

Observational Astrophysics Project Template

Your name here
Another name here

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Abstract

Your paper should begin with a brief factual abstract. Typically it would state the purpose, methods, analysis, and conclusions in a single paragraph. It is considered best practice to be as explicit about the results as possible in such a brief form. References or citations are not given in the abstract.

1 Introduction

Background to the work would be given early so that a reader will understand how this fits in the context of current knowledge. A book would be cited this way, and appear in the references at the end.^[1] The style of the citation is set by the preamble to the L^AT_EX document.

2 Observations

If your work has observational data you should discuss it in a separate section. Details about what was observed and analysis of it could go in this section. You could include figures, such as the image shown in Figure 1.

3 Analysis

When you discuss the analysis of your observations and other data you should cite any works you used, include web resources. The citation to an article might be done this way for the paper by Lingam et al written in 2019.^[2] When you are writing on Overleaf in their editor and start typing `\cite{` their editor will prompt you with entries in your bibliography matching the key as you type it. In this example I have chosen the "nature" style which is



Figure 1: A caption on a figure would go here. For example, you would describe the image of Jupiter and its relevance to the paper. Note the label is embedded in the caption so that you can refer to it later in the text.

used by the publication of Nature magazine, a premier and exclusive refereed publication. It has a number in the text, and then a comprehensive citation at the end. The style you use may be dictated by the journal or your personal preferences. See the L^AT_EX source for how to select the style.

You may also have a link in the body of a paper when the preamble has the “hyperref” package. An example would be the link to Overleaf’s help on bibliographies: https://www.overleaf.com/learn/latex/Biblatex_bibliography_styles

NASA ADS

A document may have subsections and subsubsections to help organize material. When you enter the section if you use `\section{title}` it will be numbered but if you use `\section*{Another title}` it will be plain, as this one is.

For references you should use NASA’s ADS website

<https://ui.adsabs.harvard.edu/>

The citations offered for every article include a bibtex entry that can be copied into the bib file. Simply change the keyword at the top of the entry to something you will find memorable or indicative of the content.

L^AT_EX Hints

This typesetting code is extremely powerful and consequently has a lot of options and features and gotcha's. A few to be aware of if you are new to it are

- L^AT_EX is intended to set the document style and formatting for you. Let it do its work. Generally do not override the default settings unless you want to create a unique style.
- Paragraphs have indentations on the second paragraph of a section. Use `\noindent` when that is inappropriate.
- Enter equations inline using a single dollar sign `$$ equation $`. An example would be $y = h \sin(\theta)$. Use `\$` if you need a real dollar sign in the text. Use a double dollar sign to create an equation that stands apart and is unnumbered.
- Enter numbered equations using an equation environment such as this

$$r = \sqrt{X^2 + y^2} \tag{1}$$

- Quotations use two left ticks and two right ticks that in the body look like this `“quoted material”` and in the text come out like “quoted material”.

4 Conclusions

Your paper should discuss the outcome of your work. This would not be a summary, which would come before the conclusions in the main body, but rather what your work led to, and what might come next. Typical professional scientific papers would also have another section of Acknowledgements to those who contributed in some way are are not co-authors.

References

1. Brigham, E. O. *The Fast Fourier Transform* ISBN: 0-13-307496-X (Prentice-Hall, Englewood Cliffs, New Jersey, 1974).
2. Lingam, M. & Loeb, A. Brown Dwarf Atmospheres as the Potentially Most Detectable and Abundant Sites for Life. *Astrophysical Journal* **883**, 143 (Oct. 2019).