Login + Set Up

Username: **.\wiseguest**

Pasword: **2025guest@CEAS**

Go to:

https://github.com/ianpajohnsonSBU/WISE_computing_heavens

Or for short: github.com/ianpajohnsonSBU/

And download your group’s files!

Projects Day 2!

Ian Johnson
For SBU HS WISE

Plans for Today:

- Work on projects
- Get caught up for those that missed (groupmates please help)
- Finalize posters
- Finish last documents
- (if time) Practice Presenting
- See Telescope!

Poster Additional Information + Advice

- 24 x 36 inches vertical or horizontal on a ppt slide
- An artists image of what your phenomenon is (credit them)
- Make sure most important plots are the biggest
- Define complex words such as black holes or neutron stars
- If you use abbreviations, define them first:
  - Binary Black Hole (BBH) and Binary Neutron Star (BNS)
- Close with why this information is important or interesting

A Reminder of How Far You've Come

- To do this project you coded in python
- Learned the basics of gravity and orbits
- Learned about how gravity bends time and can make waves
- Learned how complex waves are really just a sum of simple waves (Fourier Transform/FFT)
- Learned how we can clean real world data for science

(you may want to mention some or all of this on your poster)

More on Methods:

“To do this project, we used the coding software python and its matplotlib, numpy, and scipy packages. We started by taking the raw data provided by LIGO’s GWOSC and performed several processing steps to make our figures. First, we cut off the ends of the data to focus more on the signal itself. Second, we used the Fast Fourier Transform (FFT) to filter our noisy high and low frequencies thereby limiting the data to [your_min_f, your_max_f]. We then make a spectrograph of the data which has the x axis as time, the y axis as frequency of the wave, and the color indicating the power. All of this lets us visualize the merger’s “chirp” signal.”

+ BBH: “We then calculate the closest two black holes can get (the ISCO) and the corresponding frequency. We then match this with the peak frequency of the “chirp”.”

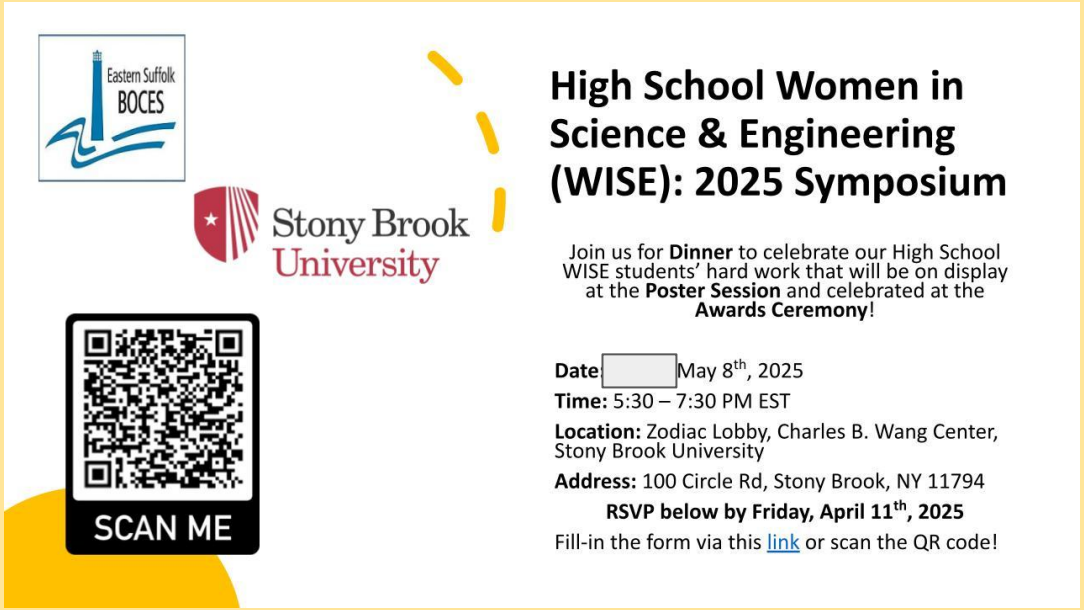
More on Discussion/Conclusion

“Using real LIGO data, we found evidence a the signal of a merger using python”

BNS: “This merger corresponds to the same time as the kilonova AT 2017gfo which indicates that this was the merger of a two neutron stars”

BBH: “We calculate a range of probable black hole masses, but we find the masses m1 = _ solar masses and m2 = _ solar masses are the most likely due to the peak frequency of _ Hz.”

“This is further evidence of the existence of black holes/neutron stars because of how well observation aligns with our models + {a lot of other important consequences}”



Closing Survey:

Share slide with me:
ian.p.johnson@stonybrook.edu

Leave For Telescope: 4:40