

▪ **Welcome to Caltech and LIGO SURF 2023!**

- I hope you had a safe & uneventful trip and are settled in your lodging.
- If you can't find your mentor, let me know...
- LIGO SURF (22 students at Caltech, four at LHO – hi!) is part of the Caltech SURF program (many hundreds of students, mostly from Caltech; run by Caltech's Student-Faculty Programs, SFP).
- You are encouraged to participate in all of the SFP activities (social, scientific).
- LIGO Lab is part of the LIGO Scientific Collaboration (LSC) and the LVK, but these are distinct organizations.
You are members of the Lab (for the next 10 weeks) but not the LSC / LVK.
- Currently, there are no covid restrictions at Caltech or the LA area, but that could change ... we'll need to prepare... with frequent zoom meetings ...
- In the meantime, take care of your physical and mental health – get outside, get social!
- Caltech resources – <https://together.caltech.edu/> , <https://wellness.caltech.edu/>

- On your first day (today Thursday June 22, 2023, for most of you):
 - Find your mentor!
 - Find your desk (West Bridge, Cahill, 40m, ...)
 - Verify that your key card works to get into West Bridge.
 - Get ligo.org credentials (from Nately or your mentor or Alan).
 - Do LIGO “inboarding” (from Nately).
 - Get your picture taken. (LHO folks – can you send me a pic?)
 - If you need the LIGO Data Grid, sign up (your mentor can help).
- Come to me if you are having any problems with any of this.
- MANDATORY SFP Safety meeting – If you haven’t already done it, see “SFP Start-up Information and SFP Student Portal” from casey@caltech.edu

- We begin "Physics of LIGO" lecture series tomorrow at 10am in the SCR (West Bridge 351); broadcast via zoom (please remind me to record!!).
- Then, lots more lectures (informal!! Ask questions!!) throughout the summer.
- GW Open Data Workshop tutorials, Next Monday & Tuesday, 3-5 pm.
- We'll meet every Friday noon, for informal lunch / chat (sometimes catered)
- Lots of lectures, workshops, meetings throughout the summer!



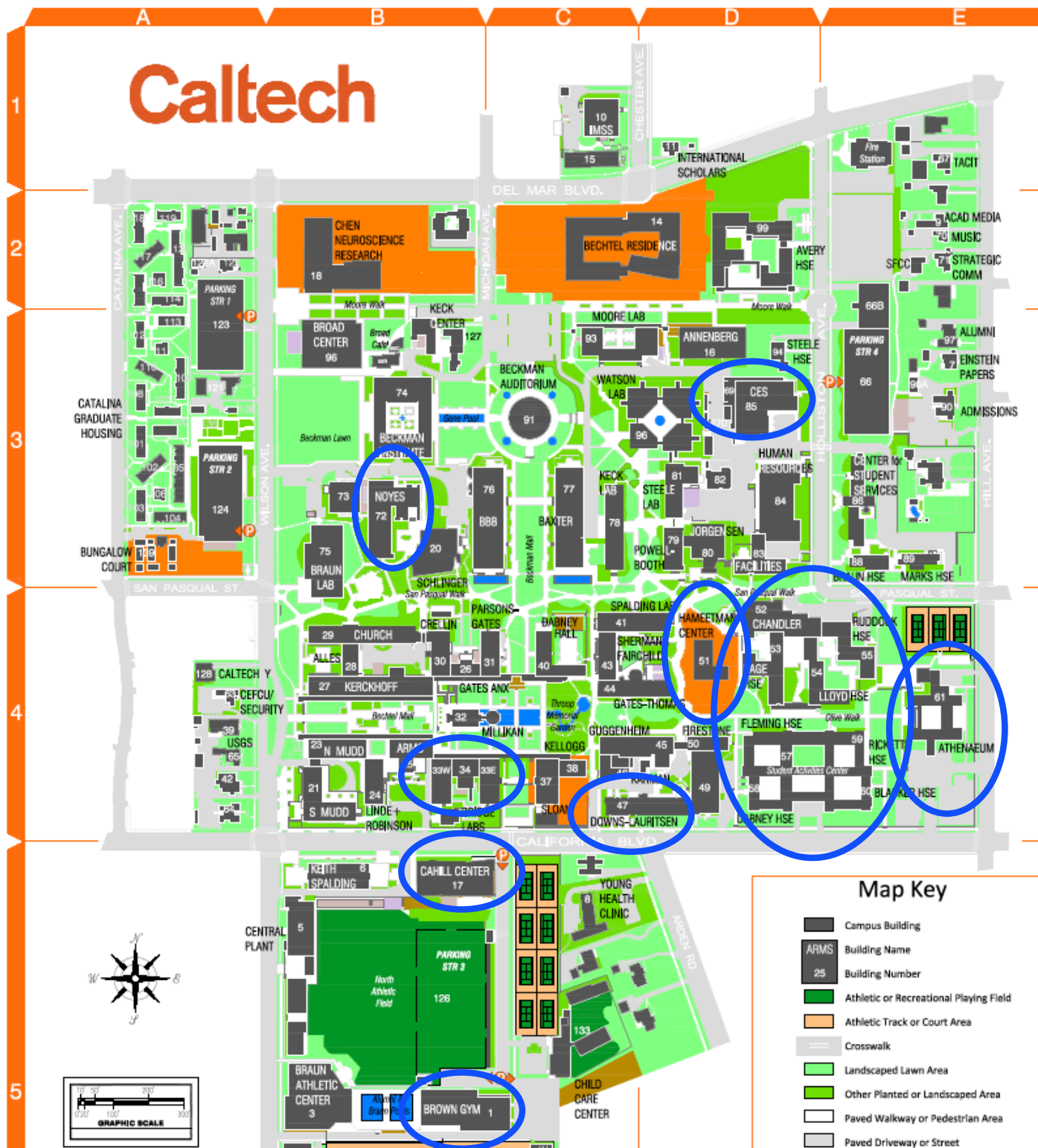
LIGO SURF 2023

Communications

- Are you getting our emails?? Check spam folder. Allow all email from caltech.edu.
- Always check your email *and respond promptly* to emails from SFP, SURF admins, **your mentor(s)**, etc.
- PLEASE respond to requests to fill out entrance and exit SURVEY(S) from SFP and from us (LIGO Lab).
- Expect an exit survey in the fall
- Expect ongoing requests to check in on the progress of your career.
- You are required to go through a web-based “research ethics” presentation from the NSF – this is REQUIRED and should be done promptly.

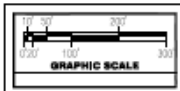


Caltech



Map Key

- Campus Building
- Building Name
- Building Number
- Athletic or Recreational Playing Field
- Athletic Track or Court Area
- Crosswalk
- Landscaped Lawn Area
- Other Planted or Landscaped Area
- Paved Walkway or Pedestrian Area
- Paved Driveway or Street



West Bridge Laboratory

- Desks in West Bridge: We will give you a tentative desk assignment now... it will be crowded!
- If you are uncomfortable and want to change your desk, let your mentor, and me, know. We can do some shuffling.
- 265 West Bridge will be open-space desks. If you want in, or out, let me know.
- PLEASE try to keep the room, and all rooms, clean. We'll have **ants!**
- Keep kitchen area, refrigerator, etc of WB 265 clean.
- Locking doors, lights, etc.
- Coffee monitors?
- Wifi – You can use Caltech Secure (I think?), or eduroam.
- We have ONE “all-gender” rest room in West Bridge on the 2nd floor (and none on the 3rd floor).
- There are two gendered rest rooms on the 0th floor of West Bridge, and two on the 1st floor of East Bridge.



<https://bit.ly/LIGO-SURF23-Schedule>

LIGO SURF 2023 Schedule - All times are Pacific.

Short URL for this page: <https://bit.ly/LIGO-SURF23-Schedule>
 Contact Alan at ajw@caltech.edu for any additions, corrections, suggestions.
 Also see SFP Calendar <https://sfp.caltech.edu/sfp-calendar>
 And SFP Portal <https://sfpstudentportal.sites.caltech.edu/>
 And SFP Requirements <https://sfpstudentportal.sites.caltech.edu/requirements-and-expectations-2>
 Info for visiting students <https://sfpstudentportal.sites.caltech.edu/information-visiting-students-2>
 Slack ligo-surf2023.slack.com

Start: **6/19/2023** 1

LIGO SURF is bluish Caltech SURF is pinkish

Week of: **6/19/2023** 1

	6/19	6/20	6/21	6/22	6/23	6/24
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	Saturday
8:00 AM	Juneteenth Caltech holiday					
9:00 AM				WAVE breakfast - Bechtel		
10:00 AM			Luggage drop-off at CSS on Holliston Ave (bldg #86), 10am - 5pm	LIGO SURF greeting & orientation meeting - 352 West Bridge (SCR)	Intro to GWs and LIGO: talk #1, SCR and https://caltech.zoom.us/j/2121413085	
11:00 AM						
12:00 PM			Checkin Fair begins, at CSS on Holliston Ave (bldg #86)		LIGO SURF lunch, SCR	
1:00 PM			Housing check-in, at CSS on Holliston Ave (bldg #86)	1:30 pm – Online Safety Training		
2:00 PM			Meet with your mentor(s)	Meet with your mentor(s)		
3:30 PM						
4:00 PM						
5:00 PM				LIGO SURF social gathering - Outside WB		
7:00 PM						
7:30 PM			SFP Dessert Party	ORE Orientation for visiting students who are living in campus housing		

Week of: **June 26** 2



LIGO

LIGO SURF 2023 Schedule

- We begin "Intro to GWs and LIGO" talks tomorrow at 10am PDT (on zoom), continuing on Mon, then Mondays and Fridays for the next weeks.
- GW Open Data Workshop tutorials, 3pm next Monday and Tuesday.
- LIGO SURF social gathering on Wednesdays 5pm PDT – in addition to Caltech SURF gatherings.
- Trip to LHO – July 10-12!
- Lots of lectures, workshops, meetings throughout the summer!
- Final presentations – Thursday and Friday Aug 24-25.

Week of: August 21 10					
	8/21 MONDAY	8/22 TUESDAY	8/23 WEDNESDAY	8/24 THURSDAY	8/25 FRIDAY
8:00 AM					
9:00 AM					
10:00 AM				LIGO SURF presentations - Linde 310	LIGO SURF presentations - Linde 310
11:00 AM				LIGO SURF presentations	LIGO SURF presentations
12:00 PM				LIGO SURF presentations	LIGO SURF presentations
1:00 PM				LIGO SURF presentations	LIGO SURF presentations
2:00 PM				LIGO SURF presentations	LIGO SURF social gathering, Tournament Park
3:00 PM		LIGO SURF Astrophysics Meeting - SCR		LIGO SURF presentations	LIGO SURF Farewell
4:00 PM					
5:00 PM					LIGO SURF Final Report is due Sep 23 (TBC) https://sfp.caltech.edu/undergraduate-research/summer_requirements/final_report

GW Open Data
Workshop tutorials,
3pm **next Mon & Tue.**

Start by setting up
your computer with
python-based tools for
exploring LIGO data.

Then tutorials on
astrophysical analysis
(mostly CBCs), etc.



Gravitational Wave Open Data Workshop

May 15 - 17, 2023

Overview

LIGO, Virgo, and KAGRA have now completed three observing runs (O1, O2, and O3), with all observational quality strain data available to the public. These observations include over 90 detections of compact object mergers. With more detector upgrades in progress and future observing runs planned, it is a very exciting time in the field!

This Open Data Workshop is the 6th in a series of workshops that began in 2018. Participants will receive a crash-course in gravitational-wave data analysis. The workshop includes lectures by data analysis experts, hands on experience with software tutorials, and a data challenge designed to test your new skill in GW data analysis.

[Register for free!](#)

Structure

This workshop will utilise hybrid learning, and will include both in-person and online elements. The format is inspired by a 2020 [Photonics Online Meet-up](#), and builds on our past experience with global, online workshops. The workshop will include the following elements:

- All lectures will be online, and may be watched live.
- Lectures will be recorded, with videos posted immediately.
- Access software tutorials, quiz questions, and a data challenge in the online course.
- Join an in-person "Study Hub", or attend the workshop virtually.
- Complete the online course and data challenge to receive a certificate.

[Find the closest Study Hub!](#)

Optional: Introductory Tutorials

If new to python or signal processing, you may wish to explore some introductory material in advance of the workshop.



Read in LIGO data, analyze, make plots, astrophysical inference ...

jupyter Tuto 1.4 Generating waveforms Last Checkpoint: 05/23/2022 (autosaved)

File Edit View Insert Cell Kernel Widgets Help Trusted igwn-py39

Initialization

```
In [2]: from pycbc.waveform import get_td_waveform
import pylab
%matplotlib inline
```

Generate your first waveform!

Here we'll generate the gravitational waveform using one of the available waveform approximants. The waveform can be generated as a time series using `get_td_waveform()`. There are some additional examples using this interface [here](#). The key parameters are the masses of the binary (given in solar masses), the time between samples (in seconds), the starting gravitational-wave frequency (Hz) and the name of the approximant we'd like to use. A variety of approximants are available that include different physical effects.

In this example, we've chosen to use the 'SEOBNRv4_opt' approximant. This is an implementation of the model introduced [in this paper](#). It models the gravitational waveform of inspiraling and merging black holes, and includes the ability for each black hole to spin in the same direction as the orbit (aligned spin).

There are many other models available, with different methodologies employed and physical effects modelled. A full review of the models is outside of the scope of this tutorial.

```
In [3]: # The outputs of this function are the "plus" and "cross" polarizations
# of the gravitational-wave signal as viewed from the line of sight at
# a given source inclination (assumed face-on, i.e. zero inclination
# if not provided)
hp, hc = get_td_waveform(approximant="SEOBNRv4_opt",
                        mass1=10,
                        mass2=10,
                        delta_t=1.0/16384,
                        f_lower=30)

pylab.figure(figsize=pylab.figsize*(0.4))
pylab.plot(hp.sample_times, hp, label='Plus Polarization')
pylab.plot(hp.sample_times, hc, label='Cross Polarization')
pylab.xlabel('Time (s)')
pylab.ylabel('Strain')
pylab.legend()
pylab.grid()
pylab.show()

# Zoom in near the merger time
pylab.figure(figsize=pylab.figsize*(0.4))
pylab.plot(hp.sample_times, hp, label='Plus Polarization')
pylab.plot(hp.sample_times, hc, label='Cross Polarization')
pylab.xlabel('Time (s)')
pylab.ylabel('Strain')
pylab.xlim(-.01, .01)
pylab.legend()
pylab.grid()
pylab.show()
```

jupyter Tuto_3.2_Parameter_estimation_for_compact_object_mergers Last Checkpoint: 05/23/2022 (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help Trusted igwn-py39

We can then plot the chirp mass in a histogram adding a region to indicate the 90% C.I.

```
In [22]: fig, ax = plt.subplots()
ax.hist(result_short.posterior["chirp_mass"], bins=20)
ax.axvspan(lower_bound, upper_bound, color="C1", alpha=0.4)
ax.axvline(median, color="C1")
ax.set_xlabel("chirp mass")
plt.show()
```

The result object also has in-built methods to make nice plots such as corner plots. You can add the priors if you are only plotting parameters which you sampled in, e.g.

```
In [23]: result_short.plot_corner(parameters=["chirp_mass", "mass_ratio", "geocent_time", "phase"], prior=True)
```

```
Out [23]:
```



Chat with fellow students, mentors

- Slack chat for students, mentors, everyone... ligo-surf2023.slack.com
- Lots of lectures, workshops, meetings throughout the summer!

LIGO-SURF2022 # general 40

+ Add a bookmark

Wednesday, April 27th

Derek Davis 9:45 AM
joined #general along with 19 others.

Derek Davis 4:26 PM
Hi everyone! Glad that the link is working just fine. During the summer, we'll be using this space to communicate about science and social activities. For now, this space is just for meeting some of the people that you will be working with over the summer. If you're a student, please ping me or one of your fellow students so that you can be added to the surfs-only channel. (edited)

For now, feel free ask questions about the program, chat about your interests, or just say hello!

4:29 ligo (2 MB)

Posted using /giphy | GIF by Rochester Institute of Technology

Hi everyone! OK! Let's dig in. x



Summer requirements

- https://sfp.caltech.edu/undergraduate-research/summer_requirements

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Home / Undergraduate Research / Summer Expectations and Requirements

Summer Expectations and Requirements

SUMMER EXPECTATIONS AND REQUIREMENTS

[Interim Reports](#)
[Abstract](#)
[Final Report](#)
[Final Presentation](#)
[Summer Seminar Day](#)
[Fall Seminar Day](#)

Expectations

The Honor Code

SFP programs operate under the [Caltech Honor Code](#). Please be sure to review the Honor Code prior to the start of your project.

Meet all requirements – on time

Requirements for students are few but extremely important:

- Meet the eligibility requirements.
- Students are expected to work hard on the project and to participate in the full ten-week period. They should not take courses or hold other jobs.
- Students must submit two interim reports.
- They must write and submit an abstract and final paper.
- They must give a final presentation.

Please note that there may be additional program-specific requirements.

Documentation, requirements

- Besides for learning about and performing your summer research, the main things we require from you are your reports:
 - Project Plan – May 15 (already done!),
 - two Progress Reports – July 14 (TBC) and Aug 11 (3rd & 7th weeks),
 - Final Presentations – August 24-25
 - Final Report – Final draft due end of September (TBC).
- These are very important; no final report in the SFP website **AND** the DCC means that you've wasted your summer (and your mentor's summer).
- ***“Science not communicated is essentially science not done.”***
- Document and write up your progress ***continuously*** throughout the summer!
 - Paper notebook
 - Lab e-notebook
 - Git repository on github
 - Google docs, sheets, presentations, ...
 - EverNote, OneNote, ... many others
 - Anything that works for you and your mentor!



LIGO Document T2000362-v5

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Detectability of Quantum Effects in Gravitational Waves Emitted by Binary Black Hole Mergers

Document #:
[LIGO-T2000362-v5](#) (Public)
[LIGO-T2000362-v5](#) (Private)

Document type:
[T - Technical notes](#)

Submitted by:
[Alan Weinstein](#) ✉

Updated by:
[Alan Weinstein](#) ✉

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- QA Uncertify/Make Non-public
- Create LIGO-T2000362-v6
- Change Metadata
- Add Files (this Rev)
- Replace Files (this Rev)
- Clone Document
- Watch Document

Abstract:

Gravitational wave detectors such as Advanced LIGO and Advanced Virgo provide a test of the theory of General relativity in the strong-field, highly dynamical regime, such as in compact binary coalescences. General Relativity, a purely classical theory, does not incorporate quantum mechanics. It is thought, however, that quantum mechanics must modify gravity; quantum uncertainty must manifest itself during the merger of two black hole horizons. These quantum mechanical effects could be observable in gravitational waves detected by LIGO as small perturbations in the signal waveform and higher harmonics, not explainable by current understandings of general relativity. We propose to study the detectability of such quantum mechanical effects from binary black hole mergers for future LIGO observations.

Files in Document:

- [Final Presentation](#) (ZoeHaggard_finalpres_SURF2020.pdf, 18.4 MB)
- [SURF final report](#) (SURFfinalreport_ZAH.pdf, 3.5 MB)

Other Files:

- [SURF interim report 1](#) (ZAH_interim1_07082020_final.pdf, 1.0 MB)
- [SURF interim report 2](#) (ZAH_interim2.pdf, 2.5 MB)
- [SURF project proposal](#) (ZAH_interim1_07082020_final.pdf, 1.0 MB)

Topics:

- [Compact Binaries](#)
- [Data Analysis](#)

Authors:

- [Zoe Haggard](#) ✉
- [Alan Weinstein](#) ✉

Keywords:

[SURF2020](#)

Referenced by:

- LIGO-T2000645: [Final reports from LIGO SURF program, Summer 2020](#)

Associated with Events:

[SURF 2020 Final Presentations](#) held from 20 Aug 2020 to 28 Aug 2020 in zoom

Viewable by:

- Public document

Modifiable by:

- [Lab Management](#)
- [Authors](#)

Other Versions:

- [LIGO-T2000362-v4](#)
21 Aug 2020, 09:33
- [LIGO-T2000362-v3](#)
31 Jul 2020, 16:37
- [LIGO-T2000362-v2](#)
08 Jul 2020, 13:14
- [LIGO-T2000362-v1](#)
14 Jun 2020, 16:43
- [LIGO-T2000362-x0](#)
04 Jun 2020, 16:10

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Your final presentation, report, and other material will be public!

LIGO Document T2200355-x0

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Final reports from LIGO SURF program, Summer 2022

Abstract:

Final reports from the LIGO Laboratory 2022 Summer Undergraduate Research Fellowship (SURF) program. This includes student participant projects funded by the LIGO Lab NSF REU (Award #2150027), the LIGO Lab NSF Operations (Award #1764464), and other funding sources.

Files in Document:

None

Topics:

- [Detector](#)
- [Data Analysis](#)
- [Education, Outreach](#)

Authors:

- [Alan Weinstein](#) ✉

Keywords:

[SURF22](#) [SURF REU](#)

Related Documents:

- LIGO-T2200279: [Mariner Suspension for Cryogenic Interferometers](#)
- LIGO-T2200177: [Fisher Information Analysis for Emissivity Estimation](#)
- LIGO-T2200173: [Frequency Stabilization for Auxilliary Lasers in the 40m](#)
- LIGO-T2200172: [Actively Monitoring and Increasing Stability of the Auxiliary Laser Controls](#)
- LIGO-T2200203: [Optical contact bonding for mitigating clamping losses in silicon resonators](#)
- LIGO-T2200160: [Higher Order Mode Coupling Analysis and Thick Lens Modeling](#)
- LIGO-T2200178: [Emissivity Estimation of Mariner Test Mass Barrel Coatings](#)
- LIGO-T2200303: [Methods of Improving Optical Contacting](#)
- LIGO-T2200185: [Analyzing the Effective and Component Spin Distributions of Binary Black Hole Mergers](#)
- LIGO-T2200253: [Detecting Non-Power Law Stochastic Gravitational Wave Background](#)
- LIGO-T2200255: [GW Strain Calibration of LIGO Detectors with High Precision and Low Latency](#)
- LIGO-T2200159: [Glitch mitigation methods for parameter estimation of compact binary coalescences](#)
- LIGO-G2201234: [Incorporating a Stepping-Stone Sampling Algorithm into BayesWave](#)
- LIGO-G2201225: [Synergies with WINTER, ZTF, and LIGO for Kilonova Discovery](#)
- LIGO-T2200224: [Determining the Feasibility of Matched Filter Searches for Core-Collapse Supernovae](#)
- LIGO-T2200252: [Approximating Simulated Stochastic Gravitational Wave Background with Broken Splines and Power Laws via MCMC Fitting](#)
- LIGO-T2200254: [Testing Mass Distribution Estimation of Binary Black Hole Mergers with GWTC-3](#)
- LIGO-T2200251: [Exploring LIGO sensitivity across binary black hole parameter space](#)
- LIGO-T2200250: [Recovering Higher Order Modes in the Ringdown of Binary Black Hole Coalescences](#)
- LIGO-T2200281: [Supermassive Black Hole Property Determination via Gravitational Radiation from Eccentrically Orbiting Stellar Mass Black Hole Binaries](#)
- LIGO-T2200278: [Testing Universal Relations under Non-Parametric Nuclear Equation of State](#)
- LIGO-T2200196: [Developing Deep Learning Solutions for Lock Acquisition](#)

Documentation, requirements

- ligo.org credentials, allow you to:
 - gain access to DCC, where you will put your Project Plan, Progress Reports, Final Presentation, Final Report, any/everything else
 - gain access to wikis for aLIGO, instrument science, data analysis
 - **SOME of the material accessible to you MUST REMAIN PRIVATE!**
- Lots of useful resources here:
https://nodus.ligo.caltech.edu:30889/wiki/doku.php?id=gw_detection_101_for_surf
- Talk to your mentor(s), early and often. Ask lots of questions!
- Talk with your fellow SURFs; science is collaborative, we all learn from each other.
- You are *strongly* encouraged to keep careful notes and records of your work throughout the summer; this will make it *much* easier to write your progress reports and final paper.
- You are encouraged to make your presentation and final paper as professional-looking as possible – consider LaTeX for your paper.
- Start writing your final paper *NOW!*



LVK candidate event detections in O4: <https://gracedb.ligo.org/superevents/public/O4/>

GraceDB Public Alerts Latest Search Alerts Pipelines Documentation Logout
Authenticated as: Alan Weinstein

LIGO/Virgo/KAGRA Public Alerts

- More details about public alerts are provided in the [LIGO/Virgo/KAGRA Alerts User Guide](#).
- Retractions are marked in red. Retraction means that the candidate was manually vetted and is no longer considered a candidate of interest.
- Less-significant events are marked in grey, and are not manually vetted. Consult the [LVK Alerts User Guide](#) for more information on significance in O4.

O4 Significant Detection Candidates: 6 (7 Total - 1 Retracted)
O4 Low Significance Detection Candidates: 62 (Total)

Show All Public Events

SORT: EVENT ID (A-Z)

Event ID	Possible Source (Probability)	Significant	UTC	GCN	Location	FAR	Comments	Scan
S230609u	BBH (96%), Terrestrial (4%)	Yes	June 9, 2023 06:49:58 UTC	GCN Circular Query Notices VOE		1 per 3.1557 years		Ω H1 Ω L1 Ω V1
S230608as	BBH (>99%)	Yes	June 8, 2023 20:50:47 UTC	GCN Circular Query Notices VOE		1 per 231.43 years		Ω H1 Ω L1 Ω V1
S230606d	BBH (>99%)	Yes	June 6, 2023 00:43:05 UTC	GCN Circular Query Notices VOE		1 per 2.7789 years		Ω H1 Ω L1 Ω V1
S230605o	BBH (99%), Terrestrial (1%)	Yes	June 5, 2023 06:53:43 UTC	GCN Circular Query Notices VOE		1 per 7.0086 years		Ω H1 Ω L1 Ω V1
S230601bf	BBH (>99%)	Yes	June 1, 2023 22:41:34 UTC	GCN Circular Query Notices VOE		1 per 1.8492e+07 years		Ω H1 Ω L1 Ω V1
S230529ay	NSBH (62%), BNS (31%), Terrestrial (7%)	Yes	May 29, 2023 18:15:00 UTC	GCN Circular Query Notices VOE		1 per 160.44 years		Ω H1 Ω L1 Ω V1
S230524x	BNS (75%), Terrestrial (25%)	Yes	May 24, 2023 20:22:41 UTC	GCN Circular Query Notices VOE		2.2799 per year	RETRACTED	Ω H1 Ω L1 Ω V1

If you log in with your ligo.org credentials, you will see information that is NOT public,

and you should NOT share it with anyone outside of the LVK!

There are many other places (wiki pages, meeting minutes, etc) that also are not public.



LIGO SURF 2023

Administrative resources

- Program director – Alan Weinstein, ajw@caltech.edu
- Program administrator – Nately Sych, nsych@caltech.edu
- Cyber-security – Randy Trudeau, rtrudeau@caltech.edu
- Caltech LIGO computing – Larry Wallace, lw Wallace@caltech.edu ,
Mike Pedraza, mpedraza@caltech.edu
- LIGO DCC – Melody Araya, maraya@caltech.edu
- Property and logistics – Nichole Washington, nicholew@caltech.edu
and Elizabeth Natividad, enativid@caltech.edu
- LIGO Travel – Eadie Balint, ebalint@caltech.edu,
travel@ligo.caltech.edu
- LIGO Lab Executive Director – Dave Reitze, dreitze@caltech.edu
- LIGO Lab Associate Director – Albert Lazzarini, lazz@caltech.edu
- Don't hesitate to contact us if you need anything!

We are serious about ...

- **Safety:**
 - We take personal safety very seriously!
 - Laboratories have powerful lasers, numerous potential safety hazards, etc.
 - IF you are working with lasers you will need laser safety training.

 - Practice good computing ergonomics, breaks, comfortable seating, breaks, ...
 - Please take care of your physical and mental well being!
<https://wellness.caltech.edu/>

- **Honor code** – we take it very seriously!

- **Computers:**
 - You need to read the LIGO Computer Use Policy, LIGO Document M020105, <https://dcc.ligo.org/LIGO-M020105> , and sign that you have read and accepted it.
 - Always check your email and respond promptly to emails from SFP, SURF admins, your mentor(s), etc.
 - Your mentor will help you get access to things you might need, like the LIGO Data Grid, COMSOL and other special software, matlab, etc.
 - We take computer cyber-security very seriously!



The Honor Code, community, collaboration, environment, diversity

- "No member of the Caltech community shall take **unfair** advantage of any other member of the Caltech community." <https://deans.caltech.edu/HonorCode>
- This is interpreted in the *broadest* sense.
- We will assume that you are honest, responsible, and genuinely devoted to your studies and your contributions to science.
- The Honor Code establishes a community of trust. Our work environment is friendly, collegial, collaborative. We are NOT in competition with each other! Collaboration is a way of life at Caltech.
- As LIGO Laboratory and LIGO Scientific Collaboration members, you will be privy to **confidential** information... REALLY keep it confidential!
- Our work environment must be free of harassment of any kind. If you feel uncomfortable, disrespected or harassed in any way, PLEASE let me or your mentor know – we will take action.
- Caltech has many confidential resources for people experiencing misconduct, or harassment, including the Title IX office: 626-395-3132, titleix.caltech.edu. Come talk with me if you have any questions.
- We value diversity. **YOU BELONG HERE.**
<http://diversity.caltech.edu/>



LIGO Laboratory Computer Security

SURF Student Orientation
LIGO-G1500787-v1

Randy Trudeau , LIGO Security Officer



Don't Be Stupid

- Personal Use Okay
 - Don't abuse it
 - Don't break any laws
 - No going into business
 - No Porn
- Don't share your password/account
 - If someone needs access, they can get their own
 - This isn't for your friends to use
- Don't violate copyright
 - Can cost *you* money
 - Can get you sent home



Don't Be Smart

- Access \neq Permission
- You **will** get caught
- You will get cut off
- No Hacking
 - If you can't get in to something, ask
 - Don't scan/probe/hack other networks
- Ask if you're not sure
 - your site system administrator
 - security@ligo.caltech.edu if you think you have a security *problem*



Be Careful

- We won't ask for your password
 - And you shouldn't give it to us if we do
- Don't use the same password elsewhere
 - e.g. gmail
 - This is for your protection as much as ours
- Keep your computer up to date
- Be careful about opening attachments
 - Especially if you're not expecting them
 - Or if it claims to be security software
 - Nobody has 60 million dollars in a bank account and needs your help
- Avoid widgets, toolbars, etc.