

UNIVERSITY of CALIFORNIA
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**FORMATION OF WATER CONDENSATION ZONES IN THE
ATMOSPHERE OF URANUS AND THEIR IMPACT ON ITS
THERMAL EVOLUTION**

A thesis submitted in partial satisfaction of the
requirements for the degree of

BACHELOR OF SCIENCE

in

ASTROPHYSICS

by

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1

Introduction

This is mostly a demonstration of all the mechanics (references, sections, figures, tables, etc.) of a physics senior thesis, but it also includes an incomplete sampling of advice, because we have to say something. Your notes from Physics 182 are of course a better and more complete discussion of what is required of the thesis.

The first part of the introduction should always quickly state what problem you are planning to solve (or question you are trying to answer) and (if you are doing original research) what methods you are going to use. For a literature review, the method is obvious – reading stuff – but you should still have a central question you want to be gathering evidence to answer. Once you have done this, your readers will know *why* they are going to read the rest of the introductory material.

1.1 This demonstrates a section and includes a figure

It's best to break your chapters up into sections, and, when the topic of a section is long and complicated, even subsections. Once a section or subsection has gone on for

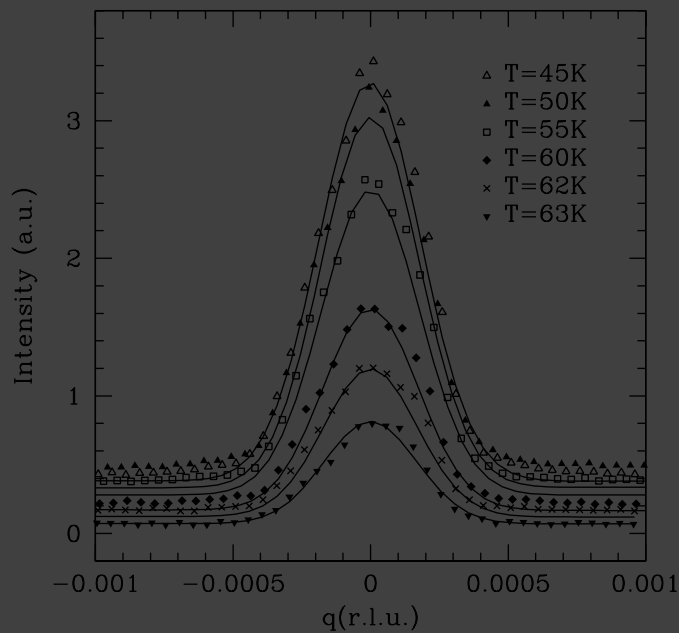


Figure 1.1: Representative transverse scans for the different temperatures below $T_c(H) = 63.7$ K taken with $H = 11$ T after cooling in $H = 0$. Each scan is displaced vertically by 0.1 units from the scan below it for clarity. The solid curves are results of least-squares fits to a Gaussian line shapes with a half-width-at-half-maximum equal to 2.1×10^{-4} r.l.u.

more than about 4 paragraphs, consider whether it might be clearer to break it up (not that this will always be the case).

This section contains a figure that is an encapsulated postscript file, and I reference it by referring to it by its label (like this: see Figure 1.1). Note that the "label" command in the figure environment has to come after the caption but before the close of the figure environment. The opposite is true for sections and subsections, where the label appears just after the section/subsection begins (like this: see section 1.1.1). Note that you must reference every figure you include somewhere in text. And never say "above", "below", etc. for the placement of the figure; instead cite it by its label as demonstrated at the start

but that was quickly rejected with much ridicule.

Here's some text to fill up the sub-section. Here's some text to fill up the sub-section. Here's some text to fill up the sub-section. Here's some text to fill up the sub-section. Here's some text to fill up the sub-section. Here's some text to fill up the sub-section.

1.1.3 A subsection on tables

Not only do I give two examples on tables here, I show you how to force tables (or other "floating" environments like figures) to appear close to where you want them.

When I first compiled this, the tables meant for this section appeared during the following one. LaTeX is just trying to arrange things well and avoid blank space, but if you want to prioritize having something appear about where you put it in the LaTeX code, put the notation "`!\htb`" as shown at the start of the tables here. The "h" stands for "put it here," The "h" stands for "here," the "t" for "top," the "b" for "bottom," and the "!" for something like, "really, darnit, override some rules if you have to. You can use "b" or "t" alone or with the "!" if you like to see all your figures at the top of a page (common) or at the bottom (rare).

Note that if your placement choices end up generating a lot of whitespace, that whitespace will not count toward the minimum page count of your thesis.

Title	Author
War And Peace	Leo Tolstoy
The Great Gatsby	F. Scott Fitzgerald

Table 1.1: A normalsize table. This would be the normal size that you would make a table, so that it is most readable, unless it's hard to fit everything in. Some journals (like Physical Review) use captions at the bottom of tables that can be as wordy as the caption to a figure, like this one. If your thesis is in physics or applied physics, rather than astrophysics, you should use this convention.

Table 1.2: A small table.^a

Title	Author
War And Peace	Leo Tolstoy
The Great Gatsby ^b	F. Scott Fitzgerald

^aIn astrophysics, the table title is usually short and always at the top, and other information is put into table footnotes like this.

^b A much shorter read than War and Peace.

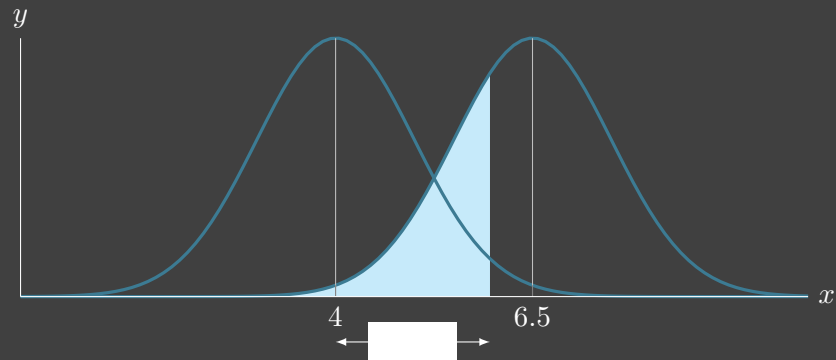


Figure 1.2: This graphic was generated using the `pdfplots` package, which is a wrapper for a more fundamental LaTeX package called "tikz".

1.1.4 Graphics with pgfplots

In this subsection I show an example of how to create plots *within* LaTeX, using a package called "pgfplots". I have verified that it works in Overleaf. If you are compiling elsewhere and get an error that the package is unknown, you can either get it at

<http://pgfplots.sourceforge.net/>

or else remove the reference to the package from the preamble of this document and remove the `tikzpicture` block from this subsection.

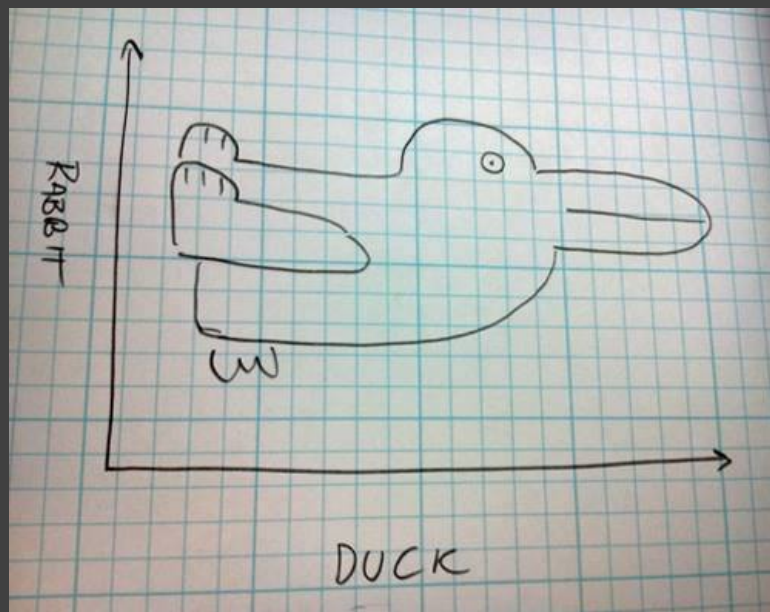


Figure 2.1: An image that looks like a rabbit one way, and a duck another. Your caption should describe everything that the reader sees looking at the figure, but *interpretation and significance* should be left for the main text.

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Appendix A

Some Ancillary Stuff

Ancillary material should be put in appendices. The guidelines are not clear whether bibliography comes before or after the appendices, but they *suggest* appendices come first. Ancillary material should be put in appendices. The guidelines are not clear whether bibliography comes before or after the appendices, but they *suggest* appendices come first. Ancillary material should be put in appendices. The guidelines are not clear whether bibliography comes before or after the appendices, but they *suggest* appendices come first. Ancillary material should be put in appendices. The guidelines are not clear whether bibliography comes before or after the appendices, but they *suggest* appendices come first.

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