

ASTR3800 Final Project Writeup

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12/8/2022

Abstract

Through a combination of data science, statistical analysis, machine learning and intuition, I analyzed data collected by LIGO. Throughout the project, I analyzed the Event Demographics of the LIGO data as a whole, the neutron star - neutron star merger GW170817, and discovered hidden correlations between variables within the data set. This helped me to understand the limitations of LIGO, how standard sirens, often sources of LIGO GW signals, are used to calculate the hubble constant, and the correlation between the Signal to Noise ratio and Luminosity Distance.

1 Gravitational Waves and LIGO

Describe the context and motivation of your paper.

1.1 In-text citations

This journal uses a style based on the APA system (see <https://openhumanitiesdata.metajnl.com/about/submissions>). The following are some basic citation commands in \LaTeX :

```
\citet → jensetmcgil  
\citet → australiashealth  
\citet → shree-a  
\citep → fabricius-hansen2012b  
\citealp → (eckhoff2018a)  
\citealp → (eckhoff2018a; fabricius-hansen2012b; shree-a)
```

1.1.1 Other simple functions

To add bullet points:

- Some point
- Another point

Or numbered points:

1. Some numbered point
2. Another numbered point

This is an example of footnote¹.

This is a simple table:

Please refer to your table using: Table ??.

To add a figure, upload the figure into the **images** folder, and then embed it:

To resize the figure:

Please refer to your figures as: Figure ??, Figure ??, etc.

2 Dataset description

Here you can provide, if applicable, information about the dataset(s) whose creation, collection, management, access, processing or analysis have been discussed in this paper, following this schema:

Object name Typically the name of the file or file set in the repository.

Format names and versions E.g., ASCII, CSV, Autocad, EPS, JPEG, Excel, SQL, etc.

Creation dates The start and end dates of when the data was created (YYYY-MM-DD).

Dataset creators Please list anyone who helped to create the dataset (who may or may not be an author of the data paper), including their roles (using and affiliations).

Language Languages used in the dataset (i.e., for variable names etc.).

License The open license under which the data has been deposited (e.g., CC0).

Repository name The name of the repository to which the data is uploaded. E.g., Figshare, Dataverse, etc.

Publication date If already known, the date in which the dataset was published in the repository (YYYY-MM-DD).

¹This is a footnote

3 Method

Describe the methods used in the study.

4 Results and discussion

Describe and discuss the results of the study.

5 Implications/Applications

Provide information about the implications of this research and/or how it can be applied.

Acknowledgements

Please add any relevant acknowledgements to anyone else that assisted with the project in which the data was created but did not work directly on the data itself.

Table 1: A caption.

1	2	3	4
a	b	c	d
e	f	g	h

images/image.jpeg

Figure 1: JOHD’s logo.

[width=0.2]images/image.jpeg

Figure 2: JOHD’s logo.

[width=0.8]images/image.jpeg

Figure 3: JOHD’s logo.