ASTR 288C - Lab 2
Literature Search and Reference

1 Literature search websites

1.1 The Astrophysics Data System (ADS)

The Astrophysics Data System (ADS) is a digital library of peer-reviewed and non peer-reviewed astronomy and astrophysics literature. It is supported by grants from the Smithsonian Astrophysical Observatory and NASA.

To start, go to the ADS has a great query site at

`http://adsabs.harvard.edu/abstract_service.html`

You will see many options for your search. Below are some commonly used features:

- **Find literature that contains certain key words in either the title or abstract.**
  For example, type "gamma-ray bursts" in the title search box, and press the "Send Query" button. You should see a list of literature that contains "gamma-ray bursts" in the paper title. If you select the Combine with "AND" option, the search will try to find results that contain all these key words.

- **Find papers with certain authors.**
  For example, to search for literature that "Amy Lien" has participated in, type "Lien, Amy" in the Author box and "Send Query". To search for multiple authors, type in all the author names, with one name per line.

- **Find papers with a certain first author.**
  You can search for literature with a specific first author, you and use the ^ symbol to indicate the first author. For example, type "^Lien, Amy" in the Author box and "Send Query", you should see all the papers with Amy Lien as the first author. In academia, the first author usually (but not always) means the main contributor of the work.

- **Find papers in certain years.**
  For example, you can use the "Publication Date between" option to specify the time of the publications.

- **Find all the refereed or non-refereed publications.**
  In academia, the *refereed* papers mean the literature has been reviewed by at least one referee (who is assigned by the journal editor) and has passed the quality check by the referee. You can search for "All refereed articles" by selecting the option under

"Select References From:". You can also select "All non-refereed publications" to list only the non-refereed articles. See Section 2 for more detailed description of refereed vs non-refereed articles.

- **Sorting**
  There are many sorting options. A very useful one is "Sort by citation count", which lists the publications with the highest citation first. The citation number is the number of other papers that cite (reference) this work.

Exercise:
Use ADS query site to do questions 1 to 3 in the worksheet.

1.2 arXiv

The arXiv (pronounced "archive")

`https://arxiv.org/`

is an electronic repository that hosts almost all the scientific papers nowadays in fields of physics, astronomy, mathematics, computer science, quantitative biology, quantitative finance, and statistics. You can submit your papers whether or not it is refereed.

You can also search papers on arXiv. The "Advanced search" link in the main arXiv page will bring you to query form to tailor your search.

1.3 Google

And of course, there is Google. In additional to the normal way to search on Google, Google now also has "Google scholar" to search for academia papers:

`https://scholar.google.com/`

2 Publication

There are several platforms that astronomers use to present their publications.

2.1 Journal papers

The journal papers are the most formal form of publication. The papers published on journals have passed reviews from one or more referees. Hence, the quality of the papers in the journals are more consistent, and presumably have fewer mistakes. Common journals used by astronomers includes The Astrophysical Journal (ApJ), Monthly Notices of the Royal Astronomical Society (MNRAS), Nature, Science, Astronomy & Astrophysics (A&A), and

Physical Review Journals. Publications on the journal includes both results from novel research and review articles of specific subjects.

How to get a copy of journal paper?
Most of the journals charge subscription fee to the readers. These fees are usually quite expensive and thus are paid by the research institutes, like the universities, instead of by individuals. If the university has subscribed to the specific journal, you will be able to access to the journal when you are on the university wifi. Also, when you use the ADS search for paper, there is a link "Full Refereed Journal Article (PDF/Postscript)" for each paper that has been published in a journal.

2.2 arXiv papers

arXiv has become a universal platform for astronomy papers. Almost all astronomers submit a copy of their papers to arXiv, even if the paper can also be found in a journal. However, anyone can submit almost anything to arXiv. There is no review process. Therefore, you can also find many non-refereed papers on arXiv. If the paper is published in a journal, the journal will be listed under the "Publication" line in ADS search. Also, sometime authors will list the status of the paper under the "Comment" in ADS form, such as "submitted to ApJ" or "accepted in ApJ". The later implies that the paper has been accepted for publication, although it might not show up in the journal yet.

How to get a copy of arXiv paper?
You can either search for the paper on arXiv, or click the link of "arXiv e-print" in the ADS search. The e-print from arXiv is completely free, and you can access it from anywhere (no need to be on the university wifi). However, please note that it is up to the author to submit a version that is identical to the one published in the journal. Hence, even though for most of the case you will find the arXiv version is basically identical to the journal version, this might not always be the case.

2.3 Conference proceeding

When astronomers attend conferences to present their results, they are usually requested to submit a short article that summarizes their presentation. Most of the conference proceedings are non-refereed; however, there are some that are refereed.

How to get a copy of conference proceeding?
You can either find them on the ADS search, or on the arXiv if the author has also submitted a copy to arXiv. On ADS, you will see the conference name is listed under the "Publication".

2.4 Notices (ATel, GCN)

Sometime astronomers need to report the observations quickly for various reasons. For example, an observatory discovers a new flaring star, the scientists at the observatory might send out a notice to all the astronomy community within a few days so other observing facilities can perform followup observations. None of the notices are refereed.

There are two major platforms to submit these short notices:

- The Astronomer's Telegram (ATeL)
  `http://www.astronomerstelegram.org/`
  Almost all the astronomy notices go to ATeL, except for the gamma-ray burst notices, which has a different platform listed below.

- The Gamma-ray Coordinates Network (GCN)
  `https://gcn.gsfc.nasa.gov/`
  All the observing activities related to gamma-ray bursts use this platform.

How to see an ATel or GCN notice?
You can either find the notice directly on the ATeL or GCN site, or use the ADS search to access them through the "Electronic On-line Article (HTML)" link.

Exercise:
Do questions 4 and 5 in the worksheet.

3 Citation/Reference

When you referred to other people's work in your paper, you need to cite/reference the original work properly. You will put a short citation right after the text that mentioned the original work, and a more complete reference at the end of the paper under the "Reference" section. Different journals might adopt slightly different format for citations/references.

You can find links of "Bibtex entry for this abstract" and "Preferred format for this abstract" in a paper's ADS search page. These links are information in Latex[1] format that will go into the reference in a paper.

Exercise:
Do questions 6 and 7 in the worksheet.

[1]Latex is a common paper editor used by astronomers. You will learn Latex next week.

Lab 2 Worksheet

You are required to hand this worksheet in at the end of the lab.

Name:_____ User Name:_____

1. Find the first paper that reports the discovery of the gravitational wave event GW150914. Write the title of the paper.

2. How many articles have Amy Lien as one of the authors (use databases of Astronomy and arXiv e-print)?

3. How many articles have Amy Lien as the first author (use databases of Astronomy and arXiv e-print)?

4. Within the list you found in question 3,

   4.1. write down three Journal names in which *refereed* papers are published (the abbreviated names, such as ApJ, are okay).

   4.2. find an article that belongs to a conference proceeding. Write down the title of the article and the name of the conference.

   4.3. find an article that is published in the GCN. Write down the title of the GCN.

5. Find an article that that is on arXiv but was not refereed. Write down the article title here.

6. Find two review articles of gamma-ray bursts. Write down the titles of these two articles. Keep these articles handy because they can be good references for your research project.

7. In this ApJ paper, "Galaxy Strategy for LIGO-Virgo Gravitational Wave Counterpart Searches", find the original paper that proposed the short and long GRB classification. Write down the reference you found (as displayed in "Reference" section of that article). Also, find out and write down the title of this paper of short and long GRB classification.