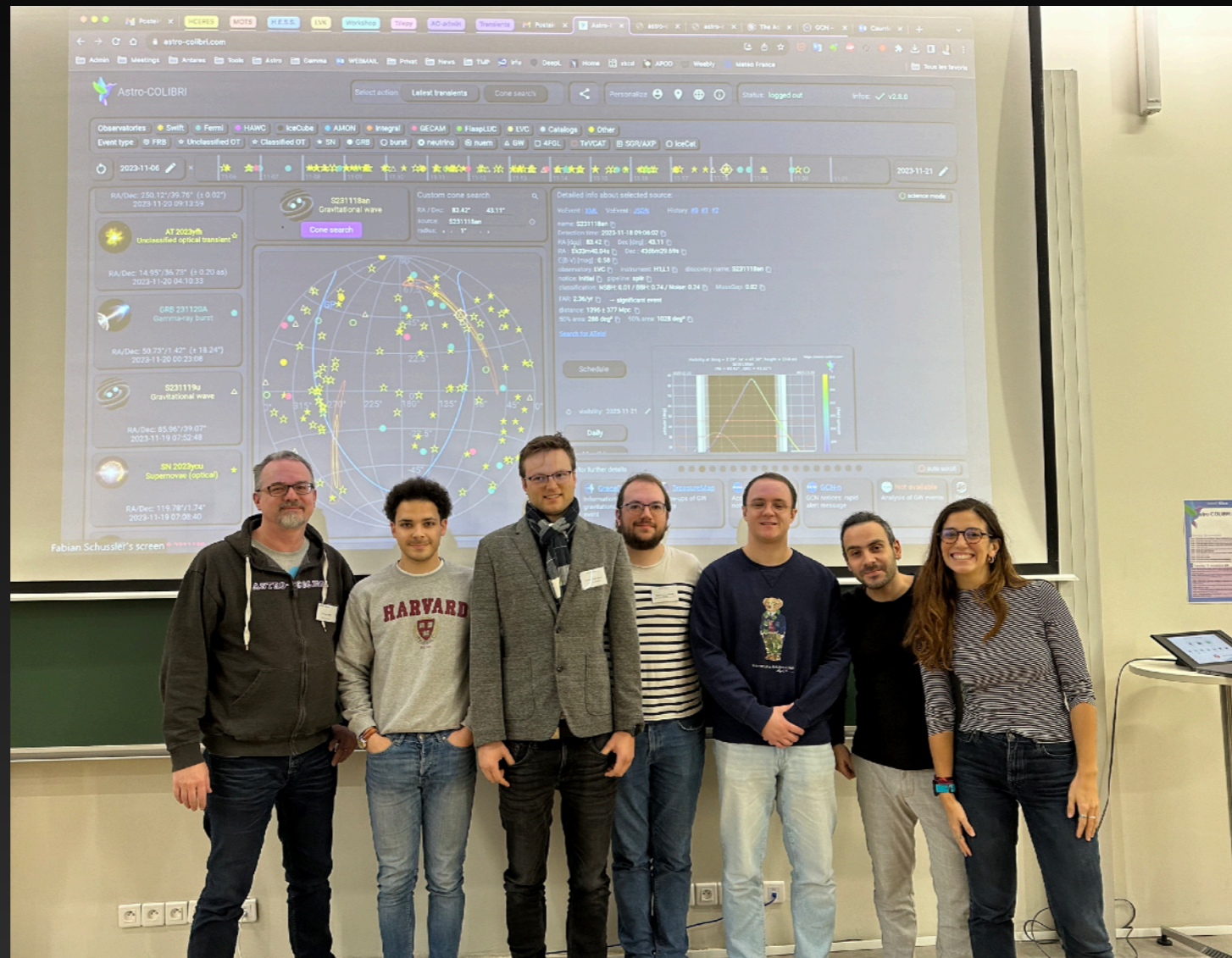


Astro-COLIBRI

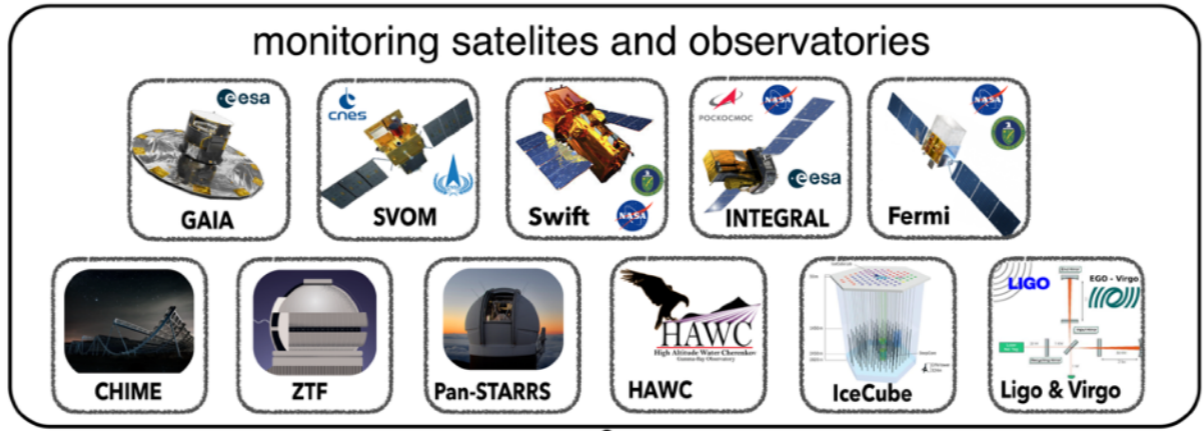


Fabian Schüssler (IRFU, CEA Paris-Saclay)

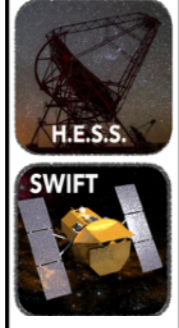




photons, GWs, ν

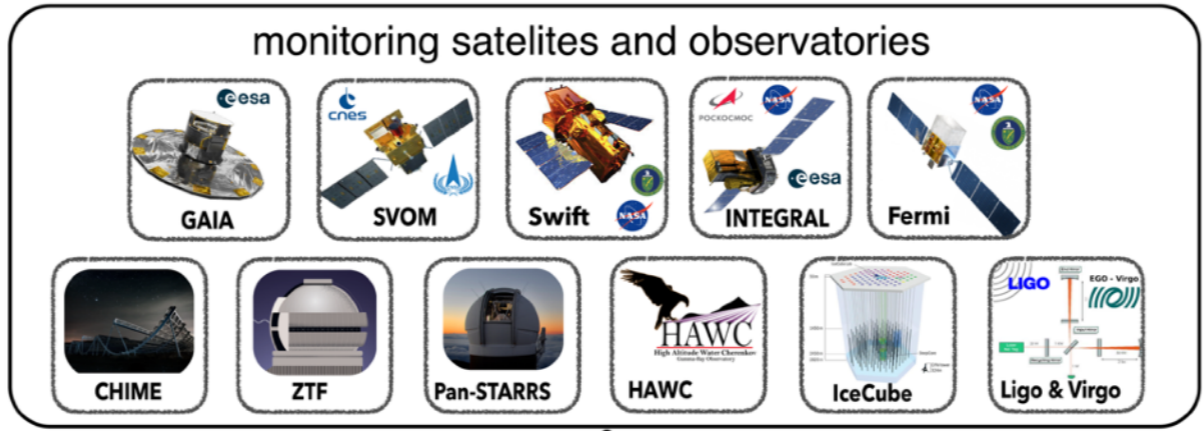


follow-up-observ.





photons, GWs, ν



follow-up-observ.



The following new classification/s were reported on:

[2021agrk](#) RA=16:31:36.210, DEC=+13:38:14.93, Classification=SN II, Redshift=0.026, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022dkw](#) RA=14:35:50.295, DEC=+24:40:58.20, Classification=SN IIln, Redshift=0.036, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022dlf](#) RA=13:24:06.914, DEC=-00:41:34.50, Classification=SN Ia-91T-like, Redshift=0.092, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022dsu](#) RA=14:05:30.767, DEC=+15:43:15.52, Classification=SN Ia-91bg-like, Redshift=0.07, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022efq](#) RA=16:40:08.257, DEC=+29:32:21.32, Classification=SN Ia, Redshift=0.072, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022ehu](#) RA=20:17:04.032, DEC=-47:46:21.15, Classification=SN Ia, Redshift=0.072, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022eml](#) RA=10:28:26.131, DEC=-34:28:22.63, Classification=SN Ia, Redshift=0.072, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+
[2022enc](#) RA=14:43:15.783, DEC=-38:23:54.71, Classification=SN Ia, Redshift=0.072, Time received: 2022-03-23 18:56:17, Classifier: T. Moore, S. Srivastav, K. W. Smith, M. Fulton, O. Yaron on behalf of ePESSTO+, Source group: ePESSTO+

```

<voe:VOEvent xmlns:voe="http://www.ivoa.net/xml/VOEvent/v2.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
xsi:schemaLocation="http://www.ivoa.net/xml/VOEvent/v2.0 http://www.ivoa.net/xml/VOEvent/VOEvent-v2.0"
  <Who>
    <AuthorIVORN>ivo://nasa.gsfc.tan/gcn</AuthorIVORN>
  </Who>
  <Author>
    <shortName>VO-GCN</shortName>
    <contactName>Scott Barthelmy</contactName>
    <contactPhone>+1-301-286-3106</contactPhone>
    <contactEmail>scott.barthelmy@nasa.gov</contactEmail>
  </Author>
  <Date>2022-05-01T19:52:11</Date>
  <Description>This VOEvent message was created with GCN VOE version: 15.08 30dec21</Description>
</Who>
  <What>
    <Param name="Packet_Type" value="61"/>
    <Param name="Pkt_Ser_Num" value="16"/>
    <Param name="TrigID" value="1104842" ucd="meta.id"/>
    <Param name="Segment_Num" value="0" ucd="meta.id.part"/>
    <Param name="Burst_TJD" value="19700" unit="days" ucd="time"/>
    <Param name="Burst_SOD" value="71511.22" unit="sec" ucd="time"/>
    <Param name="Burst_Inten" value="3195" unit="cts" ucd="phot.count;em.gamma.soft"/>
    <Param name="Burst_Peak" value="197" unit="cts" ucd="phot.count;em.gamma.soft"/>
    <Param name="Integ_Time" value="1.024" unit="sec" ucd="time.interval"/>
    <Param name="Phi" value="-69.25" unit="deg" ucd="pos.az.azi"/>
    <Param name="Theta" value="12.61" unit="deg" ucd="pos.az.zd"/>
    <Param name="Trig_Index" value="155"/>
  </What>

```



events

AGN TDE FRB GRB SN BNS merger

photons, GWs, ν

monitoring satellites and observatories

GAIA SVOM Swift INTEGRAL Fermi

CHIME ZTF Pan-STARRS HAWC IceCube Ligo & Virgo

alert - creator - streams - broker

TNS YAU GCN four π sky AMON AMON AMPEL FINK

follow-up-observ.

H.E.S.S. SWIFT VLT BHTOM RAPAS Citizen Science

SIMBAD NED aavso Fermi ALeRCE FINK

eDS Aladin esa SSC IVOA



Graphical user interfaces

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

2023-11-08 | 2023-11-23

Selected source: S231123cg Gravitational wave

RA / Dec: 243.63° / 44.2°

RA (deg): 243.63, Dec (deg): 44.20

RA: 16h14m30.49s, Dec: 44d12m5.51s

observatory: LVC, instrument: H1L1, discovery name: S231123cg

classification: BBH: 1.00

Gravitational waves are distortions of space-time. They are generated by all accelerated masses but their amplitude that only the most massive objects in the universe create waves that are sufficiently powerful to be detected by the current generation of instruments. This event has been recorded by both Advanced LIGO laser interferometers, likely due to the merger of two black holes.



<https://astro-colibri.com>

Astro-COLIBRI

MS230110g
RA/Dec: 122.34° / 23.89°
2023-01-10 06:05:42

SN 2022bf
RA/Dec: 20.86° / 49.97°
2022-01-03 21:07:12

GRB 220103A
RA/Dec: 36.86° / -15.70°
error: 8.4°
2022-01-03 21:03:12

HAWC-220103A
RA/Dec: 156.33° / 1.83°
error: 0.599°
2022-01-03 08:01:56

Visibility at H.E.S.S.
lat=-23.27°, long=16.5°, h=1835.0m

Weather: Forecast, Seeing, Sky view

Daily visibility graph showing altitude (km) vs. hours from UTC midnight.

Monthly visibility graph for 2022 showing visibility (km) vs. hours from UTC midnight.



Android + iOS

Notifications

Subscribe to alert notifications

- GRB alerts
- Neutrino alerts
- GW alerts
- Significant GW alerts
- NS/NSBH GW alerts
- Burst alerts
- Optical transients: SNe
- Optical transients: other
- Bright optical transients (mag < 18)
- FlaapLUC (Fermi-LAT alerts)
- Astro-COLIBRI announcements

Real-time notifications



Web interface

Astro-COLIBRI

Select action: Latest transients, Cone search

Personalize, Status: logged out, Infos: v2.9.1

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

2023-12-01 to 2023-12-31

GRB 231214B
Gamma-ray burst

RA/Dec: 137.93°/-13.42° (± 6.25°)
2023-12-14 07:53:55

SN 2023zzi
Supernova

RA/Dec: 43.70°/15.59° (± 0.20 as)
2023-12-14 02:58:33

S231213ap
Gravitational wave

RA/Dec: 170.95°/29.83°
2023-12-13 11:14:17

AT 2023aabz
Classified optical transient

RA/Dec: 348.57°/52.93°
2023-12-13 05:54:50

ZTF23abtnlaf
Unclassified optical transient

S231213ap
Gravitational wave

Cone search

Custom cone search
source: S231213ap
RA / Dec: 170.95° 29.83°
error: < 0.00° >

Detailed info about selected source:

VoEvent: [XML](#) VoEvent: [JSON](#) History: #0 #1 #2 #3

name: S231213ap
Detection time: 2023-12-13 11:14:17
RA [deg]: 170.95 Dec [deg]: 29.83
RA: 11h23m47.34s Dec: 29d49m40.29s
observatory: LVC Instrument: H1,L1 discovery name: S231213ap
classification: BBH: 1.00

Gravitational waves are distortions of space-time! They are generated by all accelerated masses but their amplitude is so tiny that only the most massive objects in the universe create waves that are sufficiently powerful to be detected by the current generation of instruments. This event has been recorded by both Advanced LIGO laser interferometers. It is most likely due to the merger of two black holes.

Learn more about GWs: [link](#)

Discuss this event in our forum: [link](#)

Links for further details

[GraceDB](#) Information on the gravitational wave event

[TreasureMap](#) Follow-ups of GW events

[ALADIN](#) Displays event in an interactive sky atlas

[ESASky](#) Displays event in an interactive sky atlas

[INS](#) Transient Name Server



Configurations

The screenshot shows the Astro-COLIBRI web interface. At the top, a navigation bar includes buttons for 'Select action', 'Latest transients', 'Cone search', and a 'Personalize' menu. The 'Personalize' menu is highlighted with a yellow dashed border and contains icons for user accounts, observatories, skymaps, and API documentation. A purple arrow points from the 'Personalize' menu to a list of configuration options. Another purple arrow points from the 'science mode' toggle to a text box explaining its function. The background shows a detailed view of a gravitational wave event, S231213ap, with a visibility graph and various external links.

- User accounts
- Choice of follow-up observatories
- Skymap configuration
- Link to API, documentation, etc.

“Science mode”: full event parameters, additional links to external platforms, visibility assessments, etc.

science mode



External platforms





Timeline + Filters

Astro-COLIBRI interface showing a timeline and filters for astronomical events.

Timeline: 2023-12-01 to 2023-12-31. The timeline shows various event markers for different dates, including 12-01, 12-03, 12-05, 12-07, 12-09, 12-11, 12-13, 12-15, 12-17, 12-19, 12-21, 12-23, 12-25, 12-27, 12-29, and 12-31.

Filters:

- Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other
- Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

Event Details (S231213ap):

- Source: S231213ap
- RA / Dec: 170.95° 29.83°
- error: < 0.00°
- Detailed info about selected source: name: S231213ap, Detection time: 2023-12-13 11:14:17, RA [deg]: 170.95, Dec [deg]: 29.83, RA: 11h23m47.34s, Dec: 29d49m40.29s, E(B-V) [mag]: 0.02, observatory: LVC, Instrument: H1,L1, discovery name: S231213ap, notice: Update, pipeline: pycbc, classification: BBH: 1.00, FAR: 0.02/yr, distance: 3861 ± 1257 Mpc, 50% area: 356 deg², 90% area: 1451 deg²

Map: A celestial map showing the location of the event (S231213ap) and other nearby events. The map includes a grid of RA and Dec coordinates and a search cone.

Visibility Graph: A graph showing the visibility of the event at a specific location (long = 14.4°, lat = 49.89°, height = 0.0 m) over time. The x-axis represents time from 2024-01-21 to 2024-01-22, and the y-axis represents the number of events (0 to 90). The graph shows a peak in visibility around 2024-01-21 22:00.

Links for further details:

- GraceDB: Information on the gravitational wave event
- TreasureMap: Follow-ups of GW events
- GCN Viewer: Access to GCN notices and circulars
- GCN-n: GCN notices: rapid alert message
- GW_Fermi-LAT: Analysis of GW events



Detailed filters

Astro-COLIBRI interface showing a detailed filter configuration for a gravitational wave event (S231213ap).

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem

Time range: 2023-12-01 to 2023-12-31

Filter configuration (OR logic):

- Everything else
- observatory == Gaia
- observatory == ZTF
- observatory == ATLAS
- observatory == Pan-STARRS
- observatory == MASTER

Event details (S231213ap):

- Gravitational wave
- RA/Dec: 170.95°/29.83°
- 2023-12-13 11:14:17
- distance: 3861 ± 1257 Mpc
- 50% area: 356 deg² | 90% area: 1451 deg²

Map: Sky map showing the event location and search area (red outline) with various observatory footprints (colored stars).

Visibility graph: Shows visibility (deg) vs. month (deg) for the event location (long = 14.4°, lat = 49.89°, height = 0.0 m).

Links for further details:

- GraceDB: Information on the gravitational wave event
- TreasureMap: Follow-ups of GW events
- GCN Viewer: Access to GCN notices and circulars
- GCN-n: GCN notices: rapid alert message
- GW_Fermi-LAT: Analysis of GW events



Detailed filters

Astro-COLIBRI interface showing detailed filters for source S231213ap.

Filters:

- OR
- Everything else
- Unistellar
- Magnitude \leq 18.0
- classification == nova
- classification == CV
- classification == TDE
- classification == Varstar

Custom cone search:

source: S231213ap
RA / Dec: 170.95° 29.83°
error: < 0.00°

Detailed info about selected source:

VoEvent: [XML](#) VoEvent: [JSON](#) History: [#0](#) [#1](#) [#2](#) [#3](#)

name: S231213ap
Detection time: 2023-12-13 11:14:17
RA [deg]: 170.95 Dec [deg]: 29.83
RA : 11h23m47.34s Dec : 29d49m40.29s
E(B-V) [mag]: 0.02
observatory: LVC instrument: H1,L1 discovery name: S231213ap
notice: Update pipeline: pycbc
classification: BBH: 1.00
FAR: 0.02/yr → significant event
distance: 3861 ± 1257 Mpc
50% area: 356 deg² 90% area: 1451 deg²

[Search for ATels!](#)

Discuss this event in our forum: [\[Forum\]](#)

[Schedule](#)

visibility: 2024-01-21

Links for further details:

- [GraceDB](#) Information on the gravitational wave event
- [TreasureMap](#) Follow-ups of GW events
- [GCN Viewer](#) Access to GCN notices and circulars
- [GCN-n](#) GCN notices: rapid alert message
- [GW_Fermi-LAT](#) Analysis of GW events



Detailed filters

Astro-COLIBRI interface showing detailed filters and event information for S231213ap.

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

Filters: AND, OR, Everything else, Unistellar, Magnitude > 0

Custom cone search: source: S231213ap, RA / Dec: 170.95° 29.83°, error: < 0.00° >

Detailed info about selected source:

- name: S231213ap
- Detection time: 2023-12-13 11:14:17
- RA [deg]: 170.95, Dec [deg]: 29.83
- RA : 11h23m47.34s, Dec : 29d49m40.29s
- E(B-V) [mag]: 0.02
- observatory: LVC, instrument: H1,L1, discovery name: S231213ap
- notice: Update, pipeline: pycbc
- classification: BBH: 1.00
- FAR: 0.02/yr → significant event
- distance: 3861 ± 1257 Mpc
- 50% area: 356 deg², 90% area: 1451 deg²

Visibility graph: Visibility at (long = 11.66°, lat = 48.07°, height = 0.0 m) for S231213ap (RA = 170.95°, DEC = 29.83°) from 2024-01-21 to 2024-01-22.

Links for further details: GraceDB, TreasureMap, GCN Viewer, GCN-n, GW_Fermi-LAT



Observation plans



Astro-COLIBRI Select action Latest transients Cone search Share Download Personalize Status: **logged out** Infos: **✓** v2.9.1

Observatories: Swift Fermi HAWC IceCube AMON Integral GECAM FlaapLUC LVC Catalogs Other

Event type: FRB Unclassified OT Classified OT SN GRB burst neutrino nuem GW 4FGL TeV CAT SGR/AXP IceCat

2023-12-01 12-01 12-03 12-05 12-07 12-09 12-11 12-13 12-15 12-17 12-19 12-21 12-23 12-25 12-27 12-29 12-31

RA/Dec: 189.84°/39.64°
2024-01-17 02:59:50

S231213ap_tile_012
tilepy

RA/Dec: 146.43°/2.69°
2024-01-17 03:59:50

S231213ap_tile_013
tilepy

RA/Dec: 195.64°/41.81°
2024-01-17 04:29:50

S231213ap_tile_014
tilepy

RA/Dec: 144.84°/-1.94°
2024-01-17 04:59:50

S231213ap_tile_015
tilepy

RA/Dec: 140.80°/-5.08°
2024-01-17 05:29:50

S231213ap
Gravitational wave

Latest transients

Custom cone search
source: S231213ap
RA / Dec: 170.95° 29.83°
error: < 0.00° >

observatory: LVC instrument: H1,L1 discovery name: S231213ap
notice: Update pipeline: pycbc
classification: BBH: 1.00
FAR: 0.02/yr → significant event
distance: 3861 ± 1257 Mpc
50% area: 356 deg² 90% area: 1451 deg²

[Search for ATels!](#)

Discuss this event in our forum:

Schedule

The following observation plan is proposed by [tilepy.com](#)
It covers 44.8% of the GW localisation uncertainty region.
Full details: [JSON](#)

visibility: 2024-01-21	ID	coverage [%]	RA [deg°]	Dec [deg]
Daily	S231213ap_tile_000	0.88	140.27	-0.15
Monthly	S231213ap_tile_001	3.41	158.03	19.16
	S231213ap_tile_002	3.96	169.45	28.80
	S231213ap_tile_003	3.79	165.23	25.45

Links for further details

- [GraceDB](#) Information on the gravitational wave event
- [TreasureMap](#) Follow-ups of GW events
- [GCN Viewer](#) Access to GCN notices and circulars
- [GCN-n](#) GCN notices: rapid alert message
- [GW_Fermi-LAT](#) Analysis of GW events

<https://astro-colibri.com>

<https://tilepy.com>



Community

Select action Latest transients Cone search



Personalize

Status: logged out Infos: v2.9.1

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other
Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

2023-12-01

GRB 231214B
Gamma-ray burst
RA/Dec: 137.93°/-13.42° (± 6.25°)
2023-12-14 07:53:55

SN 2023zzi
Supernova
RA/Dec: 43.70°/15.59° (± 0.20 as)
2023-12-14 02:58:33

S231213ap
Gravitational wave
RA/Dec: 170.95°/29.83°
2023-12-13 11:14:17

AT 2023aabz
Classified optical transient
RA/Dec: 348.57°/52.93°
2023-12-13 05:54:50

ZTF23abtniaf
Unclassified optical transient



Share "deep-links" to a selected event



Download all selected events



Discussion forum

API: <https://astro-colibri.science>

First version of an OpenAI GPT ChatBot



Astro-COLIBRI

- Astro-COLIBRI: novel platform providing easy access to
 - transient detections (optical transients, GRBs, FRBs, TDEs, high-energy neutrinos, GWs, etc.)
 - interfaces: <https://astro-colibri.com> + Android + iOS
 - API + documentation: <https://astro-colibri.science>
 - Forum: <https://forum.astro-colibri.science>
 - availability > 99% (fully cloud based architecture)
- P. Reichherzer et al., ApJS 256, 2021 ([link](#)) + Galaxies 11, 2022 ([link](#))
- Series of workshops: Sept. 16-20, 2024 ([link](#))



Astro-COLIBRI

Contact: astro.colibri@gmail.com

- Central webpage: [**https://astro-colibri.science**](https://astro-colibri.science)

Android Play Store



Apple iOS App Store



Introductions/tutorials on YouTube



[**Mastodon, Twitter/X, Insta, Threads**](#)



Observatory selection

Astro-COLIBRI interface showing the observatory selection process. The interface includes a top navigation bar with buttons for 'Personalize', 'Location', 'Global', and 'Info'. Below this, there are filters for 'Observatories' and 'Event type'. A central panel displays the observability calculation for VLT Paranal and lists various observatories categorized by 'Radio', 'Optical', and 'High energy'. A bottom panel shows a table of observatory parameters and buttons for 'Select coordinates' and 'Save observatory'.

The observability is calculated for an observer at VLT Paranal: long = -70.40° , lat = -24.63° , height = 2635m.

You can change the observer location by choosing one of the following observatories

Radio

ALMA ASKAP ATCA MeerKAT MWA Nançay Murriyang/Parkes

Optical

Jilin Keck Mount Wilson OHP Palomar SALT San Pedro Mártir **VLT Paranal** Victor M. Blanco Xinglong Yunnan

High energy

HAWC H.E.S.S. LHAASO LST MAGIC VERITAS

My observatories :

11.6569	48.0653	0	0.1	60	1.0	Garching Observatory
longitude	latitude	altitude [m]	FoV [deg]	Zenith limit [deg]	max. moon fracti...	name custom position

Select coordinates Save observatory



Observability

Astro-COLIBRI interface showing observatory filters and a visibility plot for H.E.S.S. at source location (RA = 120.8°, DEC = 9.8°).

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, Icecat

2023-11-01 to 2023-11-23

status: logged out Infos: v2.8.0

Personalize [location icon] [globe icon] [info icon]

Visibility at H.E.S.S.

Source location: (RA = 120.8°, DEC = 9.8°)

altitude [deg]

hours from UTC midnight

azimuth [deg]

Legend:
— Sun altitude
- - - Moon altitude
● source
■ Dark time
■ Moonlight

Note: Grey levels correspond to civil, naval, and astronomical twilight, respectively.

Zenith < 45°: 17:50 UTC - 19:40 UTC
Zenith < 60°: 17:50 UTC - 20:59 UTC



Cone searches

Astro-COLIBRI | Select action | Latest transients | **Cone search** | Personalize | Status: logged out | Infos: v2.8.0

Observatories: Swift, Fermi, HAWC, IceCube, AMON, Integral, GECAM, FlaapLUC, LVC, Catalogs, Other

Event type: FRB, Unclassified OT, Classified OT, SN, GRB, burst, neutrino, nuem, GW, 4FGL, TeVCAT, SGR/AXP, IceCat

Timeline: 2023-11-08 to 2023-11-23

IceCube-230405A Neutrino
RA/Dec: 120.85°/9.75°
2023-04-05 13:20:20

IceCube-230405A Neutrino
Latest transients

Custom cone search
RA / Dec: 120.85° 9.75°
source: IceCube-230405A
radius: 2.97°

NVSS J080159+100535
4FGL J0802.0+1006
RA/Dec: 120.51°/10.11°
(± 0.04°)
(sep: 0.49°)

PKS 0754+100
4FGL J0757.1+0956
RA/Dec: 119.29°/9.95°
(± 0.02°)
(sep: 1.55°)

TXS 0755+117
4FGL J0758.1+1134
RA/Dec: 119.54°/11.57°
(± 0.08°)
(sep: 2.23°)

4FGL J0800.9+0733
RA/Dec: 120.23°/7.55°
(± 0.05°)

Detailed info about selected source:
name: S231123cg
Detection time: 2023-11-23 13:54:30
RA [deg]: 243.63 | Dec [deg]: 44.20
RA: 16h14m30.49s | Dec: 44d12m5.51s
observatory: LVC | instrument: H1,L1 | discovery name: S231123cg
classification: BBH: 1.00

Gravitational waves are distortions of space-time! They are generated by all accelerated masses but their amplitude is so tiny that only the most massive objects in the universe create waves that are sufficiently powerful to be detected by the current generation of instruments. This event has been recorded by both Advanced LIGO laser interferometers. It is most likely due to the merger of two black holes.

Learn more about GWs: [link](#)

Discuss this event on Twitter: [@AstroColibri](#)

Links for further details: GraceDB, TreasureMap, ALADIN, ESASky, TNS



Detailed information: GWs

Astro-COLIBRI interface showing detailed information for a selected source (S230601bf).

Detailed info about selected source:

VoEvent : [XML](#) VoEvent : [JSON](#) History: [#0](#) [#1](#) [#2](#) [#3](#)

name: S230601bf

Detection time: 2023-06-01 22:41:34

RA [deg] : 307.97 Dec [deg] : -40.82

RA : 20h31m52.5s Dec : -40d49m1.38s

observatory: LVC instrument: H1,L1 discovery name: S230601bf

notice: Update pipeline: spiiir

classification: BBH: 1.00

FAR: $5.41e-8/\text{yr}$ → significant event

distance: 3565 ± 1260 Mpc

50% area: 907 deg² 90% area: 2497 deg²

[Search for ATels!](#)

Schedule

Visibility at H.E.S.S. S230601bf (RA = 308.0°, DEC = -40.8°)

Information on the gravitational wave event

- TreasureMap: Follow-ups of GW events
- GCN Viewer: Access to GCN notices and circulars
- GCN-n: GCN notices: rapid alert message
- ALADIN: Displays event in an interactive sky atlas

<https://astro-colibri.com>



Architecture

