

# Astronomy I Essay 2011

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Gravitational Wave Astronomy. Einstein predicted that movements of massive bodies will perturb the fabric of space time creating so-called gravitational waves. These waves have not yet been detected, but an observatory called LIGO is possibly on the verge of detecting signals from merging neutron stars or merging black holes. Discuss the basics of gravitational wave production and detection, with particular reference to the LIGO detectors. LIGO has recently asked Australia to host a LIGO detector at a cost of \$150 million. Do you think this is a good investment?

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You may want to check the Library's [Catalogue](#) to see if there are relevant books.

Check the Encyclopaedias as they generally give a history to a topic.

You may also want to search the electronic databases for more materials.

## Search Logic for electronic databases

Before you begin a database search you may like to make a table to ensure that your search logic is appropriate.

Write down the main concepts and then list below them all the synonyms and alternative terms.

<i>Gravitational waves</i>	<i>production</i>	<i>detection</i>	<i>LIGO</i>
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Are there other terms that you can think of that are not included in the table?

Search techniques vary in different databases but they use the same search principles. Check the individual database's help screens to find out about techniques such as truncation etc.

Think of terms to cover each concept in your topic.

Gather useful terms from the first articles you retrieve. Use a thesaurus if the database has one.

Combine terms with **Boolean operators** unless the database has natural language searching.

**Truncate** terms (check the database's truncation symbol- \* or ?) and check how to search phrases (e.g. with or without quotes - "*gravitational waves*")

Consider **limiting** searches to English language, review articles etc

Check how to **display references** or mark them for **saving, printing or emailing**.

Once your database search has given references to articles, look for the full text of the journal article.

Sometimes you can link directly through an html or pdf link within the database to the **electronic full text** of articles.

If not, always **search the journal title (NOT the article title)** in the [Library catalogue](#). You can also search [Summon](#) by putting the title in quotation marks e.g. "*Are you there yet? The road to gravitational detection*"

The catalogue lists the call numbers and holdings of print journals and also lists electronic journals with links to the electronic full text of articles.

The Barr Smith Library does not hold all journals indexed in databases. You can also try:

[Other libraries' catalogues](#)

[Libraries Australia](#), a database of journals & books held by libraries in Australia.

## Report writing

If you need help writing an essay or report, try looking at the [essays and thesis writing style guides](#).

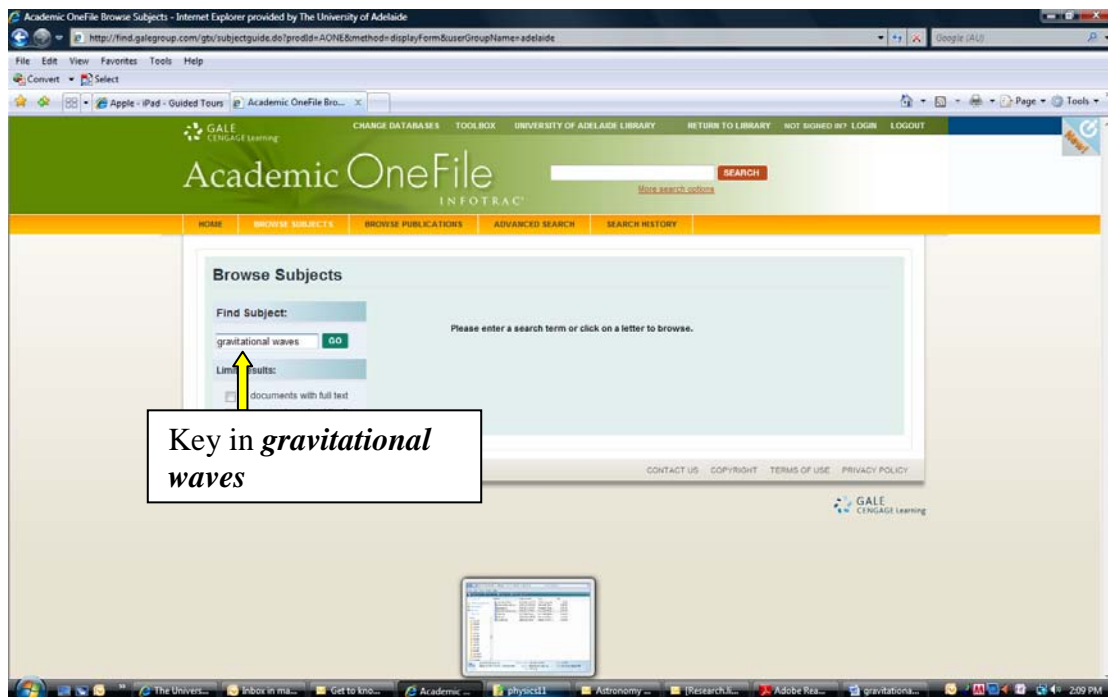
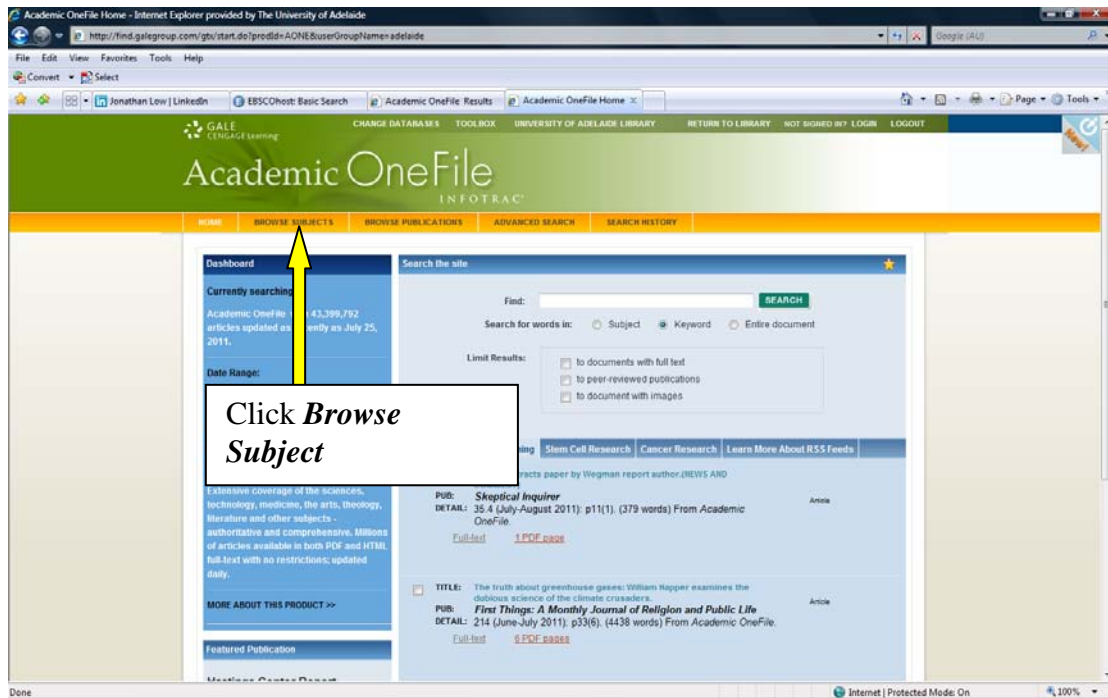
## Suggested Databases

### 1. [Academic OneFile](#)

Full text articles are available in this database. This means you do not need to look for the article on the shelves in the Library.

I have given you some examples of how to search below. Use your imagination and try other ways of doing the search. The more you practice the better you get with your strategy.

Using *“gravitational waves”* in a keyword search will retrieve many irrelevant items. You may want to try *Browse Subjects* for this topic.



Doing it this way will give you articles more specific to gravitational waves. There should not be any irrelevant items.

Click *Gravitational Waves* for 122 items

Click *Related Subjects* for other terms that may be relevant

Click *View Subdivisions* for the for more headings relating to the chemical elements

The screenshot shows the Academic OneFile interface. The search bar contains 'gravitational waves' and the results count is 122. A callout box points to the 'Gravitational Waves' link. Another callout box points to the 'RELATED SUBJECTS' link. A third callout box points to the 'View Subdivisions' link.

Click here to get the 25 articles on the *Analysis of Gravitational Waves*

Or here for 11 articles on *Gravitational Waves - Observations*

Topics	Results
Analysis	25
Discovery and Exploration	3
Electric Properties	1
Environmental Aspects	4
History	1
Identification and Classification	2
Influence	1
Investigations	1
Measurement	7
Models	5
Observations	11
Origin	1
Properties	14
Research	45
Spectra	1
Study and Teaching	1
Usage	1

The screenshot shows the 'View Subdivisions' page for 'Gravitational Waves'. A callout box points to the 'Analysis' topic with 25 results. Another callout box points to the 'Observations' topic with 11 results.

You may want to just look through the subdivisions. Scroll down for the rest of the subdivisions.

It is now displaying 4 items from Academic Journals

Click here if you want the 2 items from Magazines

For this article you will have to click here to check our catalogue

Subject Guides Search will retrieve articles that are generally more specific to that subject area than keyword search.

You may now want to “*gravitational waves*” and *LIGO* as a keyword search

Use “*gravitational waves*” and *LIGO* in a Keyword search

Academic OneFile Results - Internet Explorer provided by The University of Adelaide

http://find.galegroup.com/gtu/basicSearch.do

GALE Cengage Learning

Academic OneFile

SEARCH

HOME BROWSE SUBJECTS BROWSE PUBLICATIONS ADVANCED SEARCH SEARCH HISTORY

Search Results

Results for Basic Search (KE ("gravitational waves" and LIGO))

[save this search >>](#)

Refine Results

within these results

GO

Limit to:

Full text

Peer-reviewed

With images

Academic Journals (49)

Magazines (11)

Books (0)

News (1)

Multimedia (0)

Mark All

Showing 1 - 20 of 49 results

1 2 3 Next >

TITLE: Prospects of observing continuous gravitational waves from known pulsars.(Report)

PUB: *Monthly Notices of the Royal Astronomical Society*

DETAIL: Matthew Pitkin. 415.2 (August 2011). p1849(15).

Abstract

Check for All Full Text Options

TITLE: An atomic gravitational wave interferometric sensor in low earth orbit (AGIS-LEO).(Report)

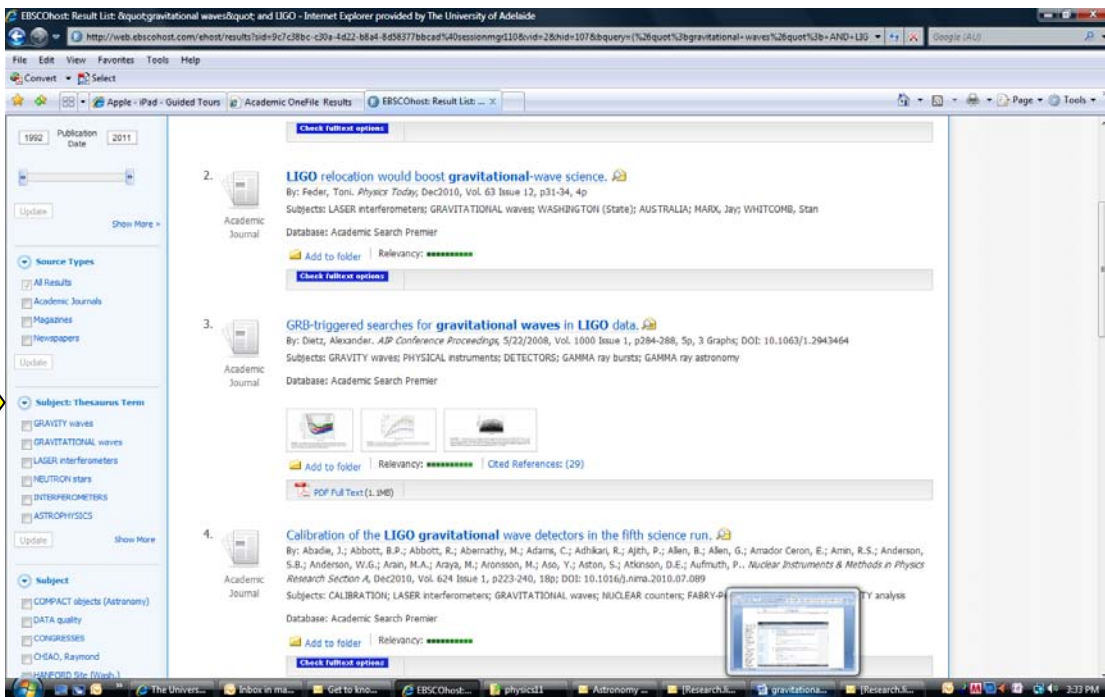
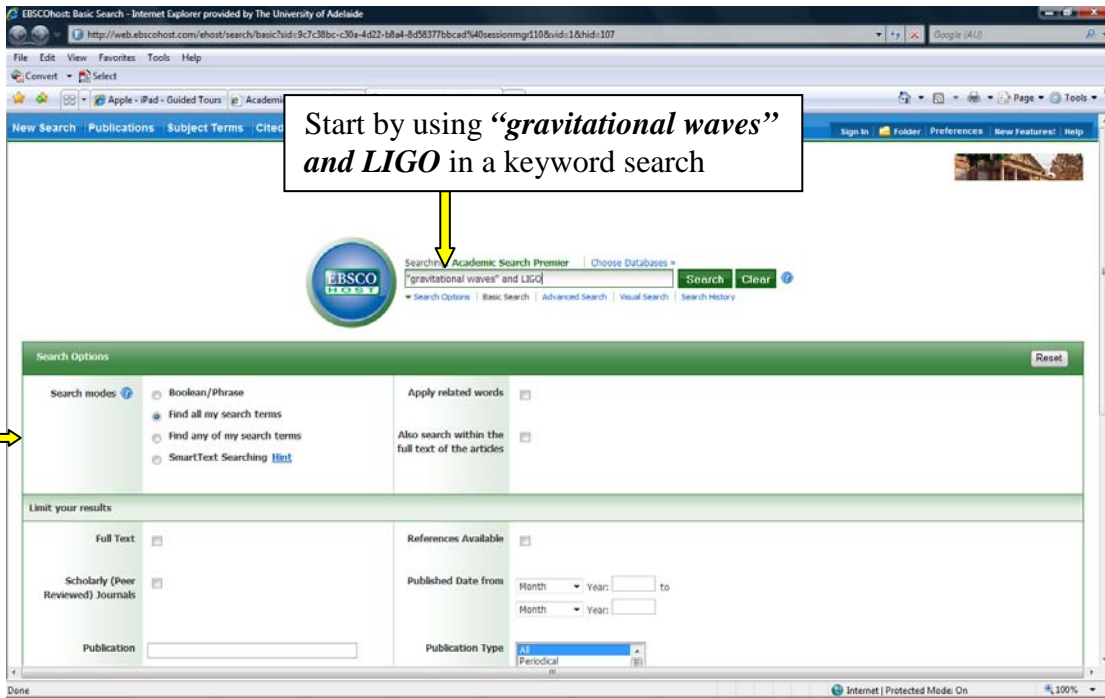
PUB: *General Relativity and Gravitation*

DETAIL: Jason M. Hoggan, David M. S. Johnson, Susannah Dickerson, Tim Kovachy, Alex Sugarbaker, Sheng-wei Chow, Peter W. Graham, Mark A. Kasevich, Babak Saif, Surjeet Rajendran, Philippe

As you can see, this is just a start. You may think of another approach and other keywords that are relevant.

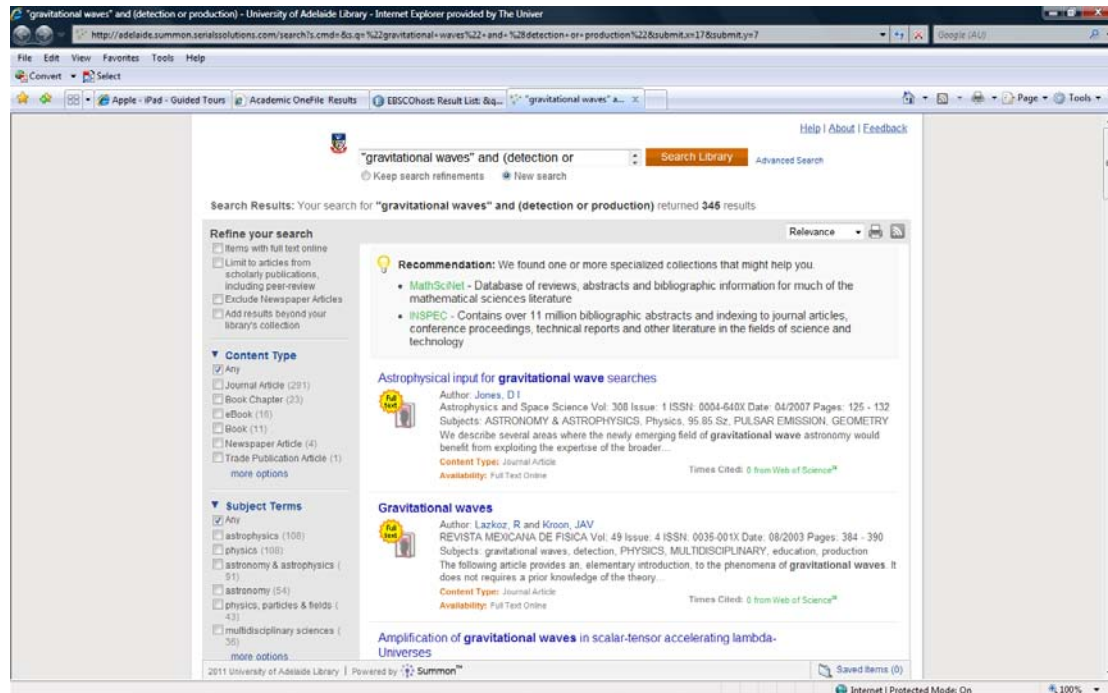
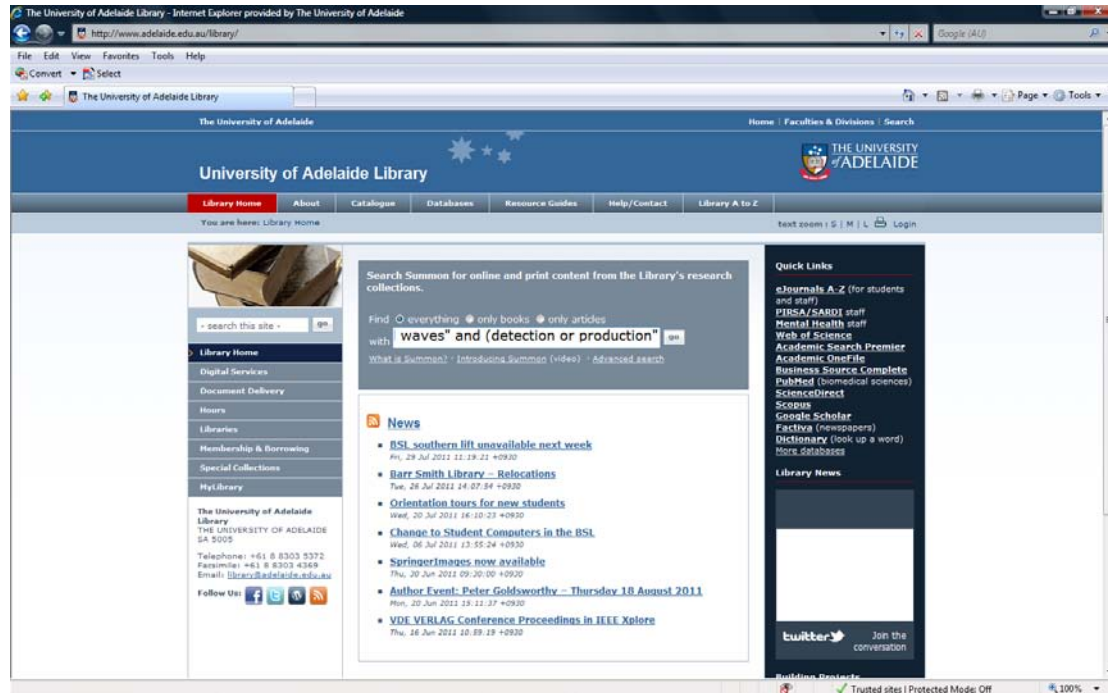
## 2. [Academic Search Premier](#)

This is another database with full-text articles that you may want to try. The search logic is the same although the screen looks very different. Again try the different ways of searching, using keywords, using keywords phrase, using truncation, etc.



### 3. [Summon](#)

This is a bit like google that searches the Library's Collection. It will include all the electronic books, the printed books and all the journals articles indexed that we hold.



As you can see, you have retrieved 345 items. You will now have to decide how to narrow the search using the refine tools at the left hand side or maybe you prefer to scan through them.