

Astro-COLIBRI: a platform for real-time monitoring of the transient sky

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1. Context: observations in time-domain astronomy
2. Astro-COLIBRI: evaluating messages of astronomical observations in real time

Increasing observations in Time-domain astronomy



- Increase interest for the the most violent **transient phenomena**;
- Short live span of these events requires rapid analysis and synthesis of the information;
- Astro-COLIBRI, has been developed to read and evaluate VOEvents in real-time [Reichherzer et al, 2021 *ApJS* 256 5].

1. Context: observations in time-domain astronomy
2. Astro-COLIBRI: evaluating messages of astronomical observations in real time

Astro-COLIBRI principle: analysis in real-time & alert

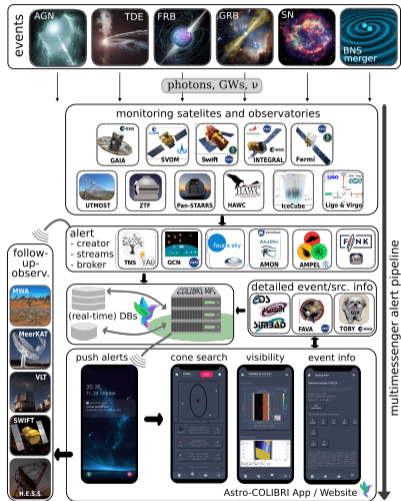


Figure: Alert pipeline of Astro-COLIBRI

Astro-COLIBRI: overview of the web interface



Figure: Astro-COLIBRI web interface¹

Astro-COLIBRI: visualisation of the latest detected transients



Figure: Latest detected transients are displayed on the map

Astro-COLIBRI: detailed information about selected source

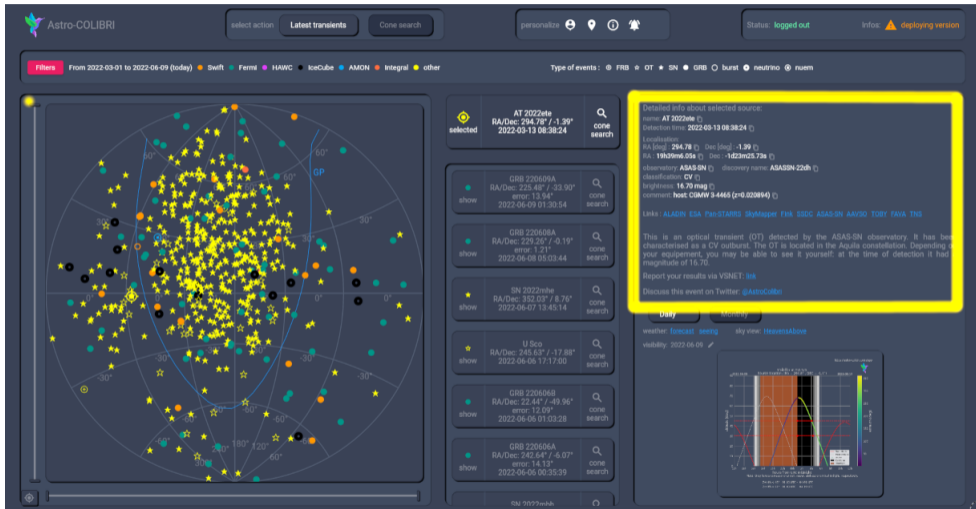


Figure: Astro-COLIBRI provides detailed information about the detected source

Astro-COLIBRI filters: dates, observers, type of events, localisation etc.



Figure: User-specific filters can be applied in Astro-COLIBRI

Astro-COLIBRI key features: cone searches with autocompletion

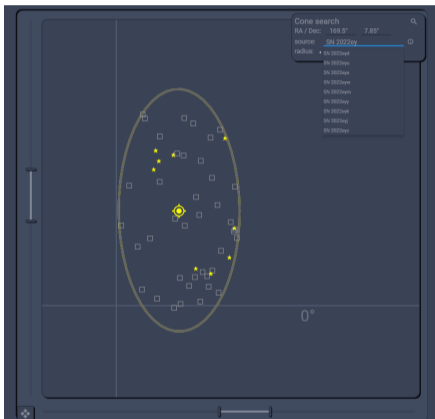


Figure: Cone search for a given source

- representation of an event in the context of other already known sources;
- autocompletion feature (implemented after amateur astronomers feedback).

Astro-COLIBRI key features: observability of a source in the next 24 hours

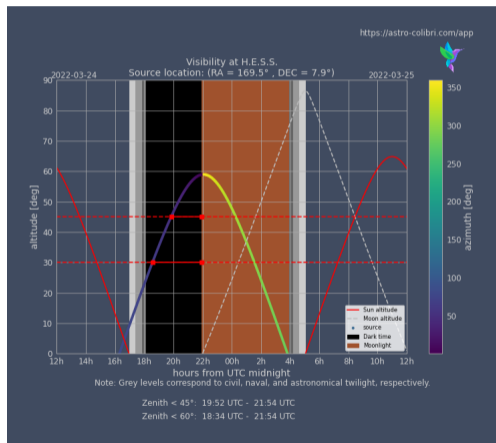


Figure: Visibility for a given source within the next 24 hours from your position

Visibility plot can be computed with custom observatories

Location of observer

The visibility plots are calculated for an observer at H.E.S.S.: long = 16.5°, lat = -23.27°, height = 1835m.

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

Radio

ALMA ASKAP ATCA MWA Nançay Yunnan

Optical

Ulsn Keck Mount Wilson OHP Palomar SALT San Pedro Mártir VLT Paranal Xinglong

High energy

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

My observatories :

Search for observatories using their IAU code or name:

Or by indicating a custom observer position:
The longitude and latitude must be expressed in decimal degrees.
The altitude must be expressed in meters above sea level.
Longitudes are negative toward West. The sign + of the longitude and latitude can be omitted.

16.5 -23.27 1835 H.E.S.S. **Select coordinates**

Save observatory

ok

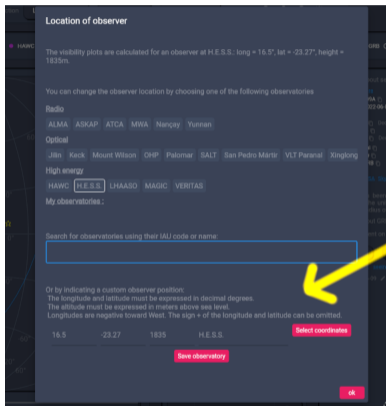


Figure: Astro-COLIBRI allows amateur astronomers to give their own coordinates

Android and iOS: subscribe to receive customized alerts in real-time

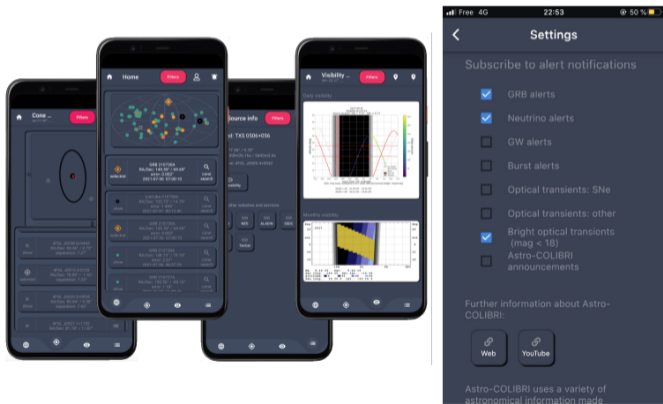


Figure: Receive alerts in real-time with Astro-COLIBRI on your smartphone (Android + iOS)

Astro-COLIBRI notifications allow amateur astronomers to trigger their own observations



Figure: Observation conducted by hobbyists astronomers right after receiving alerts by Astro-COLIBRI

Summary & additional information

- **Web interface:** <https://astro-colibri.com>
- **API** (incl. documentation): <https://astro-colibri.herokuapp.com>
- **Paper published in ApJS:**
<https://iopscience.iop.org/article/10.3847/1538-4365/ac1517>
- **Available on Android + iOS:** install it and receive alert notifications in real-time !



- **contact/feedback:** some features are implemented thanks to amateurs feedback. We are open to implement other ideas and suggestions / astro.colibri@gmail.com

Bibliography I



Reichherzer et al, 2021 *ApJS* 256 5

Astro-COLIBRI—The COincidence LIBrary for Real-time Inquiry for Multimessenger Astrophysics.
The Astrophysical Journal Supplement Series, volume 256, page 5, Aug 2021