

# Data analysis projects kick-off meeting

S. Mastrogiovanni with the other mentors

# General overview

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- **The goals of the project:** From theory to practice, how-to apply what you have learnt during the lectures to real data and events!
  - Learn how to get and handle LIGO/Virgo data.
  - Visualize data in the time-frequency plane (Q-transform), calculate power spectral density etc...
  - Calculate waveforms and compare them to data.
  - Challenge: Find signals in simulated GW data

# How?

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We will make use of some material from the [GW open data workshop](#)

- Every year (around May) we organize a one week workshop to show how to use and handle LIGO/Virgo data.
- This year the open data workshop had also become a free online course on which you can sign-up [here](#).
- Otherwise you can find video lectures [here](#).



# The program

# JUNE

Mon	Tue	Wed	Thu	Fri
7 <b>Kick-off</b>	8 <b>Topic:</b> LVC data basics, visualize data in frequency-time domains <b>Notebooks:</b> <a href="#">1.1</a> , <a href="#">1.2</a> , <a href="#">1.3</a> <b>Videos:</b> <a href="#">1</a> , <a href="#">2</a> <b>Mentors:</b> Eric	9 <b>Topic:</b> Calculate waveforms <b>Notebooks:</b> <a href="#">1.4</a> <b>Videos:</b> <a href="#">1</a> , <a href="#">2</a> <b>Mentors:</b> Eric	10 <b>Topic:</b> Matched filter and calculate the SNR <b>Notebooks:</b> <a href="#">2.1</a> <b>Videos:</b> Same as Wed <b>Mentors:</b> -	11 <b>Topic:</b> Matched filter and calculate the SNR <b>Notebooks:</b> <a href="#">2.2</a> <b>Videos:</b> Same as Wed <b>Mentors:</b> Jess
14 <b>Topic:</b> <a href="#">Challenge!</a> <b>Mentors:</b> Simone	15 <b>Topic:</b> Same as Mon 14 <b>Mentors:</b> Jess	16 <b>Topic:</b> Same as Mon 14 <b>Mentors:</b> Tito	17 <b>Topic:</b> Same as Mon 14 <b>Mentors:</b> Simone	18

**Disclaimer:** This is just a proposal, you are welcome to do the notebooks as you like and also to ask questions about the morning lectures !

# How to access and run the notebooks

- Go on the [tutorial page](#) or access them from the links in the calendar (previous slide).
- Open a notebook and click the link for Google collab



## Gravitational Wave Open Data Workshop #4

### Tutorial 1.1: Discovering open data from GW observatories

This notebook describes how to discover what data are available from the [Gravitational-Wave Open Science Center \(GWOSC\)](#).

[Click this link to view this tutorial in Google Colaboratory](#)

# How to access and run the notebooks

- Install the needed packages on Google collab by uncommenting this line



## ▼ Gravitational Wave Open Data Workshop #4

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▼ Software installation (execute only if running on a cloud platform or haven't done the installation yet!)

First, we need to install the software, which we do following the instruction in [Software Setup Instructions](#):

```
# Uncomment following line if running in Google Colab  
#! pip install -q 'gwosc==0.5.4'
```

# How to access and run the notebooks

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- Wait Google Collab installing all the packages.
- You are ready to go, you can run the next cells and experiment with the Notebook.
- If you have time, you can try to do the challenges in each notebook and answers the associated Quiz which are reachable from the Tutorial pages, e.g. from [here](#).

# The Challenge

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- In the challenge you will measure yourself by looking for GW signals in simulated data
- Go to this [link](#) and follow the instructions to download the data necessary to the challenge
- The challenge is divided by difficulty and more difficult challenges are rewarded with more points!!
- You can submit your answers to the challenges with on [this link](#) either alone or as a Team of 3-4 people. **DEADLINE: 17th June at 10.00 UTC/12.00 CEST**
- **There is a prize for the individuals/groups with the highest scores**





**Let's try to do the first notebook together!**