ADS Searches and the *Fermi*-LAT Instrument

**Step 1: Find the LAT Instrument Paper using the ADS service**

The SAO/NASA Astrophysics Data System (ADS) is the most commonly used service for looking up publications for Astronomy, Astrophysics, Physics, and a number of other disciplines. The ADS query page is available at:  
http://adsabs.harvard.edu/abstract_service.html

Go there and familiarize yourself with the many query parameters available for use. Most commonly, you will use the author name query combined with a publication date range. Use ADS to find an article, published sometime in 2009, that describes the Large Area Telescope (LAT) instrument on *Fermi*.

Questions:

1. What journal published the LAT instrument paper?
2. What date (month and year) was it published?
3. Write the reference as if it were in a reference list for a paper.
4. How many authors are on the publication?
5. Why do you think this paper has so many co-authors?

**Step 2: Retrieve the content of the article**

The links from ADS send you to the website for the journal that published the article. If your institution has a subscription to that journal you can access the article while you are on their network. However, sometimes you may not be able to access the journal. For this reason, authors will sometimes also post the article to the arXiv abstract service, available here:  
http://arxiv.org

ADS also includes a link to arXiv, if one is available. Go there and retrieve a copy of the arXiv preprint PDF for this article.

Questions:

1. What date was the preprint generated?
2. Considering the publication date for the article, do you think this is the final version of the paper?
Step 3: Using ADS for statistics

ADS also gives you the tools to look at statistics for various articles, or for the field of astronomy in general. If you select only the Astronomy database, and search only articles from refereed journals, you can sort by the total number of citations to find out which articles have been most cited in a given year. Make the selections I just described, and do this search for January through December, 2011.

Questions:
1. What subject garnered the most citations in astronomy for 2011?
2. How many citations does 2011’s most popular article have?
3. What article garnered the most citations in astronomy for 2012, and how many citations?

Step 4: Abstracts contain a lot of information

Read the abstract for the LAT instrument paper.

Questions:
1. What countries collaborated with the U.S.A. in building the LAT?
2. What is the field of view for the instrument (in square degrees)?
3. What material is used to convert $\gamma$ rays into electron-positron pairs?
4. What physical property makes that material a good choice?

Step 5: Use ADS to explore an astronomical topic

Pick a topic in astronomy that interests you. Using ADS, search for articles about your topic that have been published since the beginning of 2011. Read the abstracts for five articles with titles that interest you. Print out and attach the Title and Abstract pages for those five papers.

Questions:
1. What search parameters did you enter that were successful at finding articles about your topic?
2. Looking at the author affiliation lists, what are some institutions doing research in this area?
3. After reading the abstracts, are you more or less interested in this topic? Why?