

HOW TO BIBLIOGRAPHY

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This document gives some suggestions about how to use a bibliography in Overleaf. I hope it will be helpful!

INTRODUCTION

Bibliographies in \LaTeX are notorious for being tricky. There are numerous “guides” online, and they all make it sound pretty complicated!

Actually, I don’t think that’s really true. Bibliographies in \LaTeX have a substantial learning curve, but once you get used to it, it’s not so bad. One reason the online guides are complicated is that they try to cover every possible approach, for people who use different writing processes; and for people in different situations such as writing a research paper, writing a book, editing a collection of papers, etc.

Here, I am going to write a simplified guide aimed at students using Overleaf to write a (non-research) paper for a class, a senior thesis, or similar. And I am going to deliberately just present one way to do things, and for that matter, not every possible thing. Hopefully this will take care of what you need for your paper or thesis!

I am going to present this process in the following steps:

- (1) Decide which sources (papers, books, etc.) you want to cite.
- (2) Use the AMSRefs package in your \LaTeX file.
- (3) Get the nicely-formatted citation information from MathSciNet and add it into your \LaTeX file.
- (4) Citing web pages and unpublished sources.
- (5) Add citations throughout your file.

1. DECIDING WHICH SOURCES TO CITE

This is important, and it will develop over the course of the writing process:

Keep a list of sources that were useful to you.

A very important step is to *remember* which sources you used, and where you found each important theorem, definition, or fact that you will use in your paper. I recommend to note down (on paper, or in a document) which sources you used. For each theorem, etc., that you might want to cite later on, note down which source it was in and the page number, section number, and if applicable, the theorem number (e.g., “Theorem 3.6 in section 3.2, page 89”). Don’t make the mistake of waiting till the end, and then having to re-read all those books to figure out which theorem was from where!

Give citations for theorems, definitions, etc. As a rule of thumb, if a theorem, definition, etc., is so common-place that every student knows it, then you don’t need to give a citation for it. Ideally, citations should point to the original discoverer (or definer). In practice, this is impossible for certain items from the 1800s or earlier, and you should just give a citation

to a book or textbook. For example, it seems simply impossible to give a citation to the original definition of a vector space. (Well, it might be possible, but that would probably require a serious research project in mathematical history.) Instead, give a citation to a textbook. (Or, consider skipping a citation: the definition of vector space is common-place and might not need to be cited.)

There are numerous guides online for “How to Write Mathematics”, “Guide to Writing Mathematics”, etc. All of them have good advice, including advice on how to select sources, how to decide which sources to cite, etc.

2. USING THE AMSREFS PACKAGE

Add the `amsrefs` package to your document:

```
\usepackage{amsrefs}
```

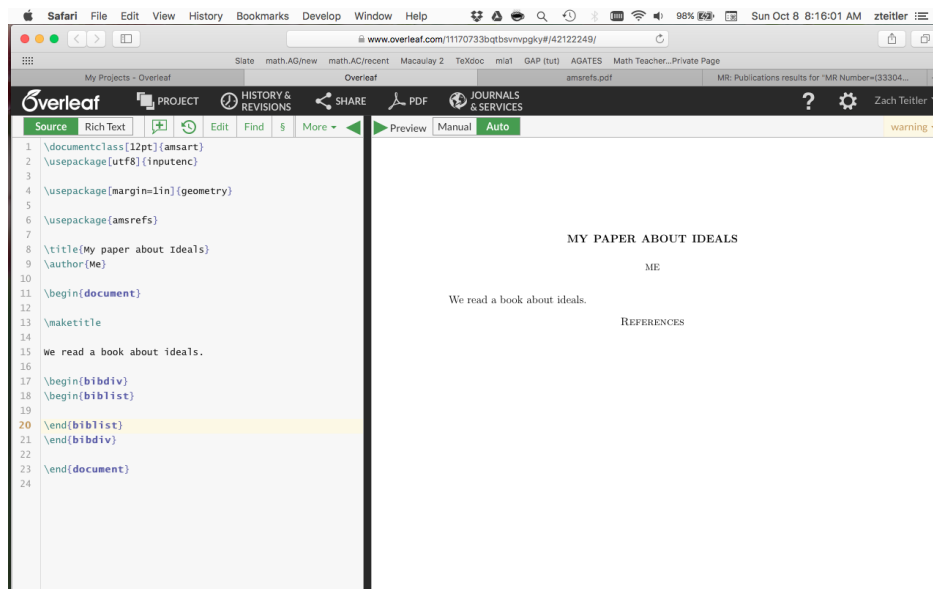
This goes *before* the `\begin{document}`.

At the same time, create a space to put your bibliography into. At the end of your document (before the `\end{document}`) add these lines:

```
\begin{bibdiv}
\begin{biblist}
```

```
\end{biblist}
\end{bibdiv}
```

It should look like this.



A few things to note:

- The `documentclass` has the `[12pt]` option.
- You might be using a different document class, such as `\documentclass[12pt]{article}` instead of `amsart`.
- I included the `geometry` package to change the margin size.
- More importantly, the `amsrefs` package is there.
- A space for the bibliography was created.

You probably don't need to read the AMSRefs documentation. But if you want to, then visit

<https://ctan.org/pkg/amsrefs?lang=en>

or

<http://www.ams.org/publications/authors/tex/amsrefs>

3. GETTING CITATION INFORMATION

When you have decided that you will cite a certain article or book, then you can get the nicely-formatted citation information from MathSciNet. This is a database of mathematical publications. It is pretty reliable in terms of accuracy.

Visit

<https://mathscinet.ams.org/mathscinet>

from on-campus; or, if you are off-campus, visit

<https://mathscinet-ams-org.libproxy.boisestate.edu/>

For the second one, you will have to log in with your Boise State username and password. MathSciNet is a subscription service. By going through the campus network or library proxy service (that's what "libproxy" stands for), you can use the university's subscription.

In MathSciNet you should see a search screen like this:

The screenshot shows the MathSciNet search interface. The search form includes the following elements:

- Search Terms:** Four input fields for Author, Title, MSC Primary, and MR Number, each with a dropdown menu and an "and" button.
- Time Frame:** Radio buttons for "Entire Database", "Year" (with a dropdown), and "Year Range" (with "to" and input fields).
- Publication Type:** Radio buttons for "All", "Books", "Journals", and "Proceedings".
- Review Format:** Radio buttons for "All", "PDF", and "HTML".
- Buttons:** "Search" and "Clear" buttons at the bottom of the form.
- Footer:** "Facts and Figures: 3,463,722 total publications" and "Help Support Mail" links.

Enter in your search terms. Usually the author and one or two words from the title are enough:

The close-up shows the search form with the following entries:

- Author:** COX
- Title:** ideals varieties algorithms

You can add more information (such as the year, the name of the journal, etc.) if needed. Then click the "Search" button to see the results:

AMERICAN MATHEMATICAL SOCIETY
MathSciNet
Mathematical Reviews
ISSN 2167-5163

Matches: 4
Batch Download: [Reviews (HTML)] [Retrieve Marked] [Retrieve First 50] [Mark All] [Unmark All]
Publications results for "Author=(cox) AND Title=(ideals varieties algorithms)"

Sort by: Newest

Search within results

Item Type
 Reviewed (4)

Institutions
Department of Mathematics, College of the Holy Cross (3)
Department of Mathematics & Computer Science, Amherst College (2)

Authors
Cox, David A. (4)
Little, John (4)

MR3330490 [Reviewed] Cox, David A.; Little, John; O'Shea, Donal Ideals, varieties, and algorithms. An introduction to computational algebraic geometry and commutative algebra. Fourth edition. *Undergraduate Texts in Mathematics*. Springer, Cham, 2015. xvi+646 pp. ISBN: 978-3-319-16720-6; 978-3-319-16721-3 13P10 (13-01 14-01 14Qxx 68W30)
Review PDF | Clipboard | Series | Book | 9 Citations

MR2290010 [Reviewed] Cox, David; Little, John; O'Shea, Donal Ideals, varieties, and algorithms. An introduction to computational algebraic geometry and commutative algebra. Fourth edition. *Undergraduate Texts in Mathematics*. Springer, New York, 2007. xvi+551 pp. ISBN: 978-0-387-35650-1; 0-387-35650-9 13P10 (13-01 14-01 14Qxx 68W30)
Review PDF | Clipboard | Series | Book | 278 Citations

MR1417938 [Reviewed] Cox, David; Little, John; O'Shea, Donal Ideals, varieties, and algorithms. An introduction to computational algebraic geometry and commutative algebra. Second edition. *Undergraduate Texts in Mathematics*. Springer-Verlag, New York, 1997. xiv+536 pp. ISBN: 0-387-94680-2 13P10 (13-01 14-01 14Qxx 68Q40)
Review PDF | Clipboard | Series | Book | 515 Citations

MR1189133 [Reviewed] Cox, David; Little, John; O'Shea, Donal Ideals, varieties, and algorithms. An introduction to computational algebraic geometry and commutative algebra. *Undergraduate Texts in Mathematics*. Springer-Verlag, New York, 1992. xii+513 pp. ISBN: 0-387-97847-X (Reviewer: Timothy Stokes) 13P10 (13-01 14-01 14Qxx 68Q40)
Review PDF | Clipboard | Series | Book | 432 Citations

This search gave 4 results. Let's look at the first one.

MR3330490 [Reviewed] Cox, David A.; Little, John; O'Shea, Donal Ideals, varieties, and algorithms. An introduction to computational algebraic geometry and commutative algebra. Fourth edition. *Undergraduate Texts in Mathematics*. Springer, Cham, 2015. xvi+646 pp. ISBN: 978-3-319-16720-6; 978-3-319-16721-3 13P10 (13-01 14-01 14Qxx 68W30)
Review PDF | Clipboard | Series | Book | 9 Citations

Click on the "MR" number at the beginning of the listing.¹ (In that last screenshot it's purple because I clicked on it before I took the screenshot. Click on the part that's purple in my screenshot.) You will see a review/summary of the article or book.

AMERICAN MATHEMATICAL SOCIETY
MathSciNet
Mathematical Reviews
ISSN 2167-5163

Previous Up Next

Select alternative format

Publications results for "Author=(cox) AND Title=(ideals varieties algorithms)"

MR3330490 [Reviewed] Cox, David A.(1-AMH); Little, John(1-HLYX-CS); O'Shea, Donal(1-NCF-PO)
Ideals, varieties, and algorithms.
An introduction to computational algebraic geometry and commutative algebra. Fourth edition. *Undergraduate Texts in Mathematics*. Springer, Cham, 2015. xvi+646 pp. ISBN: 978-3-319-16720-6; 978-3-319-16721-3 13P10 (13-01 14-01 14Qxx 68W30)
Review PDF | Clipboard | Series | Book | Make Link

Citations
From References: 9
From Reviews: 1

From the preface: "The fourth edition incorporates several substantial changes. In some cases, topics have been reorganized and/or augmented using results of recent work. Here is a summary of the major changes to the original nine chapters of the book:

- Chapter 2: We now define *standard representations* (implicit in earlier editions) and *lcm representations* (new to this edition). Theorem 6 from §9 plays an important role in the book, as indicated by the solid arcs in the dependence chart on the previous page.
- Chapter 3: We now give two proofs of the Extension Theorem (Theorem 3 in §1). The resultant proof from earlier editions now appears in §6, and a new Gröbner basis proof inspired by Schauenburg (2007) [MR2355055] is presented in §5. This makes it possible for instructors to omit resultants entirely if they choose. However, resultants are used in the proof of Bezout's Theorem in Chapter 8, §7, as indicated by the dashed arc in the dependence chart.
- Chapter 4: There are several important changes:
 - In §1 we present a Gröbner basis proof of the Weak Nullstellensatz using ideas from Glebsky (2012).
 - In §4 we now cover saturations $I:J^m$ in addition to ideal quotients $I:J$.
 - In §7 we use Gröbner bases to prove the Closure Theorem (Theorem 3 in Chapter 3. §2) following Schauenburg (2007).

This can be useful if you haven't yet read the article/book, and you are trying to decide if it's worthwhile to look at (you can look at the summary and try to determine if it's relevant for your project). Another useful feature is the Citations box. These links go to more recent

¹If you're curious, "MR" stands for Math Reviews, which is the name of the review journal that MathSciNet grew out of. If you're even more curious, you can watch <https://www.youtube.com/watch?v=cUEOghB3MvM> to learn about how MR and MSN work, their history, and also Nazis.

articles or books that cite the one you're looking at. That can be useful if you found an article, and want to find more articles that look at the same topic. Or if you have an article that states a conjecture, and want to know if a more recent article has solved the conjecture (or if it is still open).

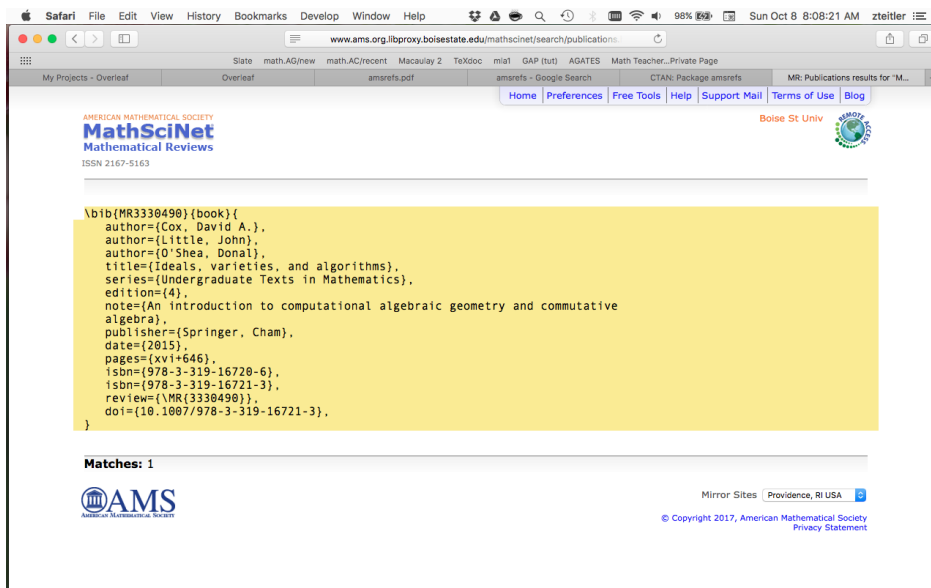
But in our case, the primary reason we are here is to get nicely-formatted citation information. Choose "AMSRRefs" from the "Select alternative format" drop-down menu:

The screenshot shows the MathSciNet search results page for the book "Ideals, varieties, and algorithms" by Cox, Little, and O'Shea. The "Select alternative format" dropdown menu is open, showing options like PDF, BibTeX, and AMSRefs. The "AMSRefs" option is selected. The page displays the book's title, authors, and a summary of the preface.

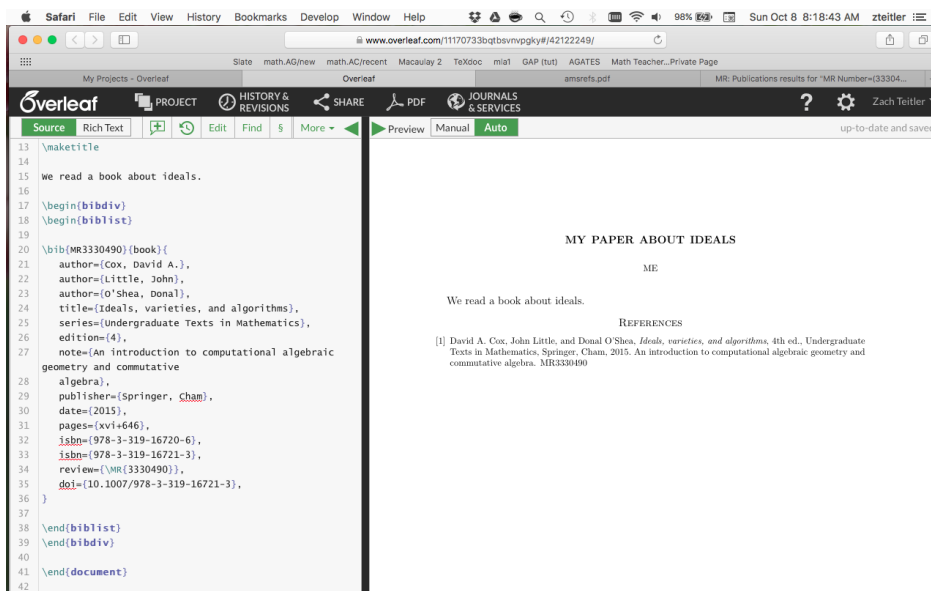
This takes us to a screen with the citation information we are looking for:

The screenshot shows the citation information in a structured format. The citation information is displayed as a block of text starting with `\bib{MR3330490}` and ending with `}`. The citation information includes the author, title, series, edition, note, publisher, date, pages, ISBN, and review.

Select and copy everything from the `\bib{` at the beginning to the `}` at the end.



Copy that and paste it into your Overleaf document, in the bibliography space that was created earlier.



Repeat that for each published source you want to use.

4. UNPUBLISHED SOURCES

You may wish to cite an unpublished source such as a web page (say, <http://dacox.people.amherst.edu/iva/4ed.pdf>) or a preprint (pre-publication paper) (say, <https://arxiv.org/abs/1709.01606>).

4.1. **Web page.** You have to write your own `\bib` item. But it's not hard!

You may enter the following information:

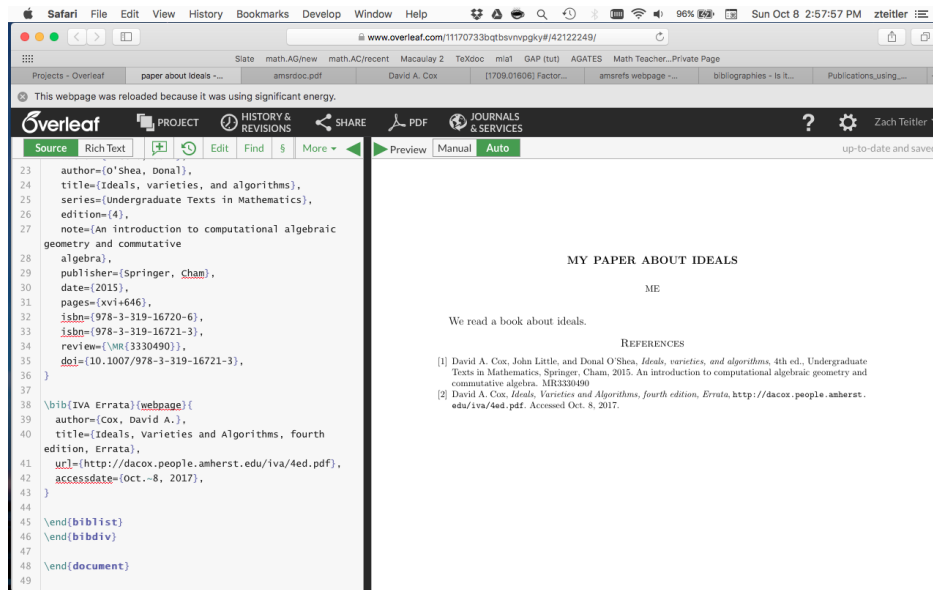
- `accessdate`
- `author`
- `date`

- note
- subtitle
- title
- url

For example we might want to refer to the Errata (errors) for the textbook. They are located on a webpage at <http://dacox.people.amherst.edu/iva/4ed.pdf>. We could write an entry as follows:

```
\bib{IVA Errata}{webpage}{
  author={Cox, David A.},
  title={Ideals, Varieties and Algorithms, fourth edition, Errata},
  url={http://dacox.people.amherst.edu/iva/4ed.pdf},
  accessdate={Oct.~8, 2017},
}
```

It will look like this.



We left `date`, `note`, and `subtitle` blank for this example. The `author`, `url`, and `title` should make sense. The `accessdate` is whatever date you accessed the webpage; this matters when webpages change after you access them, so the reader can make sure to look at the same version that you accessed (by contrast, `date` would correspond to the date that the webpage was last modified).

We made up the name “IVA Errata”. It could have been anything we wanted. We’ll see how to use it soon.

(In this example the webpage was a PDF. That is irrelevant; the same method would apply to any webpage.)

4.2. Unpublished items. We might want to cite an unpublished paper such as <https://arxiv.org/abs/1709.01606>. We can write

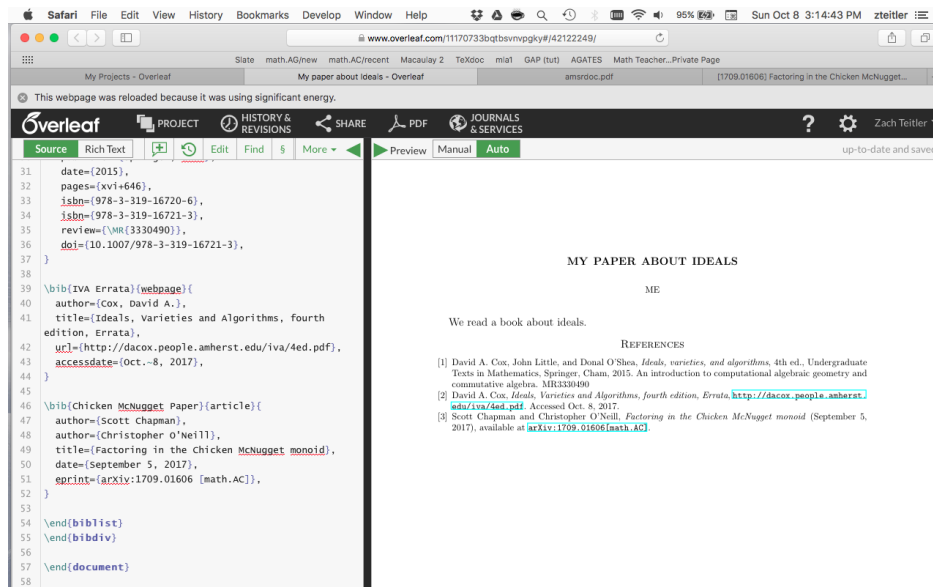
```
\bib{Chicken McNugget Paper}{article}{
  author={Scott Chapman},
  author={Christopher O’Neill},
  title={Factoring in the Chicken McNugget monoid},
```

```

date={September 5, 2017},
eprint={arXiv:1709.01606 [math.AC]},
}

```

Here, the author, title, date, and “eprint” information were just copied manually from the corresponding webpage. It will look like this.



Optionally, you could also add

```
note={\url{https://arxiv.org/abs/1709.01606}},
```

Final thoughts on adding items to bibliography. You know the basics of how to add items to your bibliography:

- (1) Published items can be pulled from MathSciNet.
- (2) For webpages and unpublished items, you can write a “bib” item manually.

However please notice that the items in the bibliography are *not* automatically alphabetized! They will be printed in whatever order they are written in the file. (In our example file, the items by COX should be alphabetically listed *after* the item by CHAPMAN.)

Therefore, put the items into your file in alphabetical order.
(If you put things out of order, you can always fix them later.)

5. ADDING CITATIONS FROM THE TEXT TO ITEMS IN YOUR BIBLIOGRAPHY

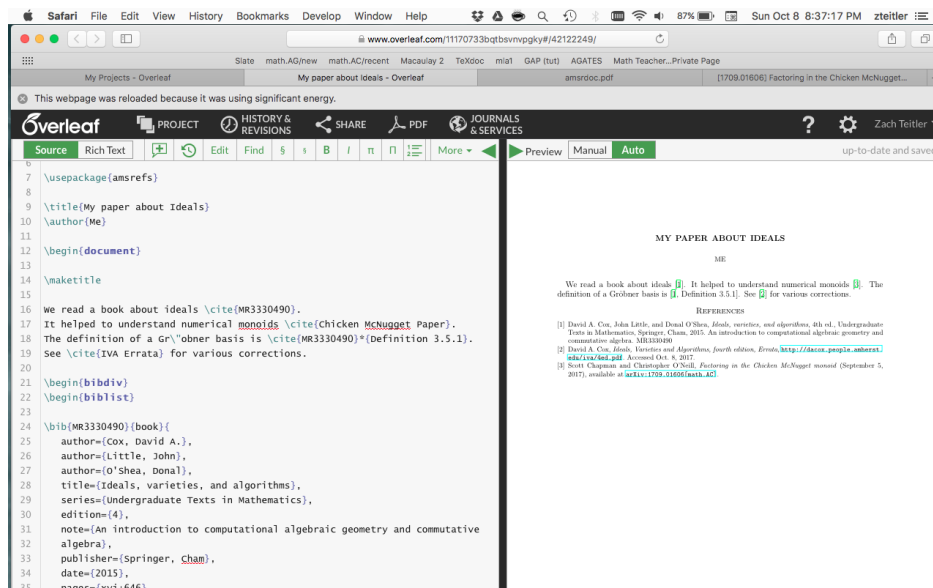
Finally, make the text of your paper actually refer to things in the bibliography!

```

We read a book about ideals \cite{MR3330490}.
It helped to understand numerical monoids \cite{Chicken McNugget Paper}.
The definition of a Gr\"obner basis is \cite{MR3330490}*{Definition 3.5.1}.
See \cite{IVA Errata} for various corrections.

```

It will look like this.



Things to note:

- (1) The basic command is `\cite`. You say `\cite{which paper you want to cite}`.
- (2) This is where that string comes into play, in `\bib{name to refer to the paper}`. It's called a "cite key" and it can be pretty much anything you want. In this example the cite keys were MR3330490, IVA Errata, and Chicken McNugget Paper. You could change "MR3330490" into something easier to remember such as "IVA Book" or whatever you like.
- (3) You can refer to specific sections, pages, or numbered items within a book or article by using `\cite{cite key}*{specific reference}`, as in the command in the above example, `\cite{MR3330490}*{Definition 3.5.1}`.
- (4) You can let L^AT_EX take care of formatting the bibliography and the citations. If you want to, it is possible to adjust to different formats. For example, you might like `\usepackage[alphabetic]{amsrefs}`.

6. FINAL THOUGHTS

I made multiple mistakes here.

- (1) I listed names like "Scott Chapman". It should have been "Chapman, Scott".
- (2) I listed dates like "September 5, 2017". It should have been in the format "2017-09-05".
- (3) I entered bibliographical items in non-alphabetic order. At some point I should fix that and add another screenshot of that.
- (4) The IVA errata actually does list an explicit last-modified date. That could be entered into a `date` field, in addition to the `accessdate`.