KILONOVA CATCHER

Telecon: Wednesday, June 25th

Presented by The Kilonova Catcher Core Team

Welcome & Introductions

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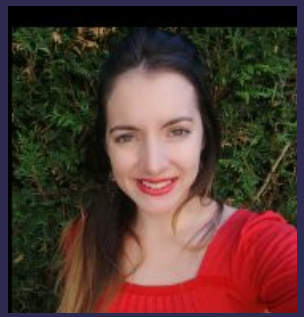

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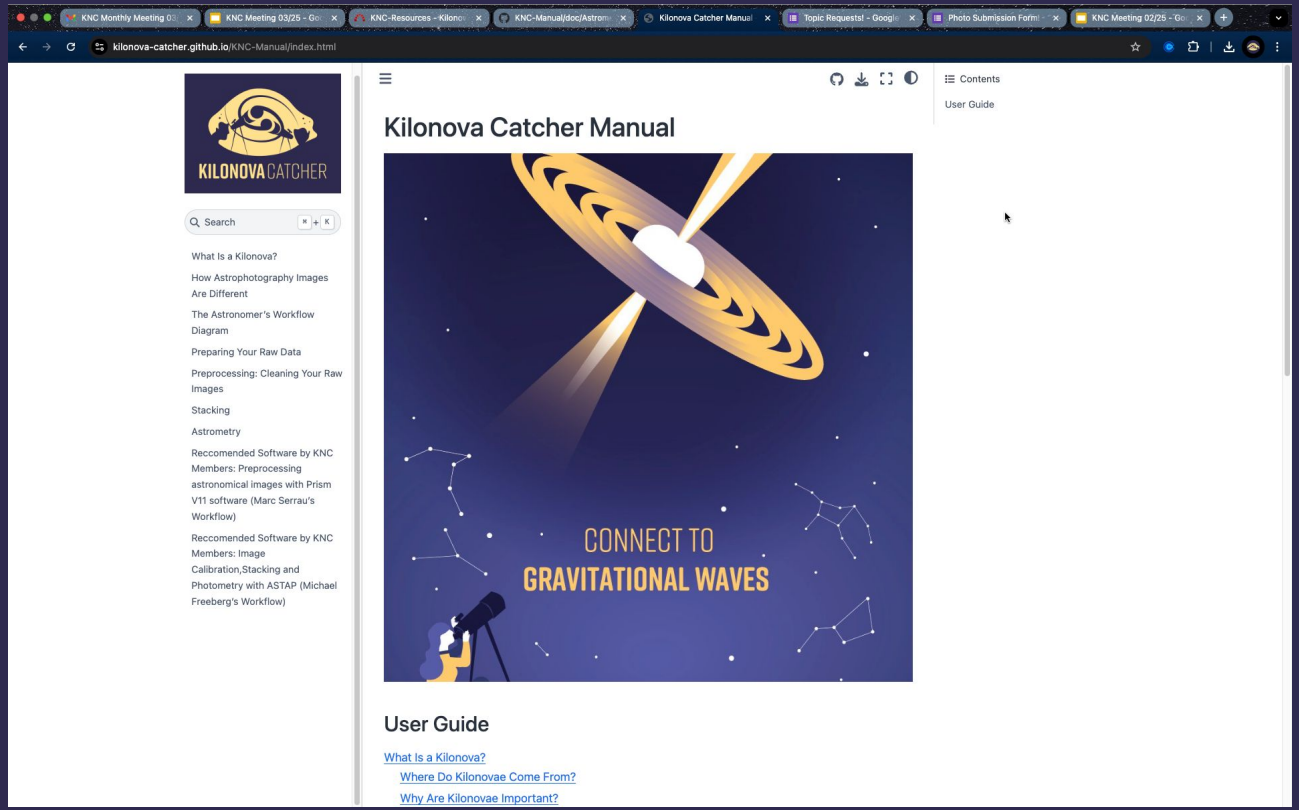
Manual: https://kilonova-catcher.github.io/KNC-Manual/index.html



Agenda

1. Rubin Observatory First Look Images (Presentation)
2. GRANDMA updates
3. Circular Template
4. Circular release protocol
5. Mid year feedback
6. Alert system
7. Release of user quote form for website and posts
8. Open Discussion?

Please let me know if I am not sharing my screen!

Rubin Observatory First Look Images (Presentation)

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GRANDMA

GRB Follow Up – Based on associated GCN event pages.

The current consensus of the GRB group is to start observing events that are well-localized AND pass one of the following criteria:

1. Short Duration + High Energy

We look for GRBs shorter than:

2 seconds if reported by Fermi, SVOM/GRM, MAXI, or ARGILE

--> in at least one band AND the upper energy band is > 100 keV

3 seconds if reported by Swift

--> If it's borderline (e.g. 2.9s), ask the group to discuss.

Why?

These are likely short GRBs, which are candidates for kilonova counterparts or gravitational wave events.

2. Very High Energy Detection

GRBs with LAT counterparts (Fermi-LAT detections in the ~10–100 GeV range)

Why?

These are highly energetic bursts, often long GRBs, and valuable for afterglow and host galaxy studies even without a redshift yet.

3. Redshift Identified (Spectroscopic or Photometric)

If redshift is known within a day, consider follow-up for:

Low-z (z < 1): nearby = brighter afterglow = possible host identification

High-z (z > 4): rare and scientifically valuable (early universe studies)

Why?

These provide context—either very nearby (good for kilonova) or very distant (good for studying early galaxies).

Circular Templates

To be discussed...GCN Release Protocol.

GRB ***YYMMDDX***: *Kilonova-Catcher optical upper limits / Kilonova-Catcher optical afterglow detection*

KNC_author1, ***KNC_author2***, ***etc***. (KNC), D. Turpin (CEA-Saclay/Irfu), C. Andrade(UMN), M. Pillas (ULiege), M. Tanasan (NARIT), S. Antier (OCA/IJCLAB) on behalf of the GRANDMA/Kilonova-Catcher collaboration:

We observed the field of GRB ***YYMMDDX*** (***GCN_author*** et al., ***GCN number***) detected by ***trigger_instrument*** with the GRANDMA citizen science project Kilonova-catcher (KNC). Our observations were performed with the ***KNC_tel_name1*** telescope operated by ***KNC_author1*** and a ***KNC_tel_name2*** telescope located at ***KNC_observatory_name2*** Observatory operated by ***KNC_author2, etc.***. Our observations started at TGRB+***XX***hr.

In our stacked frames, subtracted from the PanSTARRS DR2 template image, *we do not detect any optical counterpart / we detect the optical counterpart* inside the ***external_x-ray_telescope_team_name1*** *refined /* position (***GCN_author*** et al., GCN ***GCN number***). ***ONLY IF DETECTION otherwise no sentence ->*** *This position is consistent with the afterglow candidate reported by* ***external_opt_telescope_team_name1*** (***GCN_author*** et al., GCN ***GCN number***), ***external_opt_telescope_team_name2*** (***GCN_author*** et al., GCN ***GCN number***), etc.

We report our follow-up results in the table below (***do not care too much about the table layout, you will have to redo the layout in the GCN website in the submit form)***:

Tmid-TGRB (hr)	Exp (s)	Filter	Magnitude	Instrument
7.9	6 x 300s	r (AB)	20.1 (U.L., ***XX*** sigma)	TEC160FL
8.1	11 x 300s	g (AB)	20.8 +/- 0.1	CDK17-AITP

All the data have been reduced by a single data processing pipeline, STDPipe (Karpov et al., 2022). Images obtained with the sloan filters were calibrated using the PanSTARRS DR1 catalog. Images obtained with the Johnson-cousins filters were calibrated using the GAIA DR3 synphot catalog. Images obtained with the gaia filters were calibrated using the GAIA DR3 catalog.

We use the SkyPortal application (skyportal.io) to monitor our observational campaign (Coughlin et al. 2023).

GRANDMA is a worldwide telescope network (grandma.ijclab.in2p3.fr) devoted to the observation of transients in the context of multi-messenger astrophysics (Antier et al. 2020 MNRAS 497, 5518). Kilonova-Catcher (KNC) is the citizen science program of GRANDMA (http://kilonovacatcher.in2p3.fr/).

Legend:
Blue text: must be modified by the authors

Mid Year Feedback Form

First Name, Last Name, and slack username. *

Your answer

How many images have you submitted this last year? Since you joined? *

Your answer

How much do you plan to contribute over the next year? *

- ◯ As many as observation as the weather gods allow.
- ◯ More than half
- ◯ Less than half
- ◯ Only for very interesting events
- ◯ Other:

We're always looking for ways to help our members feel more empowered to contribute. Are there any skills you're interested in building, or anything KNC could do to better support your involvement? *

Your answer

Other Comments? Questions? Compliments? Concerns? *

Your answer

Please continue to respond!

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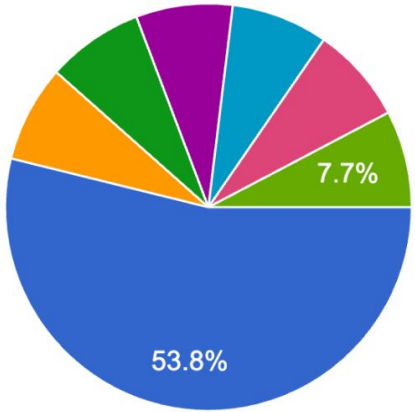
GRANDMA

Mid Year Feedback Form - Contribution

13 responses



- As many as observation as the weather gods allow.
- More than half
- Less than half
- Only for very interesting events
- I am around 1 week a month near my telescope closed to New Moon to sch…
- 200 good nights per year in Chili but o…
- When I have the opportunity to use a…
- As many as the weather and the objec…

Mid Year Feedback Form

We're always looking for ways to help our members feel more empowered to contribute. Are there any skills you're interested in building, or anything KNC could do to better support your involvement?

Technical Skills

Estimate SNR based on filters, exposure, and target brightness

✅Learn stpipe pipeline for photometry

⚠️Improve target localization and coordinate accuracy (ongoing as GRANDMA observes with KNC)

Use tools for measuring magnitudes independently

⚠️Clarify terms like "square location in square degrees"

Image Analysis

⚠️Example image analysis walkthroughs

⚠️Help with image stacking and test observations

⚠️Understand image subtraction and error estimation

Learn photometry procedures and software

Community Resources

Activate KNC repository quickly after alerts

⚠️Create FAQ page with member-submitted answers

⚠️Host workshops on data analysis and processing

✅Offer feedback on uploaded images and scientific use (Partially with GCN)

Support & Access

Help reconnecting to Slack

✅Match members for one-on-one guidance

✅Provide opportunities during LIGO downtime

Mid Year Feedback Form

Other Comments? Questions? Compliments? Concerns?

Technical Skills

"KNC is a great working group - exciting topics even when targets are elusive."

"Very enjoyable working with GRANDMA and KNC teams."

"Monthly meetings are engaging—Cristina does an excellent job enriching KNC!"

"Thanks for all the time and effort invested in KNC."

"Appreciate how much work goes into the meetings and coordination."

Suggestions & Requests

Organize an observatory-based training session

Resume transient observing during downtime (like O3-O4)

Include RAPAS filters in KNC pipeline

Provide a way to find past participation records (e.g., GRB221009A)

Participation & Plans

Some members are upgrading their setups!

Others are temporarily offline due to equipment issues

Members often find creative ways to contribute data, even remotely when personal tools aren't accessible.

Looking Forward

Hope to meet KNC/GRANDMA team in person someday

Excited by recent alerts and eager to re-engage

Social Media and Users

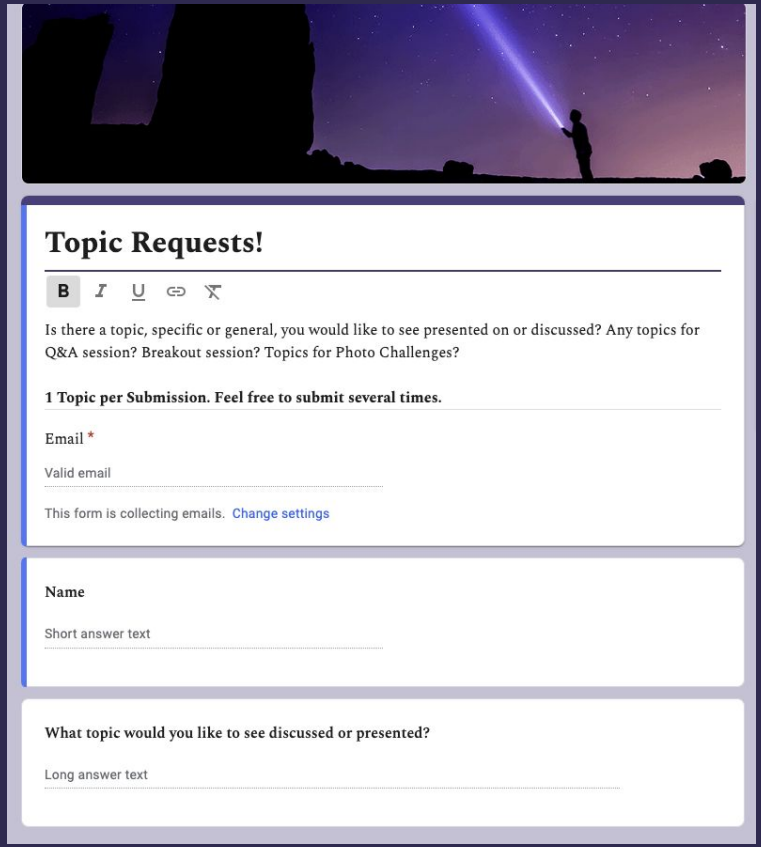
I will be reaching out to you all to hear about your individual experiences as astronomers!
Coming soon!

Forms: Topic Requests!

This form will help the KNC Core Team:

- pick our guest speakers
- organize Q&A sessions
- Webinars
- Write and collect resources and videos
- Photo challenge topics

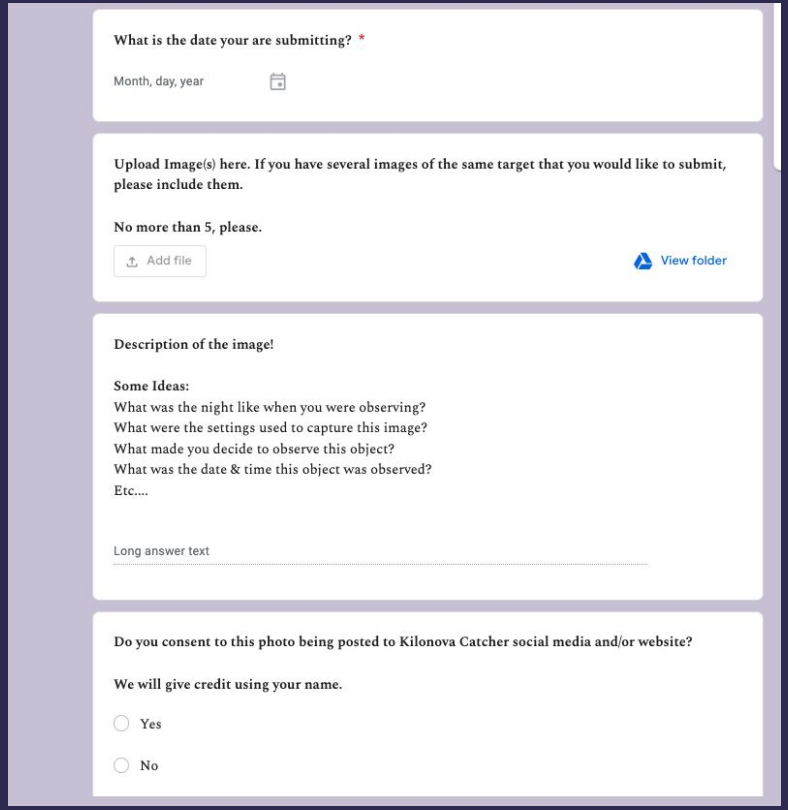
Please do not be afraid to submit! Over and over!



Forms: Photo Submission!

Submit in the same spot!

Photo of the Week! Please submit any and all images you want to share!



Social Media

How to Join & Contribute

Instagram: @kilonovacatcher

Threads: @kilonovacatcher

Twitter: @KilonovaCatcher

Facebook Page: ???

Please follow and support!

KNC Social Calendar

KNC Social Calendar currently:

- Monthly Meeting
- Monthly Webinars
- Cristina's public talks (when available)

It currently has the zoom link to connect there.

Send me an email or slack message if there is an event related to KNC activity that you think others may be interested in!

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Thank you! Open Discussion?