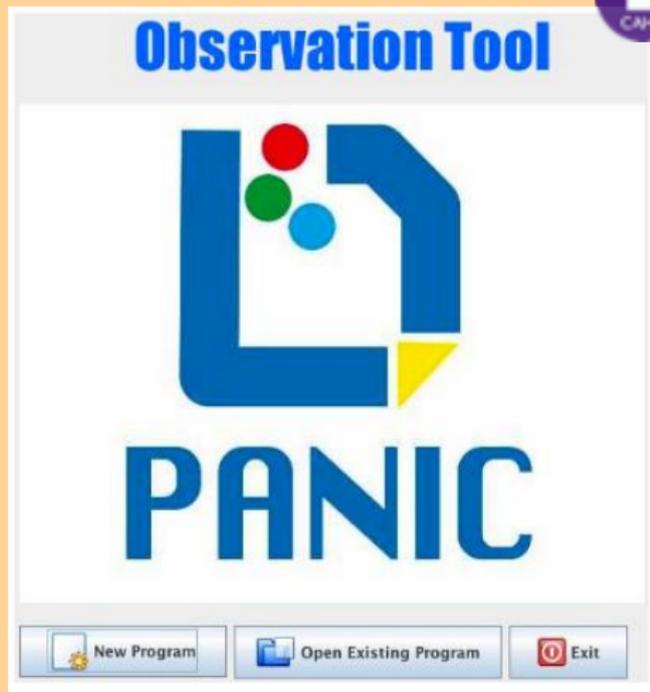
24-Sep-2025

# Sesión especial de PANIC 4K:

cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool:

- A software package that allows you to prepare your PANIC Observing Program and to execute it at the observatory.
- Specify the observations in a user-friendly way.
- Hides de complexity of the instrument and the telescope control system to the astronomer.
- Allows the support astronomer to optimize the night time arranging distinct observing blocks and programs.



# Sesión especial de PANIC 4K:

## cómo sacar el mayor partido a tu tiempo asignado de observación

### PANIC Observation Tool:



Image generated using AI with Midjourney v5.2

Prepare your Observing Program in advance at your office



Send your program to CAHA



Image generated using AI with Midjourney v5.2

Review and Execute your program at observatory

# Sesión especial de PANIC 4K:

cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool:



Download the OT from:

[https://home.iaa.csic.es/~agsegura/PANIC\\_OT/PANIC\\_OT.jar](https://home.iaa.csic.es/~agsegura/PANIC_OT/PANIC_OT.jar)

User manual:

[https://home.iaa.csic.es/~agsegura/PANIC\\_OT/PANIC\\_OT\\_User\\_Manual.pdf](https://home.iaa.csic.es/~agsegura/PANIC_OT/PANIC_OT_User_Manual.pdf)

Links available at PANIC Webpage:

<https://www.caha.es/panic>

# Sesión especial de PANIC 4K:

cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool:



The OT is written in  due to this development, it can be used in any platform that has installed Java Runtime Environment (JRE) Version 7.0 or higher.    

You can download the latest Java version from:

<http://www.java.com/en/download/manual.jsp>

# Sesión especial de PANIC 4K:

cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool:



To run the OT from the command line, in a Terminal, move to the directory where the PANIC\_OT.jar is, and type the following command:

```
java -jar PANIC_OT.jar
```

The OT can also be launched by double clicking in the PANIC\_OT.jar file at Windows and Mac OS X operating systems.

At the observatory, there is a script you can invoke:

```
start_ot.sh
```



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DE CIENCIA, INNOVACIÓN  
Y UNIVERSIDADES

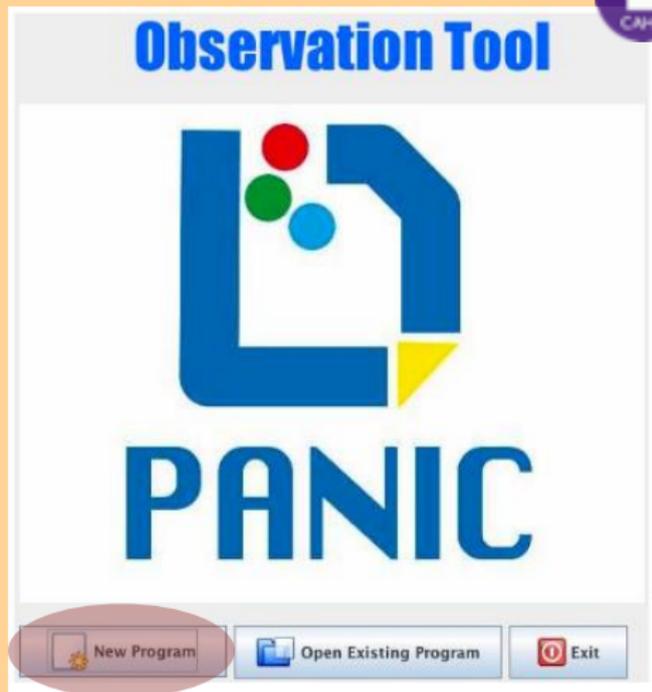


# Sesión especial de PANIC 4K:

cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool:

- This is the first window you see when you launch the OT, in which you can create a “New Program” or “Open Existing Program”



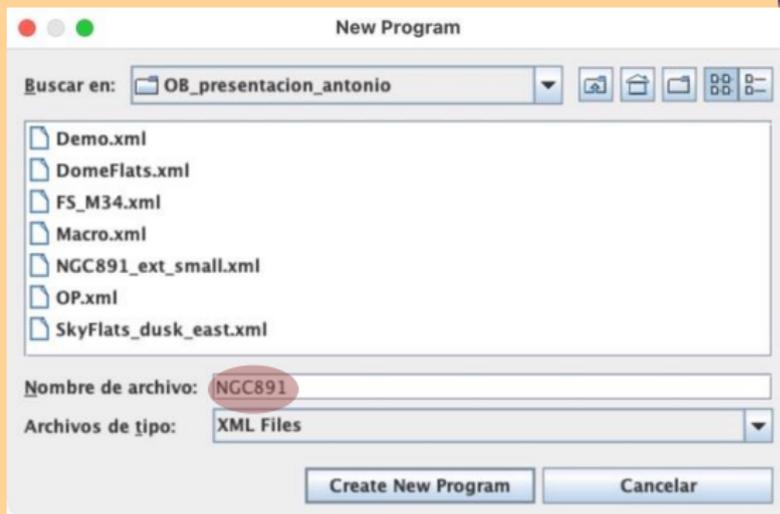
# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool



### ➤ New Program

We set the program name and automatically the OT adds the .xml extension



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Parts of the OT screen:
- Button Bar
- Tree View
- Selected element view
- Log view

The screenshot displays the PANIC Observation Tool interface. The top menu bar includes File, Edit, and Help. A red box highlights the 'Validation & Execution' button in the toolbar, with a red arrow pointing to it and the label 'Button Bar'. The left sidebar shows a 'Tree View' of the observation program structure, with a red box around it and the label 'Tree View'. The main area is divided into several panels: 'General program information' with fields for Proposal Title, ID, PI Name, Astronomer, Institution, Phone, Observer, and Telescope; 'Data Store Setup' with fields for File Name Prefix, Directory, and Save Mode; 'Data Reduction Setup' with a Reduction Mode dropdown and a Quicklook Display checkbox; and 'Observation' with Priority and Observing Time settings. A 'Comments for the Telescope Astronomer' text area is also present. A red box highlights the 'Selected element view' label in the Data Store Setup panel. At the bottom, a log window shows the following text: '2015.03.10 23h 55m 10s 444ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...' and '2015.03.10 23h 55m 18s 901ms [OT] File '/home/panic/NetBeansProjects/PANICObservationTool/FS15\_Standard\_Star\_March10.xml' opened.' A red box highlights the log window with the label 'Log view'.

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Observing Program (OP)
- General program information
- Data Store Setup
- Data Reduction Setup
- Observation info & comments

The screenshot shows the PANIC Observation Tool interface for program NGC891. The window title is "NGC891 - PANIC Observation Tool". The interface is divided into several sections:

- Validation & Execution:** A green checkmark icon indicates that the program is validated and ready for execution.
- General program information:** This section contains fields for:
  - Proposal Title: PANIC\_Seminar\_Example
  - Proposal ID: PANIC\_SE
  - PI: Matilde Fernández (E-mail: matilde@iaa.es)
  - Astronomer: Ana Gujarro (E-mail: gujarro@iaa.es)
  - Institution: IAA-CSIC
  - Phone: +34 958 121311
  - Observer: PANIC Team (E-mail: coords@caha.es)
  - Telescope: CAHA 2.2m (selected) and CAHA 3.5m
  - Observing Mode: Service
- Data Store Setup:** This section contains fields for:
  - File Name Prefix: panic\_se
  - Directory: / (with an "Explore" button)
  - Save Mode: Integrated All
- Data Reduction Setup:** This section contains:
  - Reduction Mode: No reduction
  - Quicklook Display:
- Observation:** This section contains:
  - Priority: High (selected), Medium, Low
  - Observing Time
  - Comments for the Telescope Astronomer: (empty text area)

At the bottom of the window, there is a log showing the following entries:

```
2025.09.19 08h 50m 25s 684ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...
2025.09.19 08h 50m 35s 872ms [OT] File '/Users/agsegura/saco/PANIC/PANIC Seminario
01-04-25/OB_presentacion_antonio/NGC891.xml' opened.
2025.09.19 09h 00m 40s 525ms [OT] Observing Block DomeFlats J deleted.
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

### Observing Block (OB)

- The Observing Block entity is the most important in the OT.
- Astronomers specify their OPs in terms of OBs, which contain all the information necessary to obtain a “single” observation.
- Each OB is related to one target, its instrument and exposure setup parameters, and the required observing constraints.
- Can contain one or multiple exposures, even various instrument configurations with different exposures.
- Each OB will be executed as a block and its results will be considered the smallest dataset of a given OP.
- It is recommended that one OB last at most one hour, in order whether some error occurs, do not lose much time.

# Sesión especial de PANIC 4K:

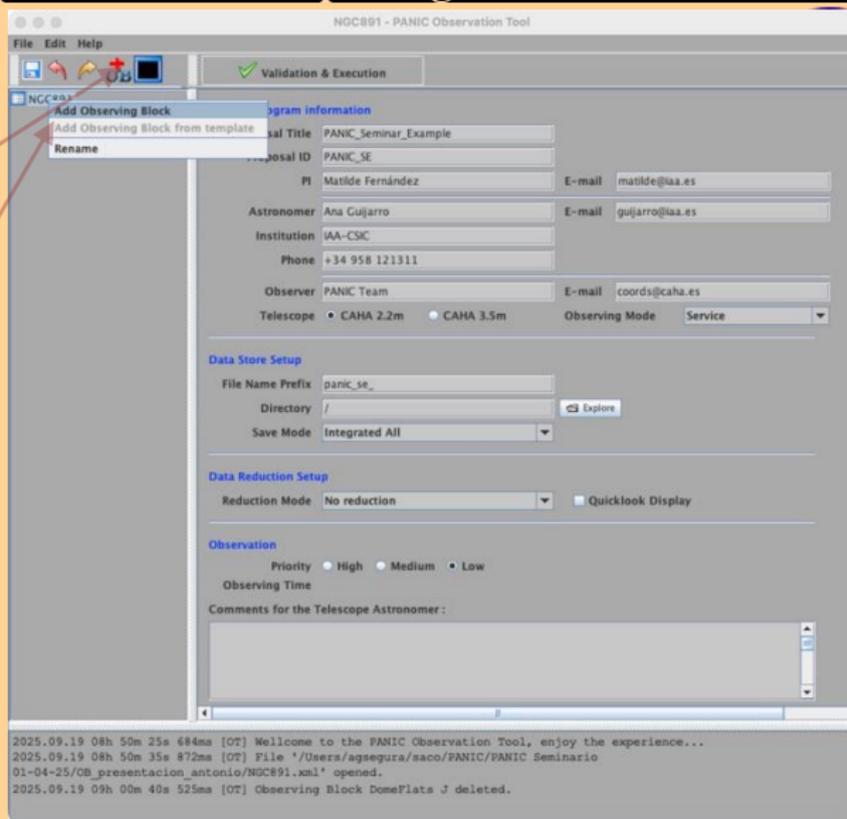
## cómo sacar el mayor partido a tu tiempo asignado de observación

### PANIC Observation Tool

#### ➤ Add Observing Block

Two different ways to add an Observing Block:

- Clicking at +OB button
- Right clicking at the Observing Program Name on the Tree View



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

NGC891 - PANIC Observation Tool

File Edit Help

Validation & Execution

NGC891  
NGC891 - J  
OS 1

Observing Block

Name: NGC891 - J

Estimated Timing: 00:00m:00s  
No Executions: 1

Target

Name: NGC891 Resolver

Equinox: 2000 RA: 02 22 32.91 Centering: Full Field  
RA: 02 22 32.91  
Type: Sidereal Dec: +42 20 53.9 Dec: +42 20 53.9

Proper Motions:

RA: 0.0 milli-arcsecs/year  
Dec: 0.0 milli-arcsecs/year

AZ/Elev/Airmass preview  
at 19 Sep 2025

Instrument Setup

ReadOutMode: cntsr

Observing Constraints

Sky background: Any/Bright Moon Phase: Any  
Transparency: Excellent Moon Distance: Any  
Seeing: Any Max. Airmass: [ ]

Mandatory Date from: 2025-09-19 to 2025-09-19  
Mandatory Time from: 00:00 to 00:00

Comments

```
01-04-25/OB_presentacion_antonio/NGC891.xml' opened.  
2025.09.19 09h 26m 49s 113ms [OT] Observing Block DomePlata J deleted.  
2025.09.19 09h 26m 51s 623ms [OT] New OB: 'OB 2' added.  
2025.09.19 09h 28m 27s 531ms [OT] Resolving Target name 'NGC891' with SIMBAD...  
2025.09.19 09h 28m 27s 531ms [OT] It must take less than 10 seconds...  
2025.09.19 09h 28m 27s 807ms [OT] Solved! Object type: III Galaxy RA: 02 22 32.91 DEC: +42 20 53.9
```

## PANIC Observation Tool

- Observing Block(OB)
- Set the Observing Block name
- Set Target name
- Click Resolver (SIMBAD query of target name)
- AZ/Elev/Airmass preview for a given date, generates a new window with the Object Visibility using Startalt, a utility of the Isaac Newton Group of Telescopes at La Palma. Developed by Peter Sorensen, Marco Azzaro and Javier Méndez

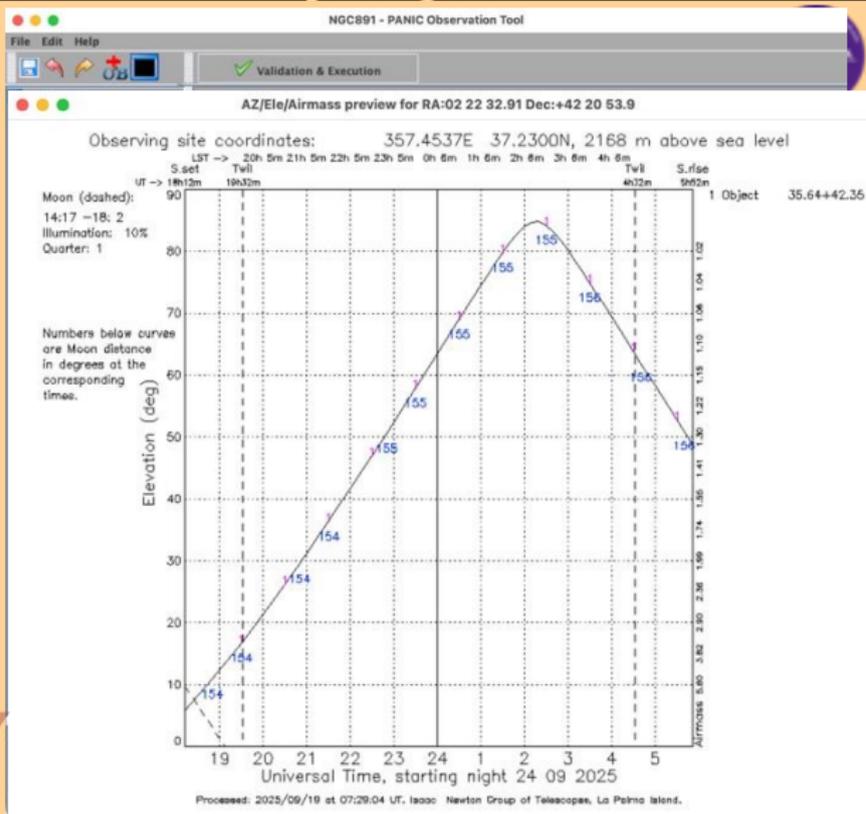
# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

### ➤ Observing Block(OB)

- Set the Observing Block name
- Set Target name
- Click Resolver (SIMBAD query of target name)
- AZ/Elev/Airmass preview for a given date, generates a new window with the Object Visibility using Startalt, a utility of the Isaac Newton Group of Telescopes at La Palma. Developed by Peter Sorensen, Marco Azzaro and Javier Méndez

AZ/Elev/Airmass preview



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

Elements in the tree view:

➤ Observing Block (OB)

- Target
- Instrument Setup
- Observing constraints
- Comments to observer

The screenshot shows the PANIC Observation Tool interface for the configuration of an Observing Block (OB). The window title is "NGC891\_Z\_Y\_Ks - PANIC Observation Tool".

**Tree View:**

- NGC891\_Z\_Y\_Ks
  - OB DomeFlats Z\_Y\_Ks
    - DomeFlats
    - Iterator
  - OB Target\_Z\_Y\_Ks
    - OS Target\_Z\_Y\_Ks
      - Default Values
      - Iterator
      - Dither Pattern

**Main Configuration Panel:**

- Validation & Execution:** Status: ✔
- Observing Block:**
  - Name: OB Target\_Z\_Y\_Ks
  - Estimated Timeline: 0h 00m 00s
  - No Executions: 1
- Target:**
  - Name: NGC891 (Resolver)
  - Centering: Full Field
  - Equinox: 2000 RA: 02 22 32.91 Dec: +42 20 53.9
  - Type: Sidereal Dec: +42 20 53.9
  - Proper Motions: RA: 0.0 milli-arcsecs/year Dec: 0.0 milli-arcsecs/year
  - AZ/Elev/Airmass preview: at 23 Sep 2025
- Instrument Setup:**
  - ReadOutMode: CRTSF
- Observing Constraints:**
  - Sky background: Any/Bright
  - Transparency: Excellent
  - Seeing: Any
  - Moon Phase: Any
  - Moon Distance: Any
  - Max. Airmass: [input field]
  - Mandatory Date: from Sep 23 2025 to Sep 23 2025
  - Mandatory Time: from 00:00 to 00:00
- Comments:** [Text area]

**Log Window:**

```
2025.09.23 18h 33m 08s 463ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...
2025.09.23 18h 33m 21s 764ms [OT] File '/Users/agsegura/saco/PANIC/PANIC Seminaro
01-04-25/OB_presentacion_antonio/NGC891_Z_Y_Ks.xml' opened.
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

Elements in the tree view:

### ➤ Observing Sequence (OS)

As a summary of all the programmed actions in this target, we can see a table with one row for each exposure is going to be taken.

Every row contains:

- dx, dy: relative movement, if exist
- Integration time
- Repetitions
- Filter
- Window size

Validation & Execution

Observing Sequence

Name OS Target Z\_Y\_Ks

Sequence	#	dx	dy	Int. time	Repetitions	Filter	Window
	1	0	0	2.903616	2	Z	Full frame Readout
	2	30	30	2.903616	2	Z	Full frame Readout
	3	-60	30	2.903616	2	Z	Full frame Readout
	4	-30	-90	2.903616	2	Z	Full frame Readout
	5	120	-30	2.903616	2	Z	Full frame Readout
	6	0	0	5.8072	3	Y	Full frame Readout
	7	30	30	5.8072	3	Y	Full frame Readout
	8	-60	30	5.8072	3	Y	Full frame Readout
	9	-30	-90	5.8072	3	Y	Full frame Readout
	10	120	-30	5.8072	3	Y	Full frame Readout
	11	0	0	8.7108	5	Ks	Full frame Readout
	12	30	30	8.7108	5	Ks	Full frame Readout
	13	-60	30	8.7108	5	Ks	Full frame Readout
	14	-30	-90	8.7108	5	Ks	Full frame Readout
	15	120	-30	8.7108	5	Ks	Full frame Readout

This table shows a resume of the entire Observing Block.

It is not editable.

Each row of the table is an exposure.

It is automatically filled when you add elements to the OB.

Please, right click over OS in the tree view and select from the pop-up menu the element you want to add.

Note: Skyflats do not show any row because are dynamically executed.

2025.09.23 18h 33m 08s 463ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...  
2025.09.23 18h 33m 21s 764ms [OT] File '/Users/agegura/saco/PANIC/PANIC Seminarío  
01-04-25/OB\_presentacion\_antonio/NGC891\_Z\_Y\_Ks.xml' opened.

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

➤ Selecting type of Observing Block:

Right-click on the Observing Sequence element at tree view, and select the type of observation we want to use for this OB.

In addition, depending on the type of OB selected, we also can add an Iterator and/or Dither Pattern.

The screenshot shows the PANIC Observation Tool interface. The tree view on the left shows the hierarchy: NGC891 > DomeFlats > OS > Dome Flats > NGC891 - J > OS. A right-click context menu is open over the 'OS' element, showing options: Add Calibration Series, Add Focus Series, Add Dome Flats, Add Sky Flats, Add Default Values, Add Iterator, and Add Dither Pattern. The main panel shows the 'Observing Sequence' configuration for 'OS'. It includes a 'Validation & Execution' status bar, a 'Name' field with 'OS', and a 'Sequence' table with columns: #, dx, dy, Int. time, Repetitions, Filter, and Window. The table is currently empty. A text box on the right explains that the table is not editable and is automatically filled when elements are added. A log window at the bottom shows system messages.

#	dx	dy	Int. time	Repetitions	Filter	Window
---	----	----	-----------	-------------	--------	--------

2025.09.22 18h 23m 34s 157ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...  
2025.09.22 18h 23m 44s 155ms [OT] File '/Users/agnegura/saco/PANIC/PANIC Seminario  
01-04-25/OS\_presentacion\_antonio/NGC891.xml' opened.  
2025.09.22 18h 23m 50s 905ms [OT] New OB: 'OB 2' added.  
2025.09.22 18h 24m 25s 435ms [OT] Observing Program renamed, old name 'NGC891' New name: NGC891 - J  
2025.09.22 18h 25m 23s 023ms [OT] Observing Program renamed, old name 'NGC891 - J' New name: NGC891

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

### Types of OB: Calibration Series

- Dark
- Flat

### Exposure Time:

- Fix
- Serie: between two values

### If Series:

- Linearly
- Logarithmically
- Zero = No spacing

(all exposures at max. value)

Cycles: # elements of the Series

The screenshot shows the PANIC Observation Tool interface for the observation NGC891\_Z\_Y\_Ks. The 'Validation & Execution' tab is active, and the 'Calibration Series' configuration is shown. The identifier is 'Calibration series Z', the type is 'Dark', and the filter is 'Z'. The exposure time is set to 'Serie' with values 2.9036 and 11.6145. The spacing is set to 'linearly'. The number of repetitions (coadds) is 2, and the number of cycles is 4, resulting in 8 images to be taken. The bottom of the window shows a log of events:

```
2025.09.23 19h 03m 47s 642ms [07] New OB: 'OB 4' added.
2025.09.23 19h 03m 50s 852ms [07] New Default Values: SE 0 added.
2025.09.23 19h 03m 54s 633ms [07] New Dither Pattern: Dither Pattern added.
2025.09.23 19h 10m 39s 779ms [07] New OB: 'OB 5' added.
2025.09.23 19h 10m 42s 451ms [07] New Calibration Series: CS 1 added.
2025.09.23 19h 13m 18s 684ms [07] Observing Block OB 4 deleted.
2025.09.23 19h 15m 01s 531ms [07] Resolving Target name 'NGC891' with SIMBAD...
2025.09.23 19h 15m 01s 531ms [07] It must take less than 10 seconds...
2025.09.23 19h 15m 01s 932ms [07] Solved! Object type: III Galaxy RA: 02 22 32.91 DEC: +42 20 53.9
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

- Types of OB:  
Focus Series

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

### ➤ Types of OB: DomeFlats

- Fixed: We specify Exposure time and Lamp
- Calculated: We specify the desired Counts Level and the OT calculates the exposure time for the given filter.

The screenshot shows the PANIC Observation Tool interface for NGC891. The left sidebar displays a tree view of observation configurations, including DomeFlats J, DomeFlats H, DomeFlats Ks, SkyFlats dusk east - Ks, SkyFlats dusk east - H, SkyFlats dusk east - J, Focus Series - H, Focus Series - J, NGC891 - J, NGC891 - H, NGC891 - Ks, NGC891 - J H ks, and NGC891 - J H ks Subwin. The main window is titled 'Dome Flats' and shows the configuration for 'Dome Flats J'. The 'Exposure Time & Lamp' section has 'Fixed' selected, with 'Exposure Time' set to 10000 (sec) and 'Lamp' set to L3 3000W. The 'Calculated' option is also visible, with 'Counts Level' set to 30000. The 'Filter' is set to 'J', 'Repetitions' to 1 (exp/obs), and 'Cycles' to 5 (No. exec. dither pattern). The status bar at the bottom shows the date and time: 2025.03.28 11h 05m 16s 641ms [OT] Wellcome to the PANIC Observation Tool, enjoy the experience...

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Types of OB: SkyFlats
  - Dusk
    - Monitoring Counts level
  - Dawn
    - Monitoring exp. time

Dusk	H2, Ks, H, J, Z, Y
Dawn	Y, Z, J, H, Ks, H2

The screenshot shows the PANIC Observation Tool interface for NGC891. The left sidebar lists observation types: DomeFlats J, DomeFlats H, DomeFlats Ks, SkyFlats dusk east - Ks, SkyFlats dusk east - H, SkyFlats dusk east - J, Focus Series - H, NGC891 - J, NGC891 - H, and NGC891 - Ks. The main panel is titled 'Skyflats' and contains the following settings:

- Identifier: SkyFlat Dusk ks
- Time of day:  Dusk,  Dawn
- Monitoring Level: 43000 (counts), Monitoring Time: (s)
- Filter: Ks
- Number of flatfields: 5
- Level: Required level: 25000 (counts), Maximum: 28750 (counts), Tolerance: 15 (%), Minimum: 21250 (counts), Bright limit: 40000 (counts)
- Integration times: Max. Exposure Time: 60 (s) per flatfield, Max. Integration time: 15 (s) per read
- Dither offset: RA: 30, DEC: 0 (arc sec)

At the bottom, a log shows: 2025.03.25 10h:36m:59s:248ms [OT] Wellcome to the PANIC Observation Tool, enjoy the experience... 2025.03.25 10h:37m:09s:209ms [OT] File '/Users/agsegura/Downloads/OP.xml' opened.

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

- Types of OB:  
Default values

To take simple exp.  
But we can combine  
Default values with:

- Dither Pattern
- Iterator

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Types of OB Iterators:  
Dither pattern

Necessary for several key reasons:

- Mitigating bad pixels
- Improving Sky background subtraction
- Reducing systematic noise
- Avoiding persistence effects

In this example we can see:

- Custom Offset selected
- 3 offset positions defined
- ✓ Extended object T-S  
26.3 arcmin  
direction North

The screenshot shows the PANIC Observation Tool interface. The main window is titled "NGC891 - PANIC Observation Tool". The "Validation & Execution" tab is active, showing the "Dither Pattern" configuration. The "Name" field is "Dither Pattern". The "Custom" tab is selected, showing the "Select one or more dither patterns:" section. The "1) Offset (arcsec)" section is selected, with "dx" and "dy" both set to 30.0. The "2) Dither Pattern" section is set to "2-point (line)". The "3) Grid Pattern" section is set to "dx" 30.0, "dy" 30.0, and "Steps" 3. The "4) Predefined Pattern" section is set to "No Predefined Pattern". The "Optional: Extended Object dither pattern:" section is checked, with "Extended object" set to "T-S", "Offset" set to 26.3 (arcmin), and "Direction" set to "North". The "Iteration Configuration:" table is visible at the bottom.

#	dx	dy	Pattern	Shift	PAT_EXP	PAT_NEXP	Cycles
1	0	0	SCIENCE Dither	-	1	6	6
2	0	1,578	SKY Dither	-	2	6	6
3	-30	-1,638	SCIENCE Dither	-	3	6	6
4	0	1,578	SKY Dither	-	4	6	6
5	60	-1,578	SCIENCE Dither	-	5	6	6
6	0	1,578	SKY Dither	-	6	6	6

2025.03.25 10h 36m 59s 248ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...  
2025.03.25 10h 37m 09s 209ms [OT] File '/Users/agsegura/Downloads/OP.xml' opened.

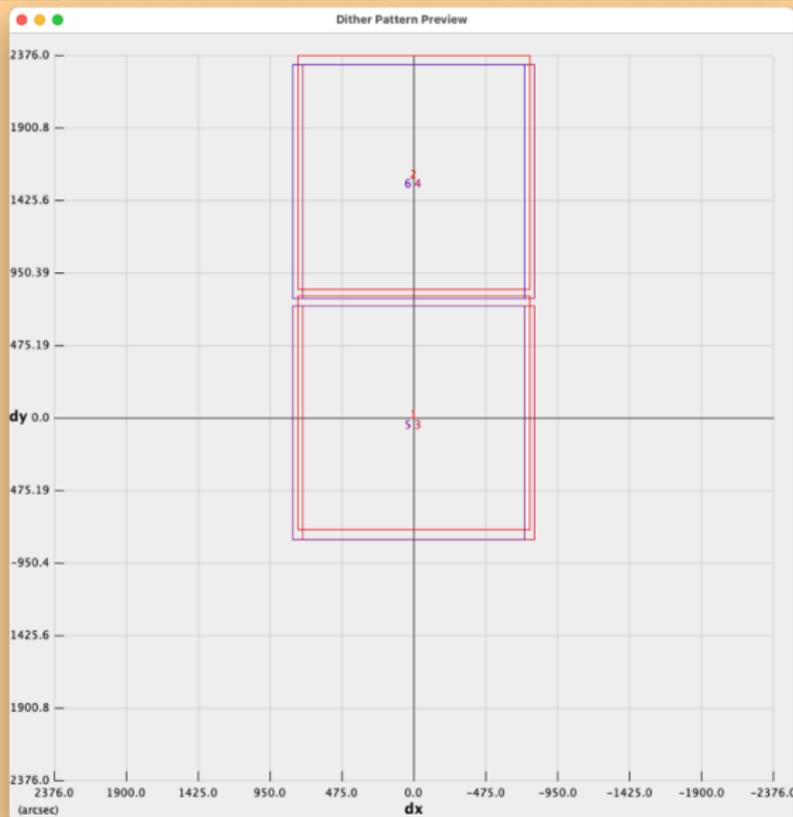


# Sesión especial de PANIC 4K:

## cómo sacar el mayor partido a tu tiempo asignado de observación

### PANIC Observation Tool

- Types of OB iterators:
  - Dither pattern
    - Custom Offset
    - 3 offset positions defined
    - ✓ Extended object T-S
      - 26.3 arcmin
      - direction North
- Dither Pattern Preview



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool → Dither pattern → Type 5-point (dice 5) & Preview



### Dither Pattern

Name: Dither Pattern

Custom Simple

Select one or more dither patterns:

1) Offset (arcsec) dx" 30.0 dy" 30.0 Add Offset

2) Dither Pattern Type 5-point (dice 5) dx" 30.0 dy" 30.0 Add Dither Pattern

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps dx 30.0 30.0 3 Add Grid Pattern dy 30.0 30.0 3

4) Predefined Pattern No Predefined Pattern Add Prefef. Pattern

Optional Extended Object dither pattern: Extended object 1-5 Offset (arcmin) Direction South Apply

Iteration Configuration:

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP	Cycles
1	0	0	5-point	-	1	5	1
2	30	30	5-point	↖	2	5	5
3	-60	30	5-point	↓	3	5	5
4	-30	-90	5-point	→	4	5	5
5	120	-30	5-point	↑	5	5	5

Show Preview

Delete Selected

Delete All

### Dither Pattern Preview

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



PANIC Observation Tool → Dither pattern → Type 5-point (dice 5) → Extended object T-S & Preview

**Dither Pattern**

Name:

**Custom Simple**

Select one or more dither patterns:

1) Offset (arcsec) dx"  dy"

2) Dither Pattern Type **5-point (dice 5)** dx"  dy"

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps

dx

dy

4) Predefined Pattern **No Predefined Pattern**

**Optional: Extended Object dither pattern:**

Extended object **T-S** Offset  Direction **South**

**Iteration Configuration:**

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP
1	0	0	SCIENCE 5-point	-	1	10
2	0	-1,800	SKY 5-point	↓	2	10
3	30	1,830	SCIENCE 5-point	↘	3	10
4	0	-1,800	SKY 5-point	↓	4	10
5	-60	1,830	SCIENCE 5-point	↙	5	10
6	0	-1,800	SKY 5-point	↓	6	10
7	-30	1,710	SCIENCE 5-point	↙	7	10
8	0	-1,800	SKY 5-point	↓	8	10
9	120	1,770	SCIENCE 5-point	↘	9	10
10	0	-1,800	SKY 5-point	↓	10	10

Cycles  (No. exec. entry table)

**Dither Pattern Preview**

2628.0

2102.4

1576.8

051.19

525.59

dy 0.0

525.59

1051.2

1576.8

2102.4

2628.0

2628.0 2102.4 1576.8 1051.2 525.59 0.0 -525.59 -1051.2 -1576.8 -2102.4 -2628.0

dx (arcsec)

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool → Dither pattern → Type 5-point (dice 5) → Extended object T-S-T & Preview



**Dither Pattern**

Name: Dither Pattern

Custom Simple

Select one or more dither patterns:

1) Offset (arcsec) dx: 30.0 dy: 30.0 Add Offset

2) Dither Pattern Type: 5-point (dice 5) dx: 30.0 dy: 30.0 Add Dither Pattern

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps  
 dx: 30.0 30.0 3  
 dy: 30.0 30.0 3 Add Grid Pattern

4) Predefined Pattern No Predefined Pattern Add Prefef. Pattern

Optional: Extended Object dither pattern:  
 Extended object T-S-T Offset: 30 (arcmin) Direction: South Apply

Iteration Configuration:

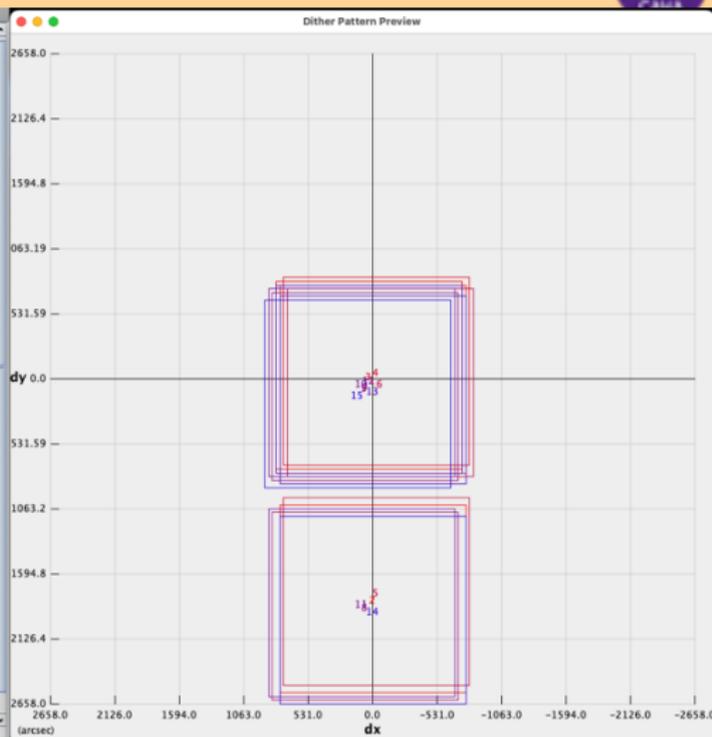
#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP
1	0	0	SCIENCE 5-point	1	1	15
2	0	-1,800	SKY 5-point	1	2	15
3	30	1,810	SCIENCE 5-point	1	3	15
4	-60	30	SCIENCE 5-point	1	4	15
5	0	-1,800	SKY 5-point	1	5	15
6	-30	1,710	SCIENCE 5-point	1	6	15
7	120	-30	SCIENCE 5-point	1	7	15
8	0	-1,800	SKY 5-point	1	8	15
9	0	1,800	SCIENCE 5-point	1	9	15
10	30	30	SCIENCE 5-point	1	10	15
11	0	-1,800	SKY 5-point	1	11	15
12	-60	1,810	SCIENCE 5-point	1	12	15
13	-30	-90	SCIENCE 5-point	1	13	15
14	0	-1,800	SKY 5-point	1	14	15
15	120	1,770	SCIENCE 5-point	1	15	15

Cycles: 1 (No. exec. entry table)

Show Preview

Delete Selected

Delete All



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool → Dither pattern → Grid Pattern (3x3) & Preview



Validation & Execution

Dither Pattern

Name: Dither Pattern

+dx AR ← ↑dy Dec

Custom Simple

Select one or more dither patterns:

1) Offset (arcsec) dx" 30.0 dy" 30.0 Add Offset

2) Dither Pattern Type 5-point (dice 5) dx" 30.0 dy" 30.0 Add Dither Pattern

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps

dx 90.0 -90.0 3 Add Grid Pattern

dy 90.0 -90.0 3

4) Predefined Pattern No Predefined Pattern Add Prefef. Pattern

Optional: Extended Object dither pattern:

Extended object 1-5-1 Offset (arcmin) Direction South Apply

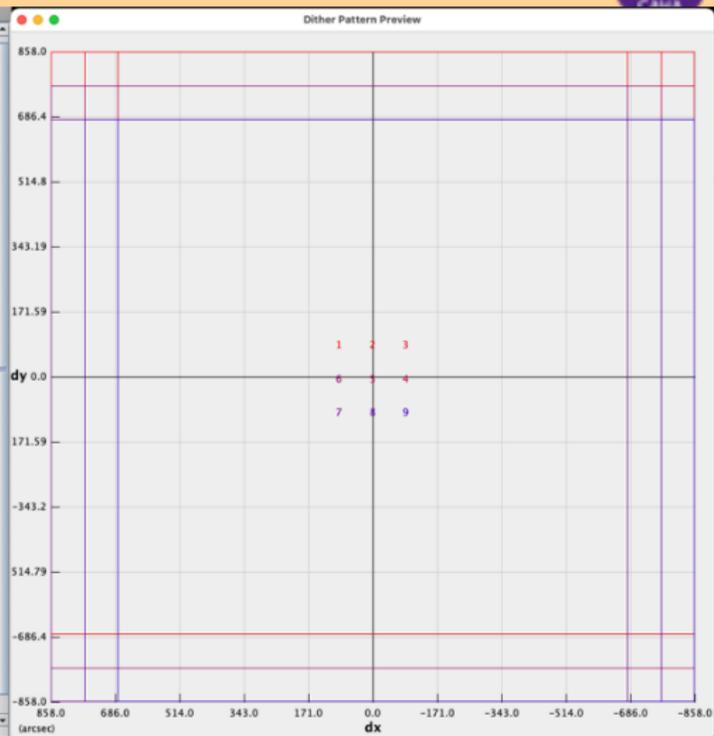
Repetition Configuration:

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP	Cycles
1	90	90	Grid Pattern	↖	1	9	1
2	-90	0	Grid Pattern	→	2	9	1
3	-90	0	Grid Pattern	→	3	9	1
4	0	-90	Grid Pattern	↓	4	9	1
5	90	0	Grid Pattern	↗	5	9	1
6	90	0	Grid Pattern	↗	6	9	1
7	0	-90	Grid Pattern	↓	7	9	1
8	-90	0	Grid Pattern	→	8	9	1
9	-90	0	Grid Pattern	→	9	9	1

Show Preview

Delete Selected

Delete All



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



PANIC Observation Tool → Dither pattern → Grid Pattern (3x3) → Extended object T-S-T & Preview

Validation & execution

**Dither Pattern**

Name:

**Custom Simple**

Select one or more dither patterns:

1) Offset (arcsec)    dx"     dy"     **Add Offset**

2) Dither Pattern    Type:     dx"     dy"     **Add Dither Pattern**

3) Grid Pattern    Initial Offset (arcsec)    Spacing (arcsec)    Steps

dx                **Add Grid Pattern**

dy                **Add Grid Pattern**

4) Predefined Pattern        **Add Prefef. Pattern**

**Optional: Extended Object dither pattern:**

Extended object    T-S-T    Offset:     Direction:     **Apply**

**Iteration Configuration:**

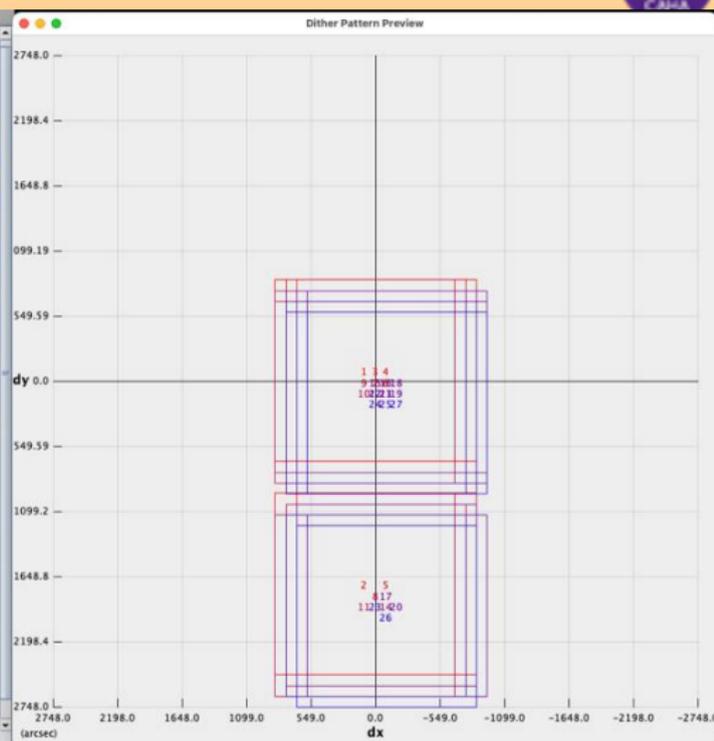
#	dx	dy	Pattern	Shift	PAT_EXP	PAT_NEXP	Cycles
1	90	90	SCIENCE Grid Pattern	\	1	27	1
2	0	-1,800	SKY Grid Pattern	↑	2	27	
3	-90	1,800	SCIENCE Grid Pattern	/	3	27	
4	-90	0	SCIENCE Grid Pattern	→	4	27	
5	0	-1,800	SKY Grid Pattern	↓	5	27	
6	0	1,710	SCIENCE Grid Pattern	↑	6	27	
7	90	0	SCIENCE Grid Pattern	←	7	27	
8	0	-1,800	SKY Grid Pattern	↓	8	27	
9	90	1,800	SCIENCE Grid Pattern	↖	9	27	
10	0	-90	SCIENCE Grid Pattern	↓	10	27	
11	0	-1,800	SKY Grid Pattern	↓	11	27	
12	-90	1,800	SCIENCE Grid Pattern	/	12	27	
13	-90	0	SCIENCE Grid Pattern	→	13	27	
14	0	-1,800	SKY Grid Pattern	↓	14	27	
15	90	1,890	SCIENCE Grid Pattern	\	15	27	
16	-90	0	SCIENCE Grid Pattern	→	16	27	
17	0	-1,800	SKY Grid Pattern	↓	17	27	
18	-90	1,800	SCIENCE Grid Pattern	/	18	27	

Cycles:  (No. exec. entry table)

**Show Preview**

**Delete Selected**

**Delete All**



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



PANIC Observation Tool → Dither Pattern → Predefined Pattern (18-point Reuleaux) & Preview

**Dither Pattern**

Name: Dither Pattern

Custom Simple

Select one or more dither patterns:

1) Offset (arcsec) dx: 30.0 dy: 30.0 Add Offset

2) Dither Pattern Type: 5-point (dice 5) dx: 30.0 dy: 30.0 Add Dither Pattern

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps  
 dx: 90.0 -90.0 3 Add Grid Pattern  
 dy: 90.0 -90.0 3

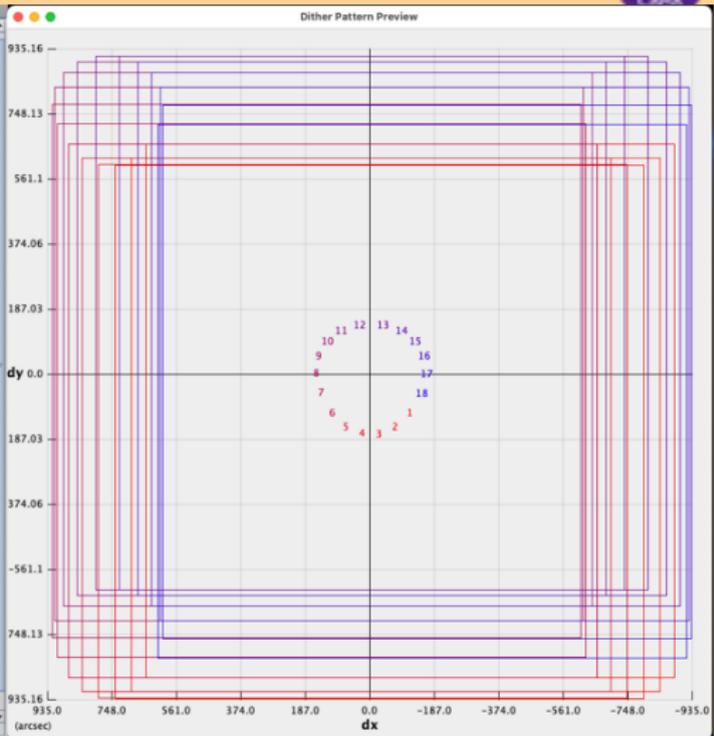
4) Predefined Pattern: 18-point Reuleaux Add Prefef. Pattern

Optional: Extended Object dither pattern:  
 Extended object 1-5-7 Offset (arcmin) Direction: South Apply

Iteration Configuration:

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXPT	Cycles
1	-117.5	-106.5	18-point Reuleaux	✓	1	18	1
2	41.33	-40.18	18-point Reuleaux	✓	2	18	18
3	46.67	-20.18	18-point Reuleaux	✓	3	18	18
4	48.33	0.67	18-point Reuleaux	✓	4	18	18
5	46.67	20.67	18-point Reuleaux	✓	5	18	18
6	41	39.33	18-point Reuleaux	✓	6	18	18
7	33.33	57.33	18-point Reuleaux	✓	7	18	18
8	13	55.67	18-point Reuleaux	✓	8	18	18
9	-6.33	50.33	18-point Reuleaux	✓	9	18	18
10	-25	42.18	18-point Reuleaux	✓	10	18	18
11	-40.67	30.18	18-point Reuleaux	✓	11	18	18
12	-54.33	16.18	18-point Reuleaux	✓	12	18	18
13	-66.67	0.67	18-point Reuleaux	✓	13	18	18
14	-54.33	-16.33	18-point Reuleaux	✓	14	18	18
15	-41	-30.67	18-point Reuleaux	✓	15	18	18
16	-24.67	-42.67	18-point Reuleaux	✓	16	18	18
17	-7	-50.33	18-point Reuleaux	✓	17	18	18
18	13.67	-55.67	18-point Reuleaux	✓	18	18	18

Show Preview, Delete Selected, Delete All



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool → Dither pattern → Predefined Pattern (18 and 36 point Reuleaux Triangle)



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## DITHERING STRATEGIES FOR EFFICIENT SELF-CALIBRATION OF IMAGING ARRAYS

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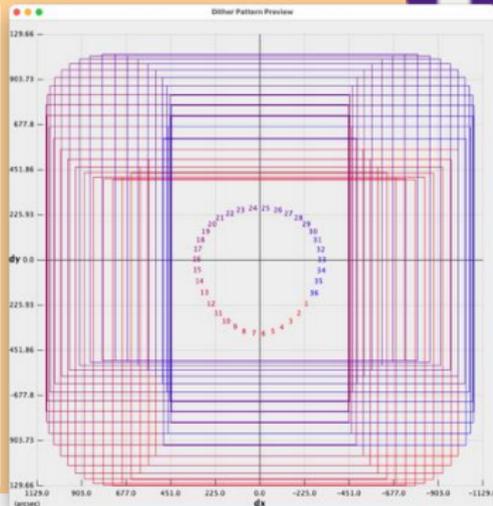
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### ABSTRACT

With high-sensitivity imaging arrays, accurate calibration is essential to achieve the limits of detection of space observatories. One can simultaneously extract information about the scene being observed and the calibration properties of the detector and imaging system from redundant dithered images of a scene. There are large differences in the effectiveness of dithering strategies for allowing the separation of detector properties from sky brightness measurements. In this paper, we quantify these differences by developing a figure of merit (FOM) for dithering procedures based on their usefulness for allowing calibration on all spatial scales. The figure of merit measures how well the gain characteristics of the detector are encoded in the measurements, and is independent of the techniques used to analyze the data. Patterns similar to the antenna arrangements of radio interferometers with good  $u$ - $v$  plane coverage are found to have good figures of merit. We present patterns for both deep surveys of limited sky areas and for shallow surveys. By choosing a strategy that encodes the calibration in the observations in an easily extractable way, we enhance our ability to calibrate our detector systems and to reach the ultimate limits of sensitivity that are required to achieve the promise of many missions.

*Subject headings:* instrumentation: detectors — methods: data analysis — techniques: photometric



### 3.1. Reuleaux Triangle

Take an equilateral triangle and draw three  $60^\circ$  arcs connecting each pair of vertices, while centered on the opposite vertex. The resulting fat triangle is a Reuleaux triangle. This basic shape has been used to set the geometry of the Sub-Millimeter Array (SMA) on Mauna Kea (Keto 1997).

This shape can be used as a dither pattern by taking equally spaced steps along each side of the Reuleaux triangle. The length of the steps is set by the overall size of the triangle (a free parameter) and the number of frames to be used in the pattern. For an interferometer, Keto (1997) shows that the  $u$ - $v$  coverage can be improved by displacing the antennas from their equally spaced positions around the triangle.

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



PANIC Observation Tool → Dither pattern → Predefined Pattern (18-point Reuleaux) → Extended object T-S & Preview

**Dither Pattern**

Name:

**Custom Simple**

Select one or more dither patterns:

1) Offset (arcsec) dx"  dy"  **Add Offset**

2) Dither Pattern Type **5-point (dice 5)** dx"  dy"  **Add Dither Pattern**

3) Grid Pattern Initial Offset (arcsec) Spacing (arcsec) Steps

dx    **Add Grid Pattern**

dy

4) Predefined Pattern **18-point Reuleaux** **Add Prefef. Pattern**

**Optional: Extended Object dither pattern:**

Extended object **T-S** Offset  Direction **South** **Apply**

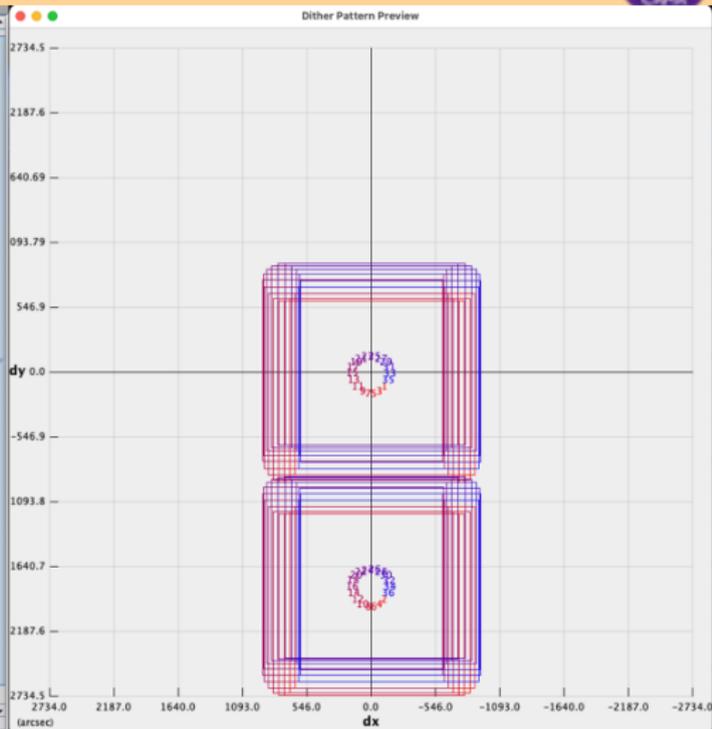
**Iteration Configuration:**

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP	Cycles
1	-117.5	-116.5	SCIENCE 18-point Reuleaux	↖	1	36	1
2	0	-1,800	SKY 18-point Reuleaux	↓	2	36	1
3	41.33	1,760	SCIENCE 18-point Reuleaux	↘	3	36	1
4	0	-1,800	SKY 18-point Reuleaux	↓	4	36	1
5	46.67	1,780	SCIENCE 18-point Reuleaux	↘	5	36	1
6	0	-1,800	SKY 18-point Reuleaux	↓	6	36	1
7	48.33	1,80	SCIENCE 18-point Reuleaux	↘	7	36	1
8	0	-1,800	SKY 18-point Reuleaux	↓	8	36	1
9	46.67	1,82	SCIENCE 18-point Reuleaux	↘	9	36	1
10	0	-1,800	SKY 18-point Reuleaux	↓	10	36	1
11	41	1,83	SCIENCE 18-point Reuleaux	↘	11	36	1
12	0	-1,800	SKY 18-point Reuleaux	↓	12	36	1
13	33.33	1,85	SCIENCE 18-point Reuleaux	↘	13	36	1
14	0	-1,800	SKY 18-point Reuleaux	↓	14	36	1
15	13	1,85	SCIENCE 18-point Reuleaux	↘	15	36	1
16	0	-1,800	SKY 18-point Reuleaux	↓	16	36	1
17	-6.33	1,85	SCIENCE 18-point Reuleaux	↗	17	36	1
18	0	-1,800	SKY 18-point Reuleaux	↓	18	36	1

**Show Preview**

**Delete Selected**

**Delete All**



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool → Dither pattern → Simple → Standard dither pattern with 20 positions & Preview



**Dither Pattern**

Name:

**Custom Simple**

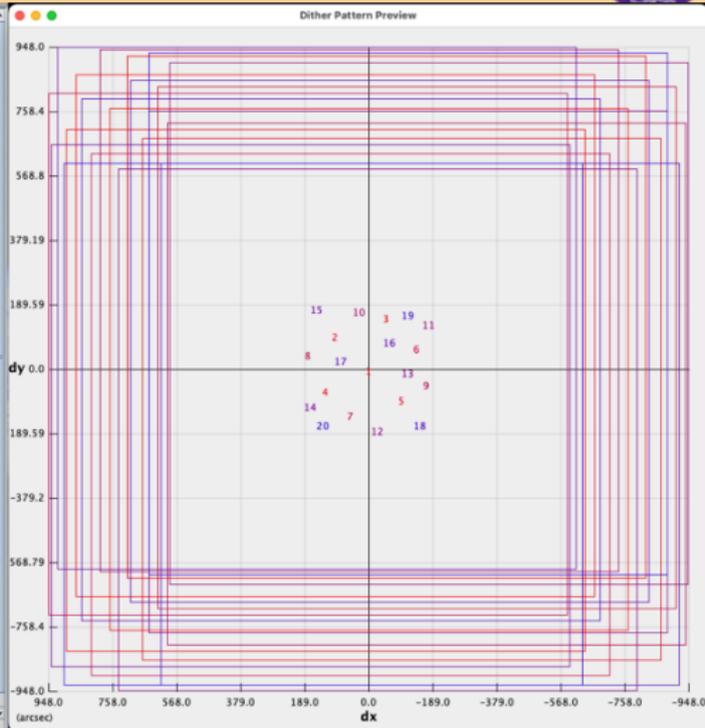
Integration Time:  sec. (Individual frame)  
 Exposure Time:  sec. (Sum of all coadds)  
 Total Exposure Time:  sec. (Sum of all dither positions, that is, one cycle)  
 Predefined Pattern:

**Optional: Extended Object dither pattern:**

Extended object  Offset:  (arcmin) Direction:

**Iteration Configuration:**

#	dx	dy	Pattern	Shift	PAT_EXPN	PAT_NEXP	Cycles
1	0	0	Simple Dither	-	1	20	1
2	99	99	Simple Dither	↖	2	20	1
3	-153	54	Simple Dither	↗	3	20	1
4	180	-216	Simple Dither	↘	4	20	1
5	-225	-27	Simple Dither	↖	5	20	1
6	-45	153	Simple Dither	↗	6	20	1
7	198	-198	Simple Dither	↘	7	20	1
8	126	180	Simple Dither	↖	8	20	1
9	-351	-90	Simple Dither	↘	9	20	1
10	198	216	Simple Dither	↖	10	20	1
11	-207	-36	Simple Dither	↗	11	20	1
12	153	-315	Simple Dither	↘	12	20	1
13	-90	171	Simple Dither	↖	13	20	1
14	288	-99	Simple Dither	↘	14	20	1
15	-18	288	Simple Dither	↗	15	20	1
16	-216	-99	Simple Dither	↘	16	20	1
17	144	-54	Simple Dither	↗	17	20	1
18	-234	-189	Simple Dither	↘	18	20	1



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

- Types of OB Iterators:  
Instrument Iterator

Elements to iterate with:

- Filter
- Integration time
- Repetitions
- Window

Iteration example:

- ✓ Filter
- ✓ Repetitions

The screenshot shows the PANIC Observation Tool interface. The left sidebar displays a tree view of observation configurations for NGC891, including Dome Flats, Sky Flats, and Focus Series. The main window is titled 'Instrument Iterator' and shows configuration options for Name, Filter (set to 'Ks'), Integration Time, and Repetitions (set to 5). A 'Window' section shows a 'Full frame Readout' window with a coordinate system and a table of sub-windows.

Integration Time	Repetitions	Filter	Window
2.9036	10	J	Full frame Readout
2.9036	10	H	Full frame Readout
2.9036	5	Ks	Full frame Readout

At the bottom, a log window shows the following messages:

```
2025.03.28 12h 31m 51s 427ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...
2025.03.28 12h 32m 06s 117ms [OT] File '/Users/agscura/saco/PANIC/PANIC Seminario 01-04-25/OP.xml' opened.
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



## PANIC Observation Tool

- Types of OB Iterators:  
Instrument Iterator

Iteration example:

- ✓ Filter
- ✓ Integration Time
- ✓ Repetitions
- ✓ Window:
  - 2 subwindows which allow us to reduce the Integration Time

The screenshot shows the PANIC Observation Tool interface. The main window is titled "NGC891 - PANIC Observation Tool". The "Validation & Execution" tab is active, showing the "Instrument Iterator" configuration. The "Name" field is set to "Iterator". The "Available Items" section shows "Filter" set to "Ks", "Integration Time" set to "1.35 (sec)", and "Repetitions" set to "10 (exp/pos)".

The "SubWindows" section shows a table with the following data:

x Start	y Start	x Size	y Size
1200	700	800	1000
2100	1900	1200	1000

Below the table, there is a "Window" table with the following data:

Integration Time	Repetitions	Filter	Window
1.35	5	J	2 SubWindows
1.35	5	H	2 SubWindows
1.35	10	Ks	2 SubWindows

The interface also includes a "SubWindows" preview window showing a blue rectangle on a coordinate system with axes labeled x and y. The top-right corner of the rectangle is labeled "(4000,4000)".

At the bottom of the interface, there is a status bar with the following text:

```
2025.03.28 12h 31m 51s 427ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...
2025.03.28 12h 32m 06s 117ms [OT] File '/Users/asegura/saco/PANIC/PANIC Seminario 01-04-25/OP.xml' opened.
```

# Sesión especial de PANIC 4K:

## cómo sacar el mayor partido a tu tiempo asignado de observación

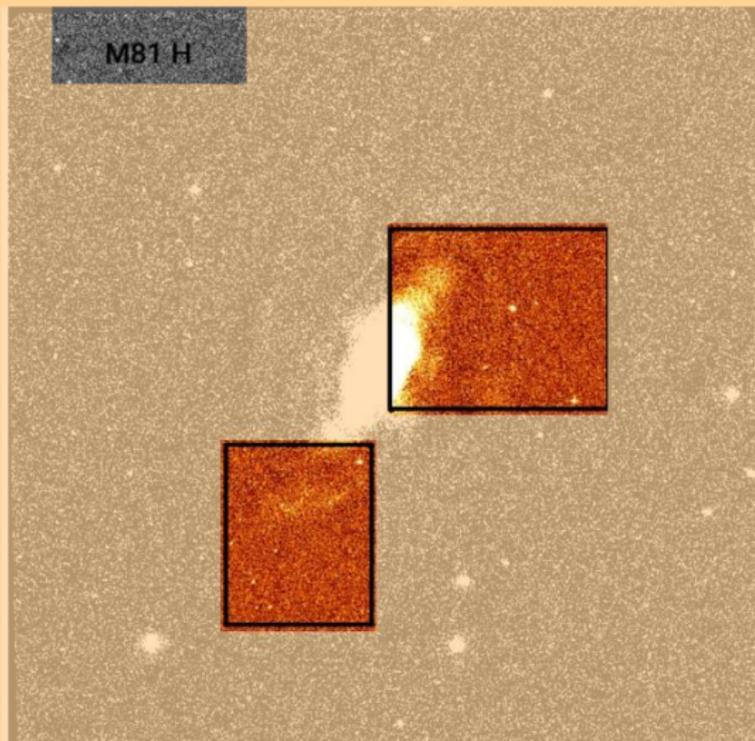
### PANIC Observation Tool

- Types of OB Iterators:  
Instrument Iterator

#### Iteration example:

- ✓ Filter
- ✓ Integration Time
- ✓ Repetitions
- ✓ Window:
  - 2 subwindows

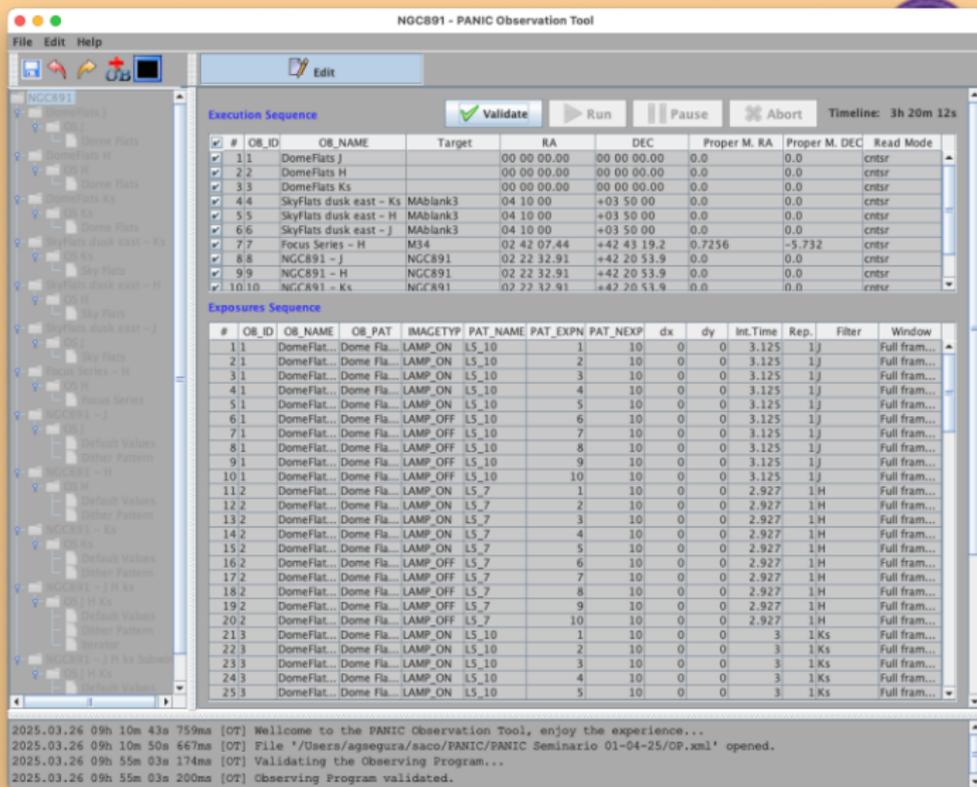
In this example, due to the size of the two subwindows, we obtain a minimum integration time of 1,35 seconds.



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Validation&Execution
- Timeline calculator
- Execution Sequence
- Exposures Sequence



NGC891 - PANIC Observation Tool

File Edit Help

Execution Sequence

#	OB_ID	OB_NAME	Target	RA	DEC	Proper M. RA	Proper M. DEC	Read Mode
✓	1.1	DomeFlats J		00 00 00.00	00 00 00.00	0.0	0.0	center
✓	2.2	DomeFlats H		00 00 00.00	00 00 00.00	0.0	0.0	center
✓	3.3	DomeFlats Ks		00 00 00.00	00 00 00.00	0.0	0.0	center
✓	4.4	SkyFlats dusk east - Ks	MABlack3	04 10 00	+03 50 00.00	0.0	0.0	center
✓	5.5	SkyFlats dusk east - H	MABlack3	04 10 00	+03 50 00.00	0.0	0.0	center
✓	6.6	SkyFlats dusk east - J	MABlack3	04 10 00	+03 50 00.00	0.0	0.0	center
✓	7.7	Focus Series - H	M34	02 42 07.44	+42 43 19.2	0.7256	-5.732	center
✓	8.8	NGC891 - J	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center
✓	9.9	NGC891 - H	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center
✓	10.10	NGC891 - Ks	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center

Exposures Sequence

#	OB_ID	OB_NAME	OB_PAT	IMAGETYP	PAT_NAME	PAT_EXPN	PAT_NEXP	dx	dy	Int.Time	Rep.	Filter	Window
1.1	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		1	10	0	0	3.125	1	J	Full fram...
2.1	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		2	10	0	0	3.125	1	J	Full fram...
3.1	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		3	10	0	0	3.125	1	J	Full fram...
4.1	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		4	10	0	0	3.125	1	J	Full fram...
5.1	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		5	10	0	0	3.125	1	J	Full fram...
6.1	DomeFlat...	Dome Fla...	LAMP_OFF	LS_10		6	10	0	0	3.125	1	J	Full fram...
7.1	DomeFlat...	Dome Fla...	LAMP_OFF	LS_10		7	10	0	0	3.125	1	J	Full fram...
8.1	DomeFlat...	Dome Fla...	LAMP_OFF	LS_10		8	10	0	0	3.125	1	J	Full fram...
9.1	DomeFlat...	Dome Fla...	LAMP_OFF	LS_10		9	10	0	0	3.125	1	J	Full fram...
10.1	DomeFlat...	Dome Fla...	LAMP_OFF	LS_10		10	10	0	0	3.125	1	J	Full fram...
11.2	DomeFlat...	Dome Fla...	LAMP_ON	LS_7		1	10	0	0	2.927	1	H	Full fram...
12.2	DomeFlat...	Dome Fla...	LAMP_ON	LS_7		2	10	0	0	2.927	1	H	Full fram...
13.2	DomeFlat...	Dome Fla...	LAMP_ON	LS_7		3	10	0	0	2.927	1	H	Full fram...
14.2	DomeFlat...	Dome Fla...	LAMP_ON	LS_7		4	10	0	0	2.927	1	H	Full fram...
15.2	DomeFlat...	Dome Fla...	LAMP_ON	LS_7		5	10	0	0	2.927	1	H	Full fram...
16.2	DomeFlat...	Dome Fla...	LAMP_OFF	LS_7		6	10	0	0	2.927	1	H	Full fram...
17.2	DomeFlat...	Dome Fla...	LAMP_OFF	LS_7		7	10	0	0	2.927	1	H	Full fram...
18.2	DomeFlat...	Dome Fla...	LAMP_OFF	LS_7		8	10	0	0	2.927	1	H	Full fram...
19.2	DomeFlat...	Dome Fla...	LAMP_OFF	LS_7		9	10	0	0	2.927	1	H	Full fram...
20.2	DomeFlat...	Dome Fla...	LAMP_OFF	LS_7		10	10	0	0	2.927	1	H	Full fram...
21.3	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		1	10	0	0	3	1	Ks	Full fram...
22.3	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		2	10	0	0	3	1	Ks	Full fram...
23.3	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		3	10	0	0	3	1	Ks	Full fram...
24.3	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		4	10	0	0	3	1	Ks	Full fram...
25.3	DomeFlat...	Dome Fla...	LAMP_ON	LS_10		5	10	0	0	3	1	Ks	Full fram...

2025.03.26 09h 10m 43s 759ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...  
 2025.03.26 09h 10m 50s 467ms [OT] File '7/Users/aspiguera/saco/PANIC/PANIC Seminario 01-04-25/OP.xml' opened.  
 2025.03.26 09h 55m 03s 174ms [OT] Validating the Observing Program...  
 2025.03.26 09h 55m 03s 200ms [OT] Observing Program validated.

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Validation&Execution
- OB's selection to run
- Timeline recalculated
- Run enabled at CAHA

The screenshot displays the PANIC Observation Tool interface. The main window is titled "NGC891 - PANIC Observation Tool". It features a menu bar (File, Edit, Help) and a toolbar with icons for file operations and execution. The central area is divided into two main sections: "Execution Sequence" and "Exposures Sequence".

**Execution Sequence Table:**

#	OB_ID	OB_NAME	Target	RA	DEC	Proper M. RA	Proper M. DEC	Read Mode
1	1	DomeFlats J		00 00 00.00	00 00 00.00	0.0	0.0	ctr
2	2	DomeFlats H		00 00 00.00	00 00 00.00	0.0	0.0	ctr
3	3	DomeFlats Ks		00 00 00.00	00 00 00.00	0.0	0.0	ctr
4	4	SkyFlats dusk es...	Mablanck3	04 10 00	+03 50 00	0.0	0.0	ctr
5	5	SkyFlats dusk es...	Mablanck3	04 10 00	+03 50 00	0.0	0.0	ctr
6	6	SkyFlats dusk es...	Mablanck3	04 10 00	+03 50 00	0.0	0.0	ctr
7	7	Focus Series - H	M04	02 43 07.44	+42 43 19.2	0.7256	-5.722	ctr
8	8	NGC891 - J	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	ctr
9	9	NGC891 - H	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	ctr
10	10	NGC891 - Ks	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	ctr

**Exposures Sequence Table:**

#	OB_ID	OB_NAME	OB_PAT	IMAGETYP	PAT_NAME	PAT_EXP	PAT_NEXP	dx	dy	Int.Time	Rep.	Filter	Window
1	1	DomeFlats J	Dome Flats	LAMP_ON	LS_10	1	10	0	0	3.125	1	J	Full frame
2	1	DomeFlats J	Dome Flats	LAMP_ON	LS_10	2	10	0	0	3.125	1	J	Full frame
3	1	DomeFlats J	Dome Flats	LAMP_ON	LS_10	3	10	0	0	3.125	1	J	Full frame
4	1	DomeFlats J	Dome Flats	LAMP_ON	LS_10	4	10	0	0	3.125	1	J	Full frame
5	1	DomeFlats J	Dome Flats	LAMP_ON	LS_10	5	10	0	0	3.125	1	J	Full frame
6	1	DomeFlats J	Dome Flats	LAMP_OFF	LS_10	6	10	0	0	3.125	1	J	Full frame
7	1	DomeFlats J	Dome Flats	LAMP_OFF	LS_10	7	10	0	0	3.125	1	J	Full frame
8	1	DomeFlats J	Dome Flats	LAMP_OFF	LS_10	8	10	0	0	3.125	1	J	Full frame
9	1	DomeFlats J	Dome Flats	LAMP_OFF	LS_10	9	10	0	0	3.125	1	J	Full frame
10	1	DomeFlats J	Dome Flats	LAMP_OFF	LS_10	10	10	0	0	3.125	1	J	Full frame
11	2	DomeFlats H	Dome Flats	LAMP_ON	LS_7	1	10	0	0	2.927	1	H	Full frame
12	2	DomeFlats H	Dome Flats	LAMP_ON	LS_7	2	10	0	0	2.927	1	H	Full frame
13	2	DomeFlats H	Dome Flats	LAMP_ON	LS_7	3	10	0	0	2.927	1	H	Full frame
14	2	DomeFlats H	Dome Flats	LAMP_ON	LS_7	4	10	0	0	2.927	1	H	Full frame
15	2	DomeFlats H	Dome Flats	LAMP_ON	LS_7	5	10	0	0	2.927	1	H	Full frame
16	2	DomeFlats H	Dome Flats	LAMP_OFF	LS_7	6	10	0	0	2.927	1	H	Full frame
17	2	DomeFlats H	Dome Flats	LAMP_OFF	LS_7	7	10	0	0	2.927	1	H	Full frame
18	2	DomeFlats H	Dome Flats	LAMP_OFF	LS_7	8	10	0	0	2.927	1	H	Full frame
19	2	DomeFlats H	Dome Flats	LAMP_OFF	LS_7	9	10	0	0	2.927	1	H	Full frame
20	2	DomeFlats H	Dome Flats	LAMP_OFF	LS_7	10	10	0	0	2.927	1	H	Full frame
21	2	DomeFlats	Dome Flats	LAMP_ON	LS_10	1	10	0	0	3	1	Ks	Full frame
22	2	DomeFlats	Dome Flats	LAMP_ON	LS_10	2	10	0	0	3	1	Ks	Full frame
23	2	DomeFlats	Dome Flats	LAMP_ON	LS_10	3	10	0	0	3	1	Ks	Full frame
24	2	DomeFlats	Dome Flats	LAMP_ON	LS_10	4	10	0	0	3	1	Ks	Full frame
25	2	DomeFlats	Dome Flats	LAMP_ON	LS_10	5	10	0	0	3	1	Ks	Full frame

Timeline: 0h 10m 31s

Buttons: Validate, Run, Pause, Abort

Log messages at the bottom:

```
2025.03.26 09h 30m 41s 793ms [OT] Welcome to the PANIC Observation Tool, enjoy the experience...
2025.03.26 09h 30m 53s 703ms [OT] Validating the Observing Program...
2025.03.26 09h 30m 53s 725ms [OT] Observing Program validated.
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Running
- Pause & abort enabled
- Time Remaining
- Execution highlighted
- Activity is shown at log

The screenshot displays the PANIC Observation Tool interface. At the top, the title bar reads "NGC891 - PANIC Observation Tool". Below the menu bar (File, Edit, Help) and toolbar (File, Run, Pause, Abort, etc.), there are two main data tables.

**Execution Sequence Table:**

#	OB_ID	OB_NAME	Target	RA	DEC	Proper M. RA	Proper M. DEC	Read Mode
1	1	DomeFlats J		00 00 00.00	00 00 00.00	0.0	0.0	center
2	2	DomeFlats H		00 00 00.00	00 00 00.00	0.0	0.0	center
3	3	DomeFlats Ks		00 00 00.00	00 00 00.00	0.0	0.0	center
4	4	SkyFlats dusk es...	MABlank3	04 10 00	+03 50 00	0.0	0.0	center
5	5	SkyFlats dusk es...	MABlank3	04 10 00	+03 50 00	0.0	0.0	center
6	6	SkyFlats dusk es...	MABlank3	04 10 00	+03 50 00	0.0	0.0	center
7	7	Focus Series - H	IM34	02 42 07.44	+42 43 19.2	0.7256	-5.732	center
8	8	NGC891 - J	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center
9	9	NGC891 - H	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center
10	10	NGC891 - Ks	NGC891	02 22 32.91	+42 20 53.9	0.0	0.0	center

**Exposures Sequence Table:**

#	OB_ID	OB_NAME	OB.PAT	IMAGETYP	PAT_NAME	PAT_EXPN	PAT_NEXT	dx	dy	Int.Time	Rep.	Filter	Window
1	1	DomeFlats J	Dome Flats	LAMP_ON	L5_10	1	10	0	0	3.125	1	J	Full frame
2	1	DomeFlats J	Dome Flats	LAMP_ON	L5_10	2	10	0	0	3.125	1	J	Full frame
3	1	DomeFlats J	Dome Flats	LAMP_ON	L5_10	3	10	0	0	3.125	1	J	Full frame
4	1	DomeFlats J	Dome Flats	LAMP_ON	L5_10	4	10	0	0	3.125	1	J	Full frame
5	1	DomeFlats J	Dome Flats	LAMP_ON	L5_10	5	10	0	0	3.125	1	J	Full frame
6	1	DomeFlats J	Dome Flats	LAMP_OFF	L5_10	6	10	0	0	3.125	1	J	Full frame
7	1	DomeFlats J	Dome Flats	LAMP_OFF	L5_10	7	10	0	0	3.125	1	J	Full frame
8	1	DomeFlats J	Dome Flats	LAMP_OFF	L5_10	8	10	0	0	3.125	1	J	Full frame
9	1	DomeFlats J	Dome Flats	LAMP_OFF	L5_10	9	10	0	0	3.125	1	J	Full frame
10	1	DomeFlats J	Dome Flats	LAMP_OFF	L5_10	10	10	0	0	3.125	1	J	Full frame
11	12	DomeFlats H	Dome Flats	LAMP_ON	L5_7	1	10	0	0	2.927	1	H	Full frame
12	12	DomeFlats H	Dome Flats	LAMP_ON	L5_7	2	10	0	0	2.927	1	H	Full frame
13	12	DomeFlats H	Dome Flats	LAMP_ON	L5_7	3	10	0	0	2.927	1	H	Full frame
14	12	DomeFlats H	Dome Flats	LAMP_ON	L5_7	4	10	0	0	2.927	1	H	Full frame
15	12	DomeFlats H	Dome Flats	LAMP_ON	L5_7	5	10	0	0	2.927	1	H	Full frame
16	12	DomeFlats H	Dome Flats	LAMP_OFF	L5_7	6	10	0	0	2.927	1	H	Full frame
17	12	DomeFlats H	Dome Flats	LAMP_OFF	L5_7	7	10	0	0	2.927	1	H	Full frame
18	12	DomeFlats H	Dome Flats	LAMP_OFF	L5_7	8	10	0	0	2.927	1	H	Full frame
19	12	DomeFlats H	Dome Flats	LAMP_OFF	L5_7	9	10	0	0	2.927	1	H	Full frame
20	12	DomeFlats H	Dome Flats	LAMP_OFF	L5_7	10	10	0	0	2.927	1	H	Full frame
21	23	DomeFlats	Dome Flats	LAMP_ON	L5_10	1	10	0	0	3	1	Ks	Full frame
22	23	DomeFlats	Dome Flats	LAMP_ON	L5_10	2	10	0	0	3	1	Ks	Full frame
23	23	DomeFlats	Dome Flats	LAMP_ON	L5_10	3	10	0	0	3	1	Ks	Full frame
24	23	DomeFlats	Dome Flats	LAMP_ON	L5_10	4	10	0	0	3	1	Ks	Full frame
25	23	DomeFlats	Dome Flats	LAMP_ON	L5_10	5	10	0	0	3	1	Ks	Full frame

At the bottom of the window, a log window shows the following text:

```
2025.03.26 09h 46m 50s 767ms [O T] Fits Keywords written into file.  
2025.03.26 09h 46m 50s 767ms [GE] Saving...  
2025.03.26 09h 46m 50s 767ms [GE] Getting next image name...  
2025.03.26 09h 46m 50s 767ms [GE] Sending GEIRS command 'next'
```

# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación



PANIC Observation Tool running with GEIRS

NGC891 - PANIC Observation Tool

Execution Sequence

#	OBJ_ID	OBJ_NAME	Target	RA	DEC	Proper M. RA	Proper M. DEC	Read Mode
1/1	DonnellFats J			00 00 00.00	00 00 00.00	0.0	0.0	center
2/2	DonnellFats H			00 00 00.00	00 00 00.00	0.0	0.0	center
3/3	DonnellFats Ka			00 00 00.00	00 00 00.00	0.0	0.0	center
4/4	18pFats disk em	MAMA1k3		04 10 00	+03 50 00	0.0	0.0	center
5/5	18pFats disk em	MAMA1k3		04 10 00	+03 50 00	0.0	0.0	center
6/6	18pFats disk em	MAMA1k3		04 10 00	+03 50 00	0.0	0.0	center
7/7	Fotona Series -H	ADFA		02 22 07.44	+42 43 19.2	0.2286	-1.792	center
8/8	NGC891 - J	NGC891		02 22 32.91	+42 20 53.9	0.0	0.0	center
9/9	NGC891 - H	NGC891		02 22 32.91	+42 20 53.9	0.0	0.0	center
10/10	NGC891 - K	NGC891		02 22 32.91	+42 20 53.9	0.0	0.0	center

Episodes Sequence

#	OBJ_ID	OBJ_NAME	OBJPAT	SAGGETYP	PAT NAME	PAT_EXP/PAET	NEWH	dx	dy	St Time	Rep	Filter	Window
1/1	DonnellFats J	Donne Fats	LAMP_ON	LS_10		1	10	0	0	3.125	1/1	Full frame	
2/1	DonnellFats J	Donne Fats	LAMP_ON	LS_10		2	10	0	0	3.125	1/1	Full frame	
3/1	DonnellFats J	Donne Fats	LAMP_ON	LS_10		3	10	0	0	3.125	1/1	Full frame	
4/1	DonnellFats J	Donne Fats	LAMP_ON	LS_10		4	10	0	0	3.125	1/1	Full frame	
5/1	DonnellFats J	Donne Fats	LAMP_ON	LS_10		5	10	0	0	3.125	1/1	Full frame	
6/1	DonnellFats J	Donne Fats	LAMP_OFF	LS_10		6	10	0	0	3.125	1/1	Full frame	
7/1	DonnellFats J	Donne Fats	LAMP_OFF	LS_10		7	10	0	0	3.125	1/1	Full frame	
8/1	DonnellFats J	Donne Fats	LAMP_OFF	LS_10		8	10	0	0	3.125	1/1	Full frame	
9/1	DonnellFats J	Donne Fats	LAMP_OFF	LS_10		9	10	0	0	3.125	1/1	Full frame	
10/1	DonnellFats J	Donne Fats	LAMP_OFF	LS_10		10	10	0	0	3.125	1/1	Full frame	
11/2	DonnellFats J	Donne Fats	LAMP_ON	LS_7		1	10	0	0	2.827	1/4	Full frame	
12/2	DonnellFats J	Donne Fats	LAMP_ON	LS_7		2	10	0	0	2.827	1/4	Full frame	
13/2	DonnellFats J	Donne Fats	LAMP_ON	LS_7		3	10	0	0	2.827	1/4	Full frame	
14/2	DonnellFats J	Donne Fats	LAMP_ON	LS_7		4	10	0	0	2.827	1/4	Full frame	
15/2	DonnellFats J	Donne Fats	LAMP_ON	LS_7		5	10	0	0	2.827	1/4	Full frame	
16/2	DonnellFats J	Donne Fats	LAMP_OFF	LS_7		6	10	0	0	2.827	1/4	Full frame	
17/2	DonnellFats J	Donne Fats	LAMP_OFF	LS_7		7	10	0	0	2.827	1/4	Full frame	
18/2	DonnellFats J	Donne Fats	LAMP_OFF	LS_7		8	10	0	0	2.827	1/4	Full frame	
19/2	DonnellFats J	Donne Fats	LAMP_OFF	LS_7		9	10	0	0	2.827	1/4	Full frame	
20/2	DonnellFats J	Donne Fats	LAMP_OFF	LS_7		10	10	0	0	2.827	1/4	Full frame	
21/3	DonnellFats J	Donne Fats	LAMP_ON	LS_10		1	10	0	0	3	1/4	Full frame	
22/3	DonnellFats J	Donne Fats	LAMP_ON	LS_10		2	10	0	0	3	1/4	Full frame	
23/3	DonnellFats J	Donne Fats	LAMP_ON	LS_10		3	10	0	0	3	1/4	Full frame	
24/3	DonnellFats J	Donne Fats	LAMP_ON	LS_10		4	10	0	0	3	1/4	Full frame	
25/3	DonnellFats J	Donne Fats	LAMP_ON	LS_10		5	10	0	0	3	1/4	Full frame	

panc from donnellFats LS\_10

1/5  bin

RedHot

current image

1.222 / 2.25 sig  98.778 / 2.25 sig

3030 H  3500 G

3666  504

horiz  vert

2

0 ADU

FWHM  plot

2025.03.26 09h 43m 05s 082ms [GEI] Getting next image name  
 2025.03.26 09h 43m 05s 083ms [GEI] Sending GEIRS command 'read'  
 2025.03.26 09h 43m 05s 344ms [GEI] Sending GEIRS command 'save-c'  
 2025.03.26 09h 43m 06s 457ms [GEI] Sending GEIRS command 'sync save'

File Edit View Bookmarks Plugins Settings Help

ReadWoConv 2.765469

Filter 1 J

Filter 2 Open

Filter 3 Open

Filter 4 Open

Filter set (macro)

Read 1 150 201 1 64 1 0 0

Subwin off

Subwin Specifications

Start Macro

Pause Macro

Quit Macro

File Edit View Bookmarks Plugins Settings Help

New Tab Split View

Copy Paste Find

read terminated ok

DND sync'ing with process(es): read save telescope filter/wheel test

DND sync'ing with process(es):

WARNING: less than 18 temperature(s)/pressure(s) found in log-file 'panictemp\_log'

WARNING: more than 28 temperature(s)/pressure(s) found in log-file 'panictemp\_log'

WARNING: temp/press-data error: emv. CANON missing or file error

temp/press-data error: emv. CANON missing or file error

DND sync'ing with process(es): save

DND sync'ing with process(es): save

WARNING: Interpreter busy, delaying ...

WARNING: Interpreter busy, delaying ...

WARNING: Interpreter busy, delaying ...

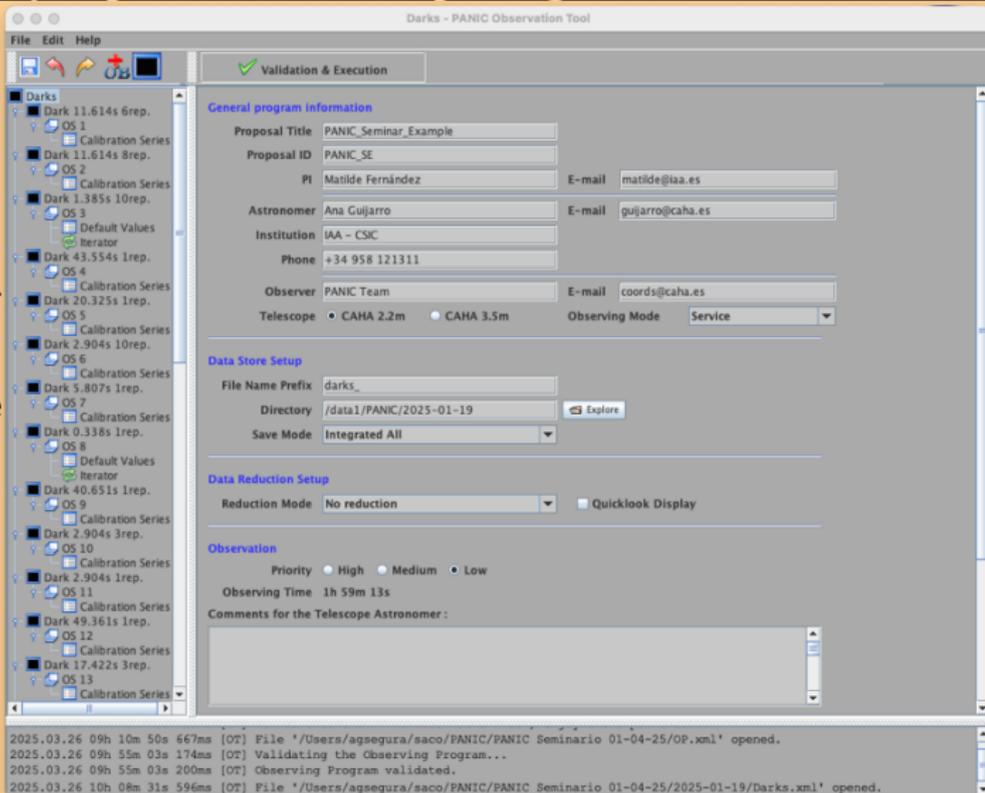
# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

## PANIC Observation Tool

- Darks automatically generated

The script ask for a images folder to inspect.

Generates a dark for every different exposure time found.



# Sesión especial de PANIC 4K: cómo sacar el mayor partido a tu tiempo asignado de observación

PANIC Observation Tool



Thank you for your attention!

More info available at PANIC Web Page: <https://www.caha.es/panic>

