

Development of Multi-Messenger Observation Database & Viewer

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Multi-messenger observation Database & Viewer

<http://mma.phys.aoyama.ac.jp>

The interface is divided into several sections:

- Viewer Search:** Includes a 'FoV Filter' section with a coordinate input field (ICRS, 11 42 010.0 -47 43 53.2) and a 'Status' panel on the right listing observation status for various instruments.
- Search Filters:** Includes 'Y/M/D' and 'MJD' tabs, 'Start' and 'Stop' date pickers, and an 'Instrument/type' list with checkboxes for various observatories like Swift, MAXI, Fermi, IceCube, and EinsteinProbe.
- Target and Coordinate:** Includes a 'Target' input field, 'Coordinate' fields for RA and Dec, and a 'Radius' field with a unit dropdown.
- Gravitational Wave Filter:** Includes a 'Show gravitational wave' checkbox and a 'Date' picker.
- Status Panel:** Lists observation status for gamma-ray (LST, OK viewing), X-ray (Swift, OK viewing), and Optical/NIR (Subaru, NG visibility; Tomo-e, day visibility).
- Bottom Bar:** Includes a 'Catalog' section and a zoom control showing '360.0° x 180.0°'.

Instrument	Status	Viewing
gamma		
LST	OK	viewing
X		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

Aims of Database and Viewer

- The multi-messenger observation **Database collects and archives data from various observatories and telescopes.**
- **Viewer visualizes the observational data, providing helpful information for devising strategies** for future observations and analyses.
- The **Viewer may inspire us to potential targets for multi-messenger astronomy by overlaying observational data.**

Development of Database and Viewer

- The development of the main system was outsourced to AstroArts.
 - <https://www.astroarts.co.jp/official/corporate/index-j.shtml>
- We manage the servers and develop the data collection system for the Database at Aoyama Observatories.

- Database

- Ubuntu 22.04 LTS
- PostgreSQL

List of relations			
Schema	Name	Type	Owner
public	gravitational_wave	table	postgres
public	gravitational_wave_id_seq	sequence	postgres
public	obj	table	postgres
public	obj_id_seq	sequence	postgres
public	observation	table	postgres
public	observation_id_seq	sequence	postgres

- Viewer (+ Object Search)

- Ubuntu 22.04 LTS
- HTTP server: nginx
- Aladin Lite (<https://aladin.cds.unistra.fr>)
- © Centre de Données astronomiques de Strasbourg.



Viewer: Survey

The background survey image can be changed. Detailed instructions are in the backup slides.

The screenshot displays the ALADIN Viewer: Survey interface. The main view is a sky map with a purple grid overlay. A yellow box highlights the 'Stack' control panel, which includes a dropdown menu set to 'PanSTARRS DR1' and icons for zoom, pan, and other navigation functions. The interface is divided into several sections:

- Viewer Search:** Includes a 'FoV Filter' section with 'Start' (2023/12/01 00:00:00) and 'Stop' (2024/11/12 00:00:00) date pickers, and an 'Instrument/type' section with a 'Check all' checkbox and a list of instruments like 'swift XRT/fov', 'MAXI GSC/object', etc.
- Coordinate:** Includes input fields for 'RA' and 'Dec', and a 'Radius' field set to 'degree'.
- Gravitational Wave Filter:** Includes a 'Show gravitational wave' checkbox and a 'Date' field set to 2024/11/11.
- Status:** A table on the right side of the interface showing the status of various surveys.

Status		
gamma		
LST	OK	viewing
X		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

The sky map shows a dark background with a prominent galaxy. A purple grid is overlaid on the map, with labels for coordinates such as 09.00.00.000, 06.00.00.000, 03.00.00.000, 00.00.00.000, 21.00.00.000, 18.00.00.000, 15.00.00.000, 45.00.00.000, and -45.00.00.000. The text 'PanSTARRS' is visible in the upper right area of the map.

Viewer: Catalog

Catalogs can be overlaid on the survey image. Detailed instructions are in the backup slides.

The screenshot displays the ALADIN Viewer interface. The main view is a star catalog overlaid on a survey image, showing a dense field of stars with a prominent concentration in the center. The catalog is labeled 'Gaia DR3'. The interface includes several control panels:

- Viewer Search:** Includes a search bar and a 'FoV Filter' section with 'Y/M/D' and 'MJD' options. The start time is set to 2023/12/01 00:00:00 and the stop time to 2024/11/12 00:00:00.
- Stack Panel:** A yellow-bordered panel showing a list of overlays and surveys. 'Gaia DR3' is listed under 'Overlays' and 'PanSTARRS DR1' is listed under 'Surveys'.
- Instrument/type Filter:** A section with a 'Check all' button and a list of instrument types with checkboxes, including 'swift XRT/fov', 'swift BAT/object', 'MAXI GSC/object', 'Fermi GBM/object', 'IceCube/object', 'EinsteinProbe WXT/object', and 'optical agu-target/fov'.
- Coordinate Filter:** Includes input fields for RA, Dec, and Radius, with a 'Submit' button.
- Gravitational Wave Filter:** A section with a 'Show gravitational wave' checkbox.
- Date Filter:** Includes a date input field set to 2024/11/11 and a 'Submit' button.
- Status Table:** A table on the right side showing the status of various instruments. The 'Status' column has values like 'OK viewing', 'NG visibility', and 'day visibility'.
- Data Table:** A table at the bottom showing the first row of the catalog data.

DR3Name	RAdeg	DEdeg	Solid	Source	RandomI	e_RAdeg	e_DEdeg	Plx	e_Plx	RPlx	PM	pmRA	e_pmRA
Gaia DR3 206960...	310.01273245272	43.45862368024	163614806892137...	206960380059346...	999350046	0.0191	0.0213	6.5338	0.0228	286.0411	90.648	-70.376	0.023

ALADIN 6

Viewer: FoV Filter

Viewer Search

FoV Filter

Y/M/D MJD

Start: 2023/12/01 00:00:00

Stop: 2024/11/13 00:00:00

Instrument/type

Check all

- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Coordinate

RA Dec

Radius degree

Submit

Reset FoV

Gravitational Wave Filter

Show gravitational wave

Date: 2024/11/12

Submit

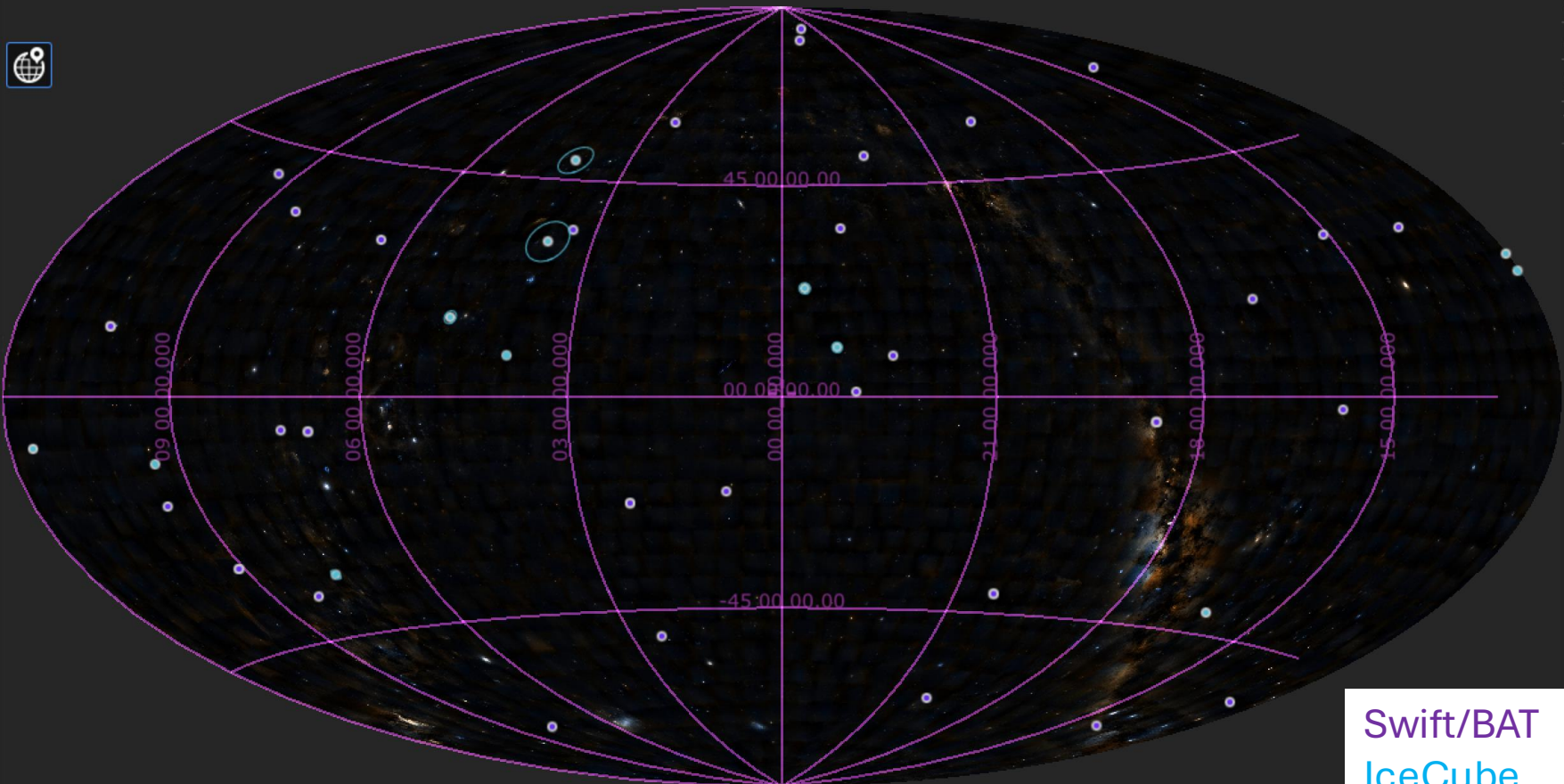
ICRS 11 49 59.77 +36 27 57.7

AIT

Status

gamma		
LST	OK	viewing
x		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

Objects/FoV can be turned on/off by checkboxes. Filters by time, target name, and position are available.



Swift/BAT
IceCube

Swift/BAT, Fermi/GBM, IceCube, and Einstein Probe events are automatically added from GCN/Notices.

ALADIN

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Viewer: Gravitational Wave Filter

The screenshot displays the ALADIN viewer interface. The main window shows a star map with a purple grid overlay. A yellow oval highlights a region labeled "S240422ed". The interface includes a sidebar with various filters and controls.

Stop: 2024/11/13 00:00:00

Instrument/type:

- Check all
- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Target: [Empty field]

Coordinate:

RA: [Empty field] Dec: [Empty field]

Radius: [Empty field] degree

Submit **Reset FoV**

Gravitational Wave Filter:

- Show gravitational wave

Date: 2024/04/22

Submit

S240422ed: 2024-04-22T21:35:13

Catalog:

- Suzaku WAM
- XMM EPIC
- MAXI PROG

Swift: OK viewing

Optical/NIR:

- Subaru:** NG visibility
- Tomo-e:** day visibility

ALADIN

360.0° × 180.0°

The LIGO/Virgo/KAGRA 90% localization region can be overlaid. Gravitational wave events ($FAR < 6.34e-7$) are automatically added from GCN/Notices.

Object Search

Viewer **Search**

FoV Filter

Click

Start

Stop

Instrument/type

- Check all
- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Target

Coordinate

RA Dec

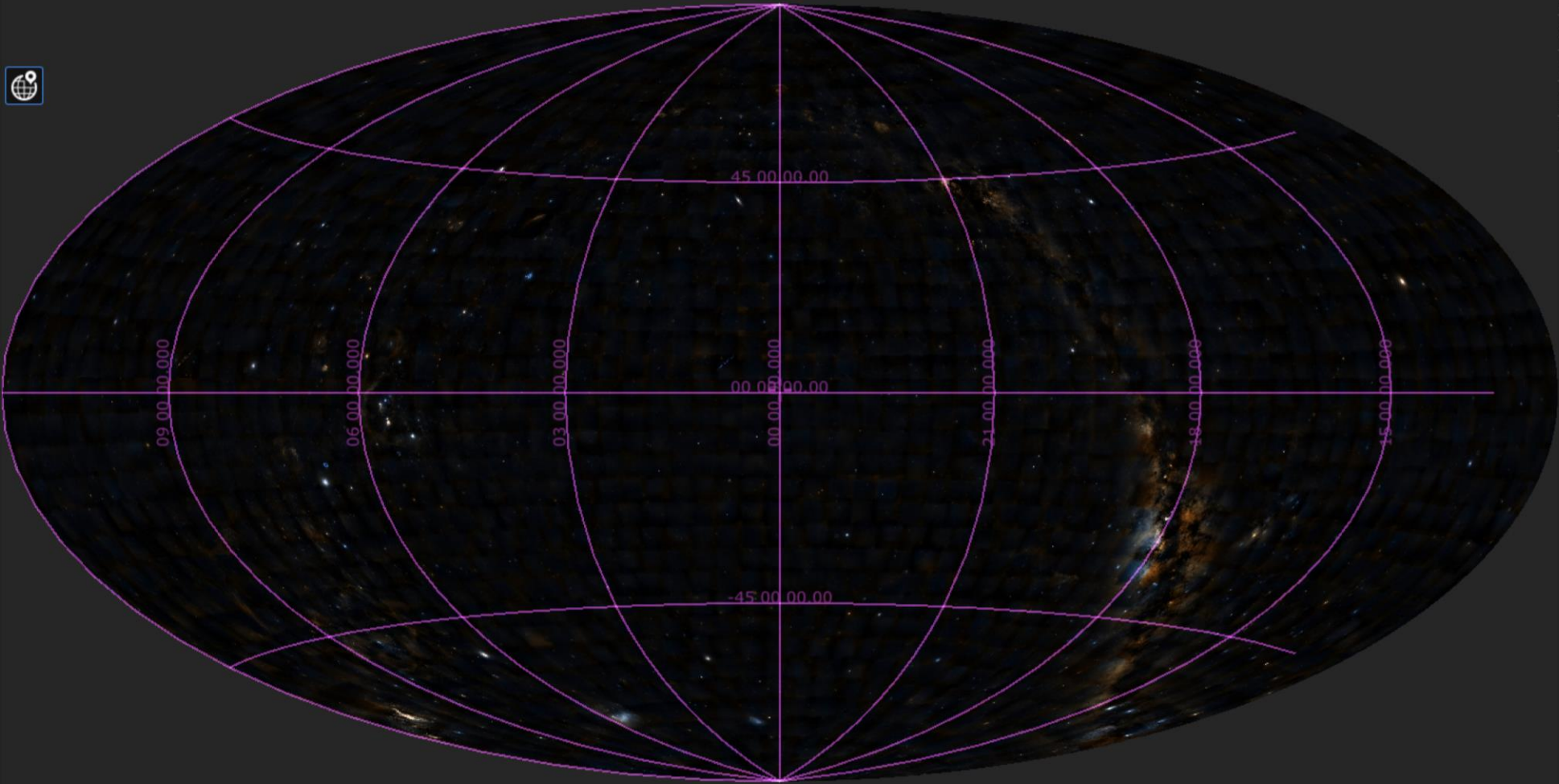
Radius

Gravitational Wave Filter

Show gravitational wave

Date

Catalog 360.0° × 180.0°



gamma	Status
LST	OK viewing
X	
Swift	OK viewing
Optical/NIR	
Subaru	NG visibility
Tomo-e	day visibility

ALADIN

Object Search

Viewer Search

Object Search

Search with Object name or Pointing keyword (e.g., “GRB 230826A”).
Results can be filtered by time and coordinate.

Target / Pointing keyword: GRB 230826A

Date time filter

Coordinate

RA: Dec:

Radius: Arcsec

object	instrument	tstart	tstop	ra	dec	err_shape	err_poly	pointing_kw	flux	flux_
GRB 230826A	swift BAT	2023-08-26T19:29:27.078920	2023-08-26T19:39:27.078920	83.048	66.125	circle_r(arcmin)	((83.04827,66.11473), (83.05615,66.11524), (83.06325,66.11670), (83.06889,66.11898), (83.07251,66.12186), (83.07376,66.12504), (83.07251,66.12823), (83.06890,66.13111), (83.06326,66.13339), (83.05615,66.13485), (83.04827,66.13536), (83.04040,66.13485), (83.03329,66.13339), (83.02765,66.13111), (83.02404,66.12823), (83.02279,66.12504), (83.02404,66.12186), (83.02766,66.11898), (83.03330,66.11670), (83.04040,66.11524))	GRB 230826A swift BAT	na	
GRB 230826A	GRBAlpha	2023-08-26T19:31:07.097476	2023-08-26T19:34:28.097480			none		GRB 230826A GRBAlpha	na	
GRB 230826A	VZLUSAT-2	2023-08-26T19:31:53	2023-08-26T19:36:08			none		GRB 230826A VZLUSAT-2	na	

Prev. 1 Next

Object Search: GRB 230826A

Viewer		Search										
GRB 230826A												
viewer	object	instrument	tstart	tstop	ra	dec	pointing_kw	flux	flux_unit	flux_com	upper_limit	lc
viewer	GRB 230826A	swift BAT	2023-08-26T19:29:27.078920	2023-08-26T19:39:27.078920	83.048	66.125	GRB 230826A swift BAT	na				file
viewer	GRB 230826A	GRBAIpha	2023-08-26T19:31:07.097476	2023-08-26T19:34:28.097480			GRB 230826A GRBAIpha	na				file
viewer	GRB 230826A	VZLUSAT-2	2023-08-26T19:31:53	2023-08-26T19:36:08			GRB 230826A VZLUSAT-2	na				file



Light curve (Count)

Implemented:

- GRBAIpha
- VZLUSAT-2

In Progress:

- Swift/BAT
- MAXI/GSC
- Fermi/GBM
- CALET/GBM

Light curve (Flux)

Pending:

- Swift/XRT
- MAXI/GSC
- Optical

Use example: GRB180829A

FoV Filter

Y/M/D MJD

Start: 2018/08/29 00:00:00

Stop: 2018/08/30 00:00:00

Instrument/type

- Check all
- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Target:

Coordinate

RA: Dec:

Radius: degree

Submit

Reset FoV

Gravitational Wave Filter

Show gravitational wave

Date: 2024/04/22

Submit

S240422ed: 2024-04-22T21:35:13

5.802° × 3.730°

Stack

- Overlays
- VizieR:VII/237/pgc
- MAXI GSC|object_1
- MAXI GSC|object
- Surveys
- PanSTARRS DR1

GRB 180829A

MAXI GSC (object)

J2000: 61.729, -1.976

[Object information](#)

Are there any galaxies in the MAXI's error box for GRB 180829A?

Survey image
PanSTARSS DR1

Catalog
HYPERLEDA
Paturel+ 2003

FOV Filter
MAXI GSC/object
2018/08/29
GRB 180829A

ALADIN

Ongoing and future tasks

Enrichment of existing contents

- **Catalogs**
- **Status**
- Light curves
- Reported events (FoV Filter)

Ongoing
Pending
Under Review

Catalog	
<input type="checkbox"/>	Suzaku WAM
<input type="checkbox"/>	XMM EPIC
<input type="checkbox"/>	MAXI PROG
<input type="checkbox"/>	SWIFT BAT
<input type="checkbox"/>	Chandra CSC2
<input type="checkbox"/>	SWIFT XRT

The “Catalog” section can have non-public catalogs.

What catalog should be listed here?

Outsourcing to AstroArts

- Improvement of UI
 - More convenient search
 - Link from the trigger ID to the object/event name
- **Major revision (if needed, the next fiscal year)**

Sub-threshold events

Promoting more collaborative observations

- MAXI sub-threshold
- Swift-BAT sub-threshold

API to access data in the Database

Anticipating future automatic analysis

Status	
gamma	
LST	OK viewing
X	
Swift	OK viewing
Optical/NIR	
Subaru	NG visibility
Tomo-e	day visibility

The ”Status” section was prepared to share observation status of each mission.

What information can/should be shared here?

Summary

- The multi-messenger observation Database and Viewer are under development.
- **The beta version is available on the web.**
<http://mma.phys.aoyama.ac.jp>
- We are working on the enrichment of existing content.
 - **Light curves**
 - **Reported events (FOV Filter)**
- We need inputs to proceed with the development below:
 - **Catalog**
 - **Status**
 - **Major revision (if needed, the next fiscal year)**
- **The user's manual is available in backup slides.**

Backup

Implementation Items

Implemented
Implementing
Pending
Under Review
Temporal

- FOV Filter
 - MAXI GSC/object
 - Swift XRT/fov
 - Swift BAT/object
 - Fermi GBM/object
 - IceCube/object
 - EinsteinProbe WXT/object
 - MAXI/GSC sub-threshold
 - Swift/BAT sub-threshold
 - GCN Circular events
 - **Transient Name Server**
 - Swift XRT/object
 - optical agu-target/fov
 - **others**
- **Status**
 - LST
 - Swift
 - Subaru
 - Tomo-e
 - others
- Gravitational Wave Filter
 - **LVK GCN Notice**
- Light curve (count rate)
 - **GRBA**
 - **VZLUSAT-2**
 - **Swift/BAT**
 - **Fermi/GBM**
 - **MAXI/GSC**
 - **CALET/GBM**
 - **others**
- **Catalog**
 - Suzaku WAM
 - XMM EPIC
 - MAXI PROG
 - Swift BAT
 - Chandra CSC2
 - Swift XRT
- Light curve (flux)
 - **MAXI/GSC**
 - **Swift/XRT**
 - **others**

Multi-messenger Observation
Database & Viewer User's manual
ver. 241117

Yuta Kawakubo (Aoyama Gakuin University)

Top page (Viewer): <http://mma.phys.aoyama.ac.jp>

Viewer Search

FoV Filter J2000

Start

Stop

Instrument/type

Check all

- swift XRT/fov
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- optical agu-target/fov

Target

Coordinate

RA Dec

Radius

Gravitational Wave Filter

Show gravitational wave

Date

Catalog

Suzaku WAM

60.00° × 37.43°

10 00 00.00

00 00 00.00

-10 00 00.00

Status

gamma		
LST	OK	viewing
x		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

ALADIN

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Button Usage

Switching between
Viewer & Object Search

Switching coordinates

Switching Projection

The screenshot displays the ALADIN interface with several key components:

- Viewer and Search Buttons:** Located at the top left, both are highlighted with red boxes.
- FoV Filter Panel:** Contains a search bar with 'J2000' and a coordinate field '02 00 33.69 +07 59 56.'. A green box highlights the search bar, and a blue box highlights the coordinate field. A yellow box highlights the copy icon.
- Layer Control:** A yellow box highlights the layer control icon.
- Grid Control:** A yellow box highlights the grid icon.
- Full Screen:** A purple box highlights the full screen icon.
- Status Panel:** Located on the right, showing a list of surveys and their status.
- Coordinate Fields:** RA and Dec fields are visible in the bottom left.
- Gravitational Wave Filter:** A panel with a 'Show gravitational wave' checkbox.
- Catalog Panel:** Shows 'Suzaku WAM' and a field of view '60.00° × 37.43°'.

Annotations on the screenshot include:

- 'Setting the central position of Viewer' pointing to the coordinate field.
- 'Copy coordinates to your clipboard' pointing to the copy icon.
- 'Layer control (Change or Add surveys and catalogs)' pointing to the layer control icon.
- 'Turn on / off grid' pointing to the grid icon.
- 'Zoom in / out by scrolling' pointing to the star field.

Survey	Status	Viewing
gamma	OK	viewing
LST	OK	viewing
X		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

Viewer: Survey

The background survey image can be changed.

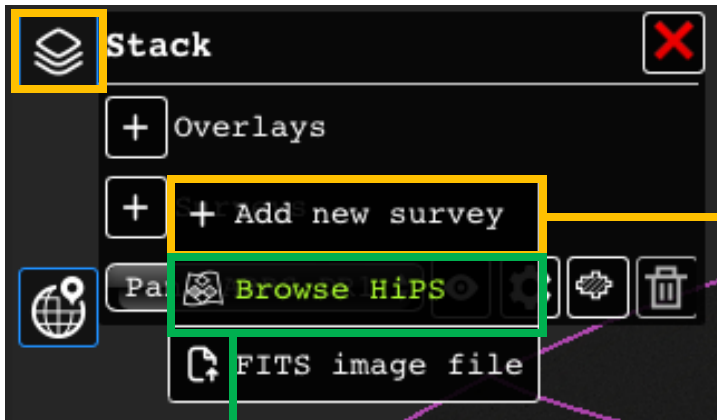
The screenshot displays the ALADIN Viewer: Survey interface. The main view is a sky map with a purple grid overlay. The interface includes several control panels:

- Viewer Search:** Shows the current coordinates (ICRS) as 05 45 41.01 +76 38 22.5.
- FoV Filter:** Includes a 'Stack' panel with 'Overlays' and 'Surveys' options, and a 'PanSTARRS DR1' survey selected.
- Start/Stop:** Date and time selection for the survey (Start: 2023/12/01 00:00:00, Stop: 2024/11/12 00:00:00).
- Instrument/type:** A list of instruments with checkboxes, including 'Check all', 'swift XRT/fov', 'swift BAT/object', 'swift XRT/object', 'MAXI GSC/object', 'Fermi GBM/object', 'IceCube/object', 'EinsteinProbe WXT/object', and 'optical agu-target/fov'.
- Coordinate:** Fields for RA, Dec, and Radius (set to degree).
- Gravitational Wave Filter:** A checkbox for 'Show gravitational wave'.
- Date:** A date selection field (2024/11/11).
- Status:** A table showing the status of various surveys.

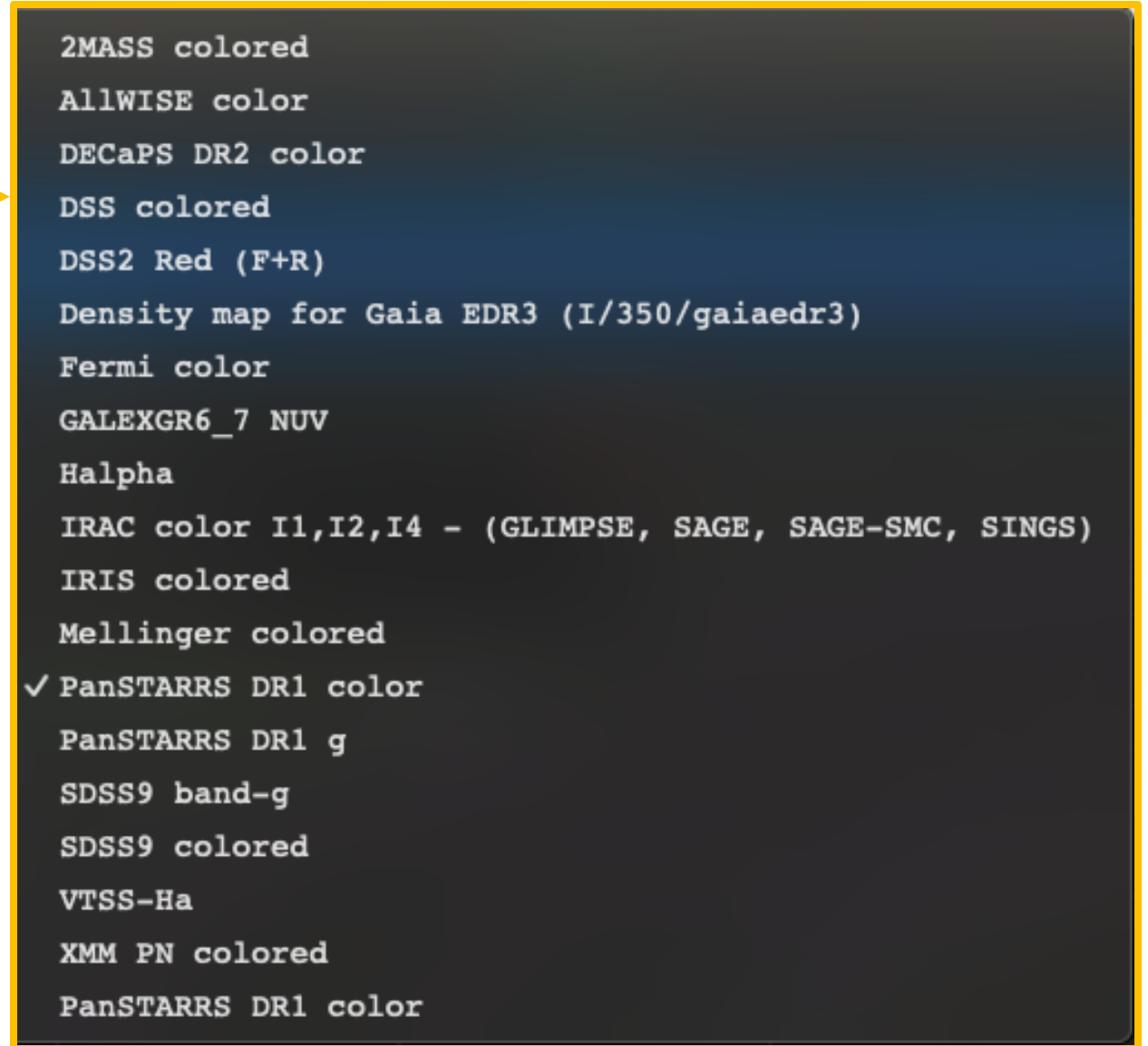
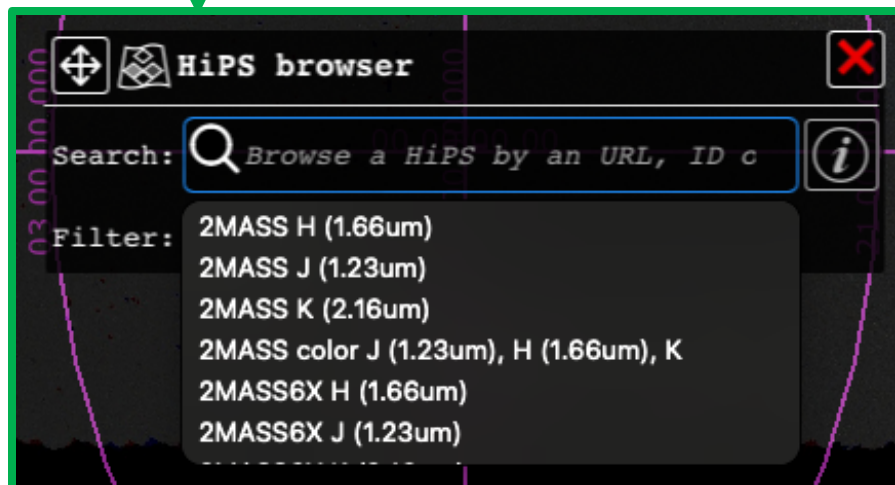
Survey	Status	Action
gamma		
LST	OK	viewing
X		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

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Display survey image



More selections:
<https://aladin.cds.unistra.fr/hips/list>



Viewer: Catalog

Catalogs can be overlaid on the survey image.

Viewer Search

FoV Filter ICRS 20 37 21.30 +43 08 02.7

Start: 2023/12/01 00:00:00

Stop: 2024/11/12 00:00:00

Instrument/type

- Check all
- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Target: []

Coordinate: RA [] Dec []

Radius: [] degree

Submit

Reset FoV

Gravitational Wave Filter

- Show gravitational wave

Date: 2024/11/11

Submit

Stack

- Overlays
- Gaia DR3
- Surveys
- PanSTARRS DR1

Status

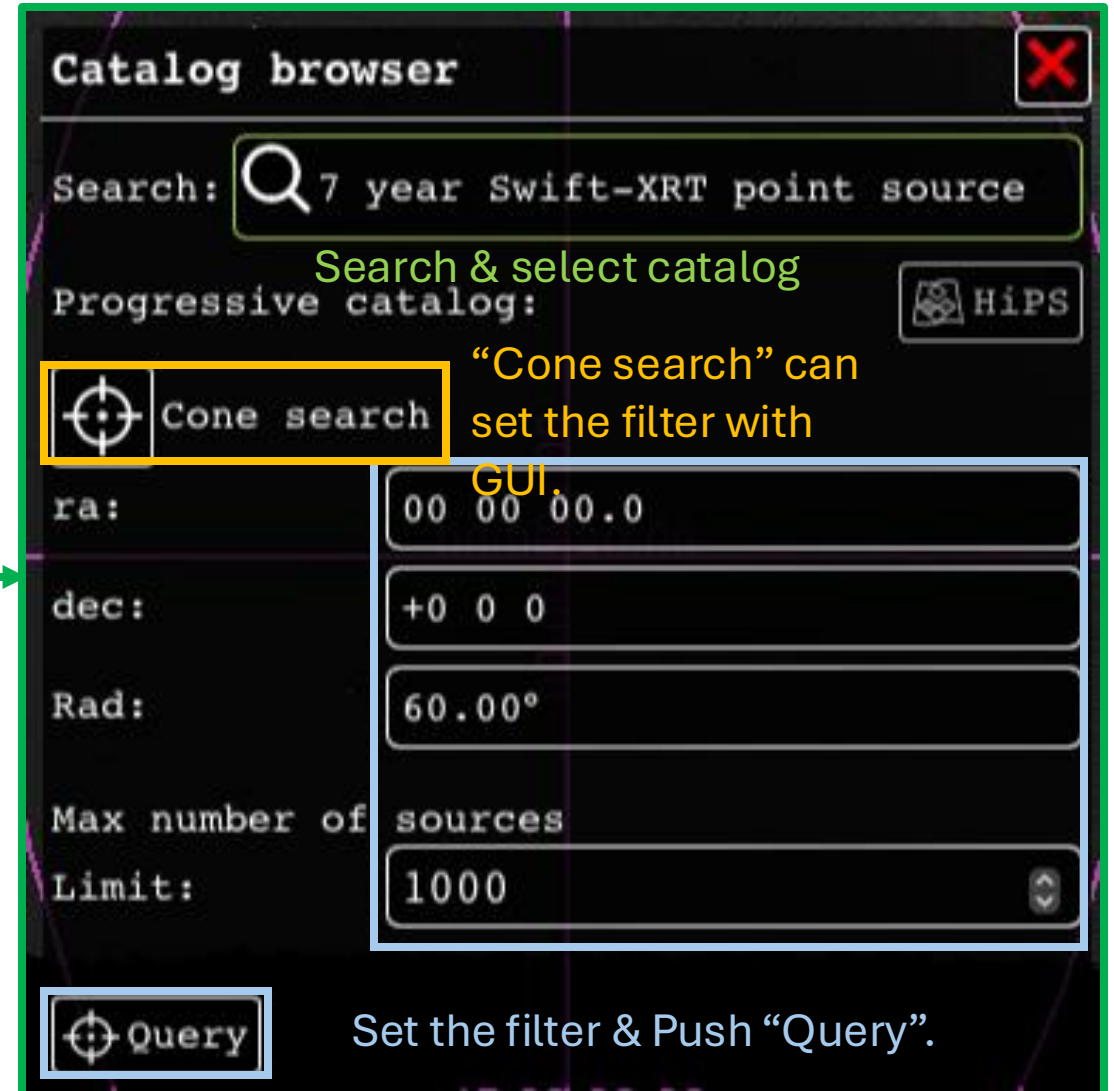
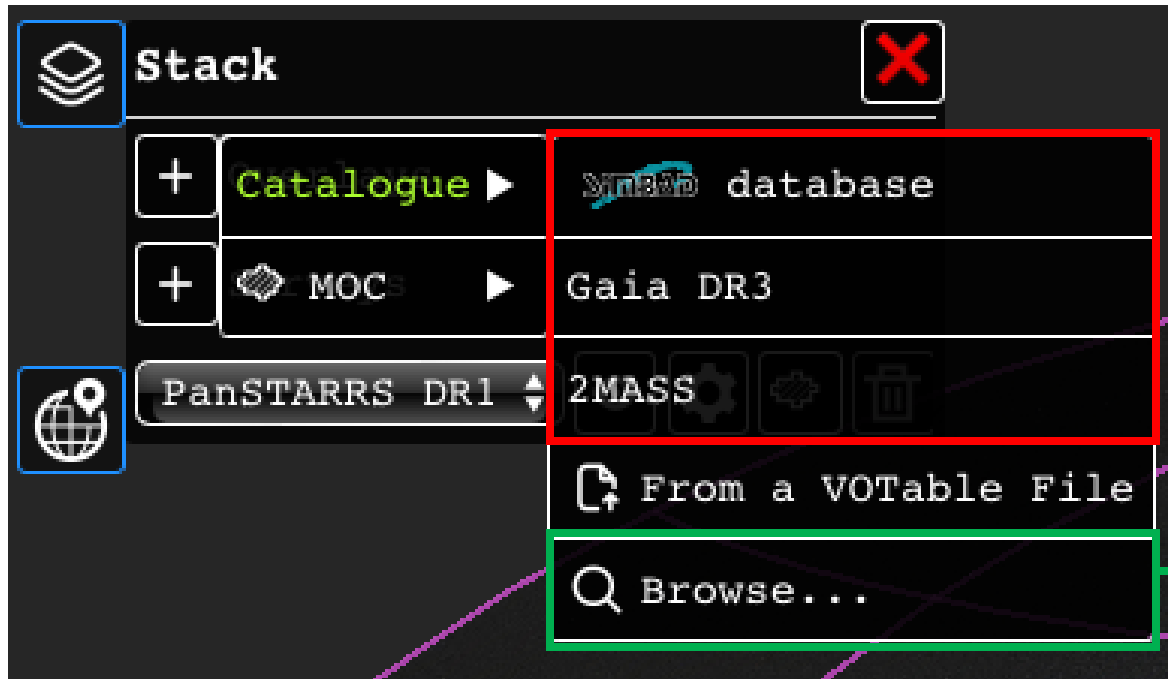
- gamma
- LST OK viewing
- X
- Swift OK viewing
- Optical/NIR
- Subaru NG visibility
- Tomo-e day visibility

DR3Name	RAdeg	DEdeg	Solid	Source	RandomI	e_RAdeg	e_DEdeg	Plx	e_Plx	RPlx	PM	pmRA	e_pmRA
Gaia DR3 206960...	310.01273245272	43.45862368024	163614806892137...	206960380059346...	999350046	0.0191	0.0213	6.5338	0.0228	286.0411	90.648	-70.376	0.023

360.0° × 180.0°

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Display catalogs



Unavailable catalogs can be added to the “Catalog” section.

The current catalogs listed are temporal for testing.

Viewer: FoV Filter

The screenshot shows the 'FoV Filter' interface with the following elements highlighted:

- Time Selection:** A red box highlights the 'Y/M/D' and 'MJD' buttons, the 'Start' time field (2023/12/01 00:00:00), and the 'Stop' time field (2024/04/10 00:00:00). A green box highlights the 'Up' and 'Down' arrow buttons between the time fields.
- Instrument Selection:** A purple box highlights the 'Instrument/type' section, which includes a 'Check all' checkbox and a list of instrument types with checkboxes and colored dots: swift XRT/fov (red), swift XRT/object (red), MAXI GSC/object (purple), Fermi GBM/object (blue), IceCube/object (cyan), and optical agu-target/fov (green).
- Target:** A blue box highlights the empty 'Target' text input field.
- Coordinate Selection:** A blue box highlights the 'Coordinate' section, including 'RA' and 'Dec' input fields, a 'Radius' input field, and a unit dropdown menu currently set to 'degree'.
- Action Buttons:** A yellow box highlights the 'Submit' button, with a yellow arrow pointing to it from the right. A grey 'Reset FoV' button is located below it.

Objects/FoV can be filtered by time. “Y/M/D” and “MJD” can be switched by the button.

Upward (downward) arrow copy Stop (Start) time to Start (Stop) time.

 Start and Stop times increase/decrease independently.

 Start and Stop times increase/decrease synchronized.

Checkboxes can turn each item on/off.

Events/objects can be filtered by the name.

If you input central position (equatorial coordinates) and radius (degrees, arcmin, arcsec), Objects/FoV can be filtered by the circle.

“Submit” applies the settings above.

Viewer: FoV Filter

Viewer Search

FoV Filter

ICRS 11 49 59.77 +36 27 57.7

Objects/FoV can be turned on/off by checkboxes.
Filters by time, target name, and position are available.

AIT **Status**

gamma		
LST	OK	viewing
x		
Swift	OK	viewing
Optical/NIR		
Subaru	NG	visibility
Tomo-e	day	visibility

Y/M/D MJD

Start
2023/12/01 00:00:00

Stop
2024/11/13 00:00:00

Instrument/type

Check all

- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Coordinate

RA Dec

Radius degree

Submit

Reset FoV

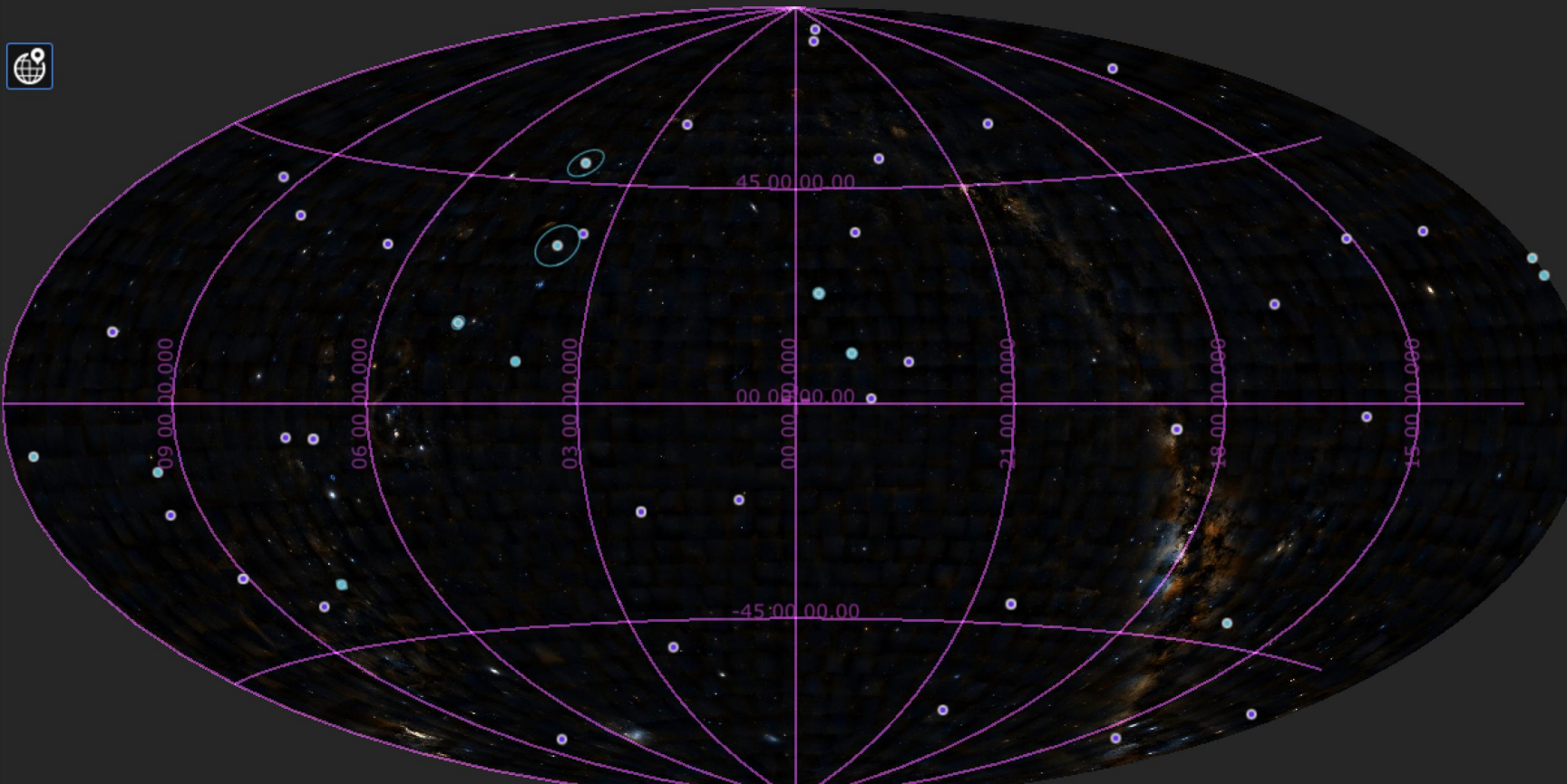
Gravitational Wave Filter

Show gravitational wave

Date
2024/11/12

Submit

360.0° × 180.0°



ALADIN 25

Viewer: Gravitational Wave Filter

The screenshot displays the ALADIN viewer interface. The main window shows a star map with a purple grid overlay representing the 90% localization region for a gravitational wave event. The event is labeled "S240422ed" in yellow text. The interface includes a sidebar with various controls:

- Stop:** A date/time selector set to "2024/11/13 00:00:00".
- Instrument/type:** A list of instruments with checkboxes and colored dots: "Check all", "swift XRT/fov" (red), "swift BAT/object" (blue, checked), "swift XRT/object" (red), "MAXI GSC/object" (purple), "Fermi GBM/object" (blue), "IceCube/object" (cyan, checked), "EinsteinProbe WXT/object" (orange), and "optical agu-target/fov" (green).
- Target:** An empty text input field.
- Coordinate:** Fields for "RA" and "Dec", and a "Radius" field set to "degree".
- Buttons:** "Submit" and "Reset FoV".
- Gravitational Wave Filter:** A highlighted section with a checked "Show gravitational wave" checkbox, a date selector set to "2024/04/22", and a "Submit" button. Below it, a legend shows "GW, H1, L1, V1" with a download icon.
- Dimensions:** A field showing "360.0° × 180.0°".
- Catalog:** A list of instruments: "Suzaku WAM", "XMM EPIC", and "MAXI PROG".
- Top Right:** A status panel for "Swift" (OK, viewing), "Optical/NIR", "Subaru" (NG, visibility), and "Tomo-e" (day, visibility).
- Bottom Right:** The "ALADIN" logo.

The LIGO/Virgo/KAGRA 90% localization region can be overlaid. Gravitational wave events ($FAR < 6.34e-7$) are automatically added from GCN/Notices.

Use example: GRB180829A

FoV Filter

Y/M/D MJD

Start: 2018/08/29 00:00:00

Stop: 2018/08/30 00:00:00

Instrument/type

- Check all
- swift XRT/fov
- swift BAT/object
- swift XRT/object
- MAXI GSC/object
- Fermi GBM/object
- IceCube/object
- EinsteinProbe WXT/object
- optical agu-target/fov

Target:

Coordinate

RA: Dec:

Radius: degree

Submit

Reset FoV

Gravitational Wave Filter

Show gravitational wave

Date: 2024/04/22

Submit

S240422ed: 2024-04-22T21:35:13

Stack

- Overlays
- VizieR:VII/237/pgc
- MAXI GSC|object_1
- MAXI GSC|object
- Surveys
- PanSTARRS DR1

GRB 180829A
MAXI GSC (object)
J2000: 61.729, -1.976
[Object information](#)

Survey image
PanSTARSS DR1

Catalog
HYPERLEDA
Paturel+ 2003

FOV Filter
MAXI GSC/object
2018/08/29
GRB 180829A

5.802° × 3.730°

ALADIN

Object Search

The screenshot shows a software interface with a blue header bar containing 'Viewer' and 'Search' buttons. Below the header, the title 'Object Search' is displayed in large white text. A search input field is labeled 'Target / Pointing keyword'. Below this is a 'Date time filter' section with a checkbox. Underneath is a 'Coordinate' section with input fields for 'RA' and 'Dec', and a 'Radius' field with a dropdown menu set to 'Arcsec'. A blue 'Submit' button is at the bottom.

Click “Search” to switch to object search.

Search with Target (Object) / Pointing keyword.
The exact match is only available (a partial match will be available in the future).

The filters by time and coordinate are also available in the same way as the Viewer.

Object Search (GRB 231129C)

Viewer Search

Object Search

Target / Pointing keyword
GRB 231129C

Date time filter

Coordinate
RA Dec
Radius Arcsec
Submit

object	instrument	tstart	tstop	ra	dec	err_shape	err_poly	pointing_kw	flux	flux_unit	flux_com	upper_limit	lc_file
GRB 231129C	MAXI GSC	2023-11-29T19:08:05	2023-11-29T19:13:05	11.91	-81.636	box	((12.351, -81.744), (11.353, -81.663), (12.374, -81.394), (13.350, -81.472))	GRB231129C MAXI GSC	1355	mCrab	0.0034	false	file
GRB 231129C	CALET CGBM	2023-11-29T19:08:34.975000	2023-11-29T19:15:14.980000			none		GRB231129C CALET CGBM		na			file
GRB 231129C	GRBAlpha	2023-11-29T19:09:28.539022	2023-11-29T19:11:09.539003			none		GRB231129C GRBAlpha		na			file
GRB 231129C	Optical	2023-11-29T19:11:48	2023-11-29T19:11:49	11.1582	-81.9969	circle_r(arcsec)	4	Optical GRB 231129C	17.6	Mag	0.000268	false	
GRB 231129C	swift XRT	2023-11-30T04:47:22	2023-11-30T04:56:22	11.1769	-81.9936	circle_r(arcsec)	9.5	swift XRT GRB 231129C	2.155e-13	erg cm^-2 s^-1	1.78e-8	false	

Prev. 1 Next

If we search with “GRB 231129C”, observations are listed.

If we click “GRB 231129C” in “object” column, a new tab for object information will open (see next page).

Keywords in “object” and “pointing_kw” can be used for the search.

Object Search (GRB 231129C)

GRB 231129C

viewer	object	instrument	tstart	tstop	ra	dec	pointing_kw	flux	flux_unit	flux_com	upper_limit	lc_file	spec_url	image_url	source_url	filter
viewer	GRB 231129C	MAXI GSC	2023-11-29T19:08:05	2023-11-29T19:13:05	11.91	-81.636	GRB231129C MAXI GSC	1355	mCrab	0.0034	false	file			source	2-20keV
viewer	GRB 231129C	CALET CGBM	2023-11-29T19:08:34.975000	2023-11-29T19:15:14.980000			GRB231129C CALET CGBM		na			file			source	40-1000keV
viewer	GRB 231129C	GRBAlpha	2023-11-29T19:09:28.539022	2023-11-29T19:11:09.539003			GRB231129C GRBAlpha		na			file			source	80-950keV
viewer	GRB 231129C	Optical	2023-11-29T19:11:48	2023-11-29T19:11:49	11.1582	-81.9969	Optical GRB 231129C	17.6	Mag	0.000268	false				source	unfiltered
viewer	GRB 231129C	swift XRT	2023-11-30T04:47:22	2023-11-30T04:56:22	11.1769	-81.9936	swift XRT GRB 231129C	2.155e-13	erg cm ⁻² s ⁻¹	1.78e-8	false		spec	image	source	0.3-10 keV

Flux

X Scale

Linear

T0

2023/11/29 19:08:05

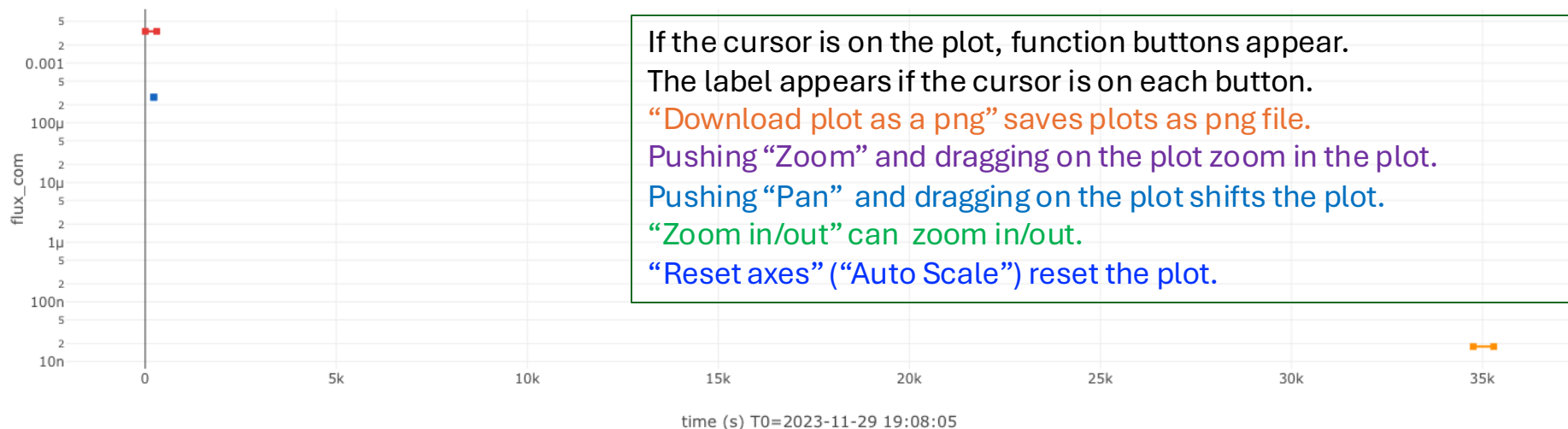
Update chart

Reset

Change offset time (T0)

"update chart" apply settings changed.

Switch the x-axis scale (Linear/Log)



Object Search (GRB 231129C)

Light curve

Instrument/Band filter

- Check all
- MAXI GSC 2-4keV
- MAXI GSC 4-10keV
- MAXI GSC 10-20keV
- MAXI GSC 2-20keV
- CALET CGBM 40-100keV
- CALET CGBM 100-230keV
- CALET CGBM 230-450keV
- CALET CGBM 450-1000keV
- CALET CGBM 40-1000keV
- GRBAIpha 80-120keV
- GRBAIpha 120-400keV
- GRBAIpha 400-670keV
- GRBAIpha 670-950keV
- GRBAIpha 80-950keV

Update chart

Each lightcurve can be turned on/off by the checkboxes.

GRB 231129C

The same function buttons are available as the flux light curves.



Link from Viewer to Object information

The screenshot displays the ALADIN viewer interface. On the left, there are several control panels: 'FoV Filter' with a search bar containing 'J2000 11 54 20.84 -48 03 49.', 'Start' and 'Stop' time selectors (2023/11/01 00:00:00 and 2024/04/11 00:00:00), 'Instrument/type' with a 'Check all' button and a list of instruments (swift XRT/fov, swift XRT/object, MAXI GSC/object, Fermi GBM/object, IceCube/object, optical agu-target/fov), 'Target' with 'GRB 231129C', 'Coordinate' fields for RA and Dec, 'Radius' set to 'degree', and 'Gravitational Wave Filter' with 'Show gravitational wave' checked and 'Date' set to 2024/04/10. On the right, a 'Status' panel shows the viewing status for various instruments: gamma (LST OK viewing, X Swift OK viewing), Optical/NIR (Subaru NG visibility, Tomo-e day visibility). The main area is a sky map with a purple grid. A popup window is open over the map, displaying: 'GRB 231129C', 'swift XRT (fov)', 'J2000: 12.182, -81.894', and a blue link 'Object information'. The bottom left shows 'Suzaku WAM' and '360.0° x 180.0°'. The bottom right has the ALADIN logo and the number 32.

The popup appears if we click object/FoV.

“Object information” in the popup is a direct link to the object information.

Registered data (2024/11/14)

- Swift XRT/fov
 - observation history (once / day)
- Swift BAT/object
 - every GCN/Notice (near real-time)
- MAX GSC/object
 - MAXI GRBs (manual)
- Fermi-GBM/object
 - every GCN/Notice (near real-time)
- IceCube/object
 - ICECAT-1 (Gold & Bronze, 2011-2023)
<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/SCRUCD>
 - every GCN/Notice (near real-time)
- optical agu-target/fov (temporary)
 - S230927ba (for testing)

Gravitational wave filter

- GW150914
- GW170817
- O4b (FAR < 6.34e-7)
 - every GCN/Notice (near real-time)

Light curves (count)

- GRB 241129C (for testing)
 - MAXI/GSC
 - CALET/GBM
 - GRBAlpha
- GRBAlpha GRBs
- VZLUSAT-2 GRBs
- Swift/BAT GRBs (~ 2023)

Light curves (flux)

- GRB 241129C (for testing)
 - MAXI/GSC
 - Swift/XRT
 - Optical