

# Sample title for amb Latex template for article preparation

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## Abstract

This document (amb\_main.tex—launched November 2025) provides a brief tutorial on the use of the amb  $\LaTeX$  and also serve as a template for the preparation of papers to be published in the Journal “Applied Mathematical Biosystems” published by “Society for Applied Mathematics in India”. It provides brief tutorial information and common rules for authors. We have included information about the section content, as well as examples of the figures, tables, and code lines for mathematical and computational articles. We are making a  $\LaTeX$  class (amb.cls), specially designed for academic purposes. It is assumed that you are already familiar with the rudiments of  $\LaTeX$ .

**Keywords:** keyword 1, keyword 2, keyword 3, keyword 4, keyword 5

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## 1. INTRODUCTION

Welcome to the amb  $\LaTeX$  template to prepare your academic article. Articles considered for publication in the journal can be easily prepared using this template. The style of this template is based on the style required for the journal “Applied Mathematical Biosystems”. It requires minimal or no typesetting adjustments to provide a version of your manuscript organization that is close to the final printed version. This style also has ample margins to allow for a comfortable number of words per line and leaves room for marginal notes to be added. Its use requires a relatively recent version of  $\LaTeX$ . This template can be downloaded from the journal website and or can be asked from the journal support by email.

## 2. BASIC INFORMATION

Here are some basic information which are essentially requires for any journal/article templates and hence for this also.

### 2.1. Title

The `\title` command defines the article title. The title text should be entered in mixed case letters. In general, for archival and reference purposes, it is recommended not to use mathematical expressions in a title, but they are allowed if necessary.

### 2.2. Author information

The `\author` command defines the article’s authors. In addition to this command, the `\affil` command can be used to define authors’ affiliations. This will be typed below the authors’ names in the final version of the manuscript. Individual authors named **First Middle Surname**, should be entered in the style **F. M. Lastname**. Authors may use their first name instead of the initial before their second initial and last name. If the authors have various affiliations, you can put more than one of them in square brackets preceding the author name.

### 2.3. Footer information

The `\leadauthor` command is used to provide the last name and initials of the leading author of the article, and will be visible at the top of every odd-numbered page. Please do not modify the text of the `\smalltitle` and `\institution` commands, which define the footer text at the bottom of the first page of every article in the amb.

### 2.4. Corresponding author information

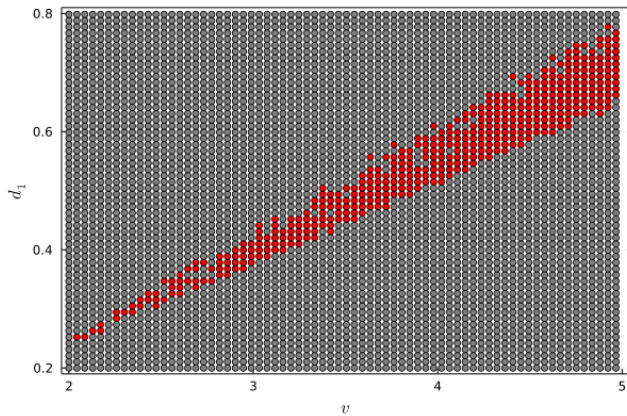
Please use the `\corres` and `\email` commands to define the name and e-mail address of the corresponding author. In most cases, this will probably coincide with the lead author, as in the example. We note that the only email used in the manuscript is that of the corresponding author; the remaining authors are identified by their affiliations.

## 2.5. Abstract

In this section, you need to provide the abstract for the article. The abstract text may contain several paragraphs, but it should not be overly long, since it must fit on the first page<sup>1</sup>. The recommended length for the anstract is within 200 words.

## 2.6. Keywords

Keywords are provided by the authors and placed below the abstract. A minimum of three keywords and a maximum of five keywords must be placed using the command `\keywords{}`.



**Figure 1.** Example figure for single column.

## 3. MAIN BODY

The main body of the document should be opened within the following pair of commands `\begin{document}` . . . and so on. The first command after the `\begin{document}` should be `\maketitle`. This will format the Title, Author(s), Abstract, and Keywords sections.

Within the main body of the document, all standard  $\LaTeX$  commands can be used. The commands provided by many optional packages distributed with  $\LaTeX$  may also be used as long as the package is loaded using the `\usepackage` command in the preamble. However, authors are requested to avoid using commands that change the document fonts, page layout, or other 'stylistic' parameters. We should also note that not all optional packages have been tested for compatibility with the amb class.

### 3.1. Sectioning commands and cross references

Authors are encouraged to use the standard  $\LaTeX$  sectioning commands to subdivide their articles as follows various section and subsections.

Please use standard  $\LaTeX$  sectioning commands to subdivide your document. You should use mixed cases for the section titles, although in the current style, this only matters at the level of `\subsection` and below.

These will be automatically typed in the amb style. Cross-referencing is made easier by the use of the `\label {LABEL}` command immediately after each sectioning command, where the LABEL text is a mnemonic string. Elsewhere in the document, the section can then be referred to as `\ref {LABEL}`. The `\label` command can also be used with equations, figures, and tables (see below).

<sup>1</sup>It is suggested to make a single paragraph for an abstract

## 3.2. Math Symbols and Equations

Symbols for physical quantities should usually be in italics: velocity,  $v$ , density,  $N$ , etc. However, multi-letter symbols generally look better in Roman: FWHM, EM, etc. The `\frac` command (and its  $\TeX$  relative `\over`) is best used only in displayed equations, as in this case: Something like

$$x = \frac{a+b}{c} \quad (1)$$

looks fine, whereas  $x = \frac{a+b}{c}$  looks somewhat cramped. It is better rewritten as  $x = (a+b)/c$ .

$$R^{\alpha}_{\epsilon\mu\nu} := \partial_{\mu}\Gamma^{\alpha}_{\nu\epsilon} - \partial_{\nu}\Gamma^{\alpha}_{\mu\epsilon} + \Gamma^{\sigma}_{\nu\epsilon}\Gamma^{\alpha}_{\mu\sigma} - \Gamma^{\sigma}_{\mu\epsilon}\Gamma^{\alpha}_{\nu\sigma}, \quad (2)$$

which, after contraction of the first and third indices,  $R_{\mu\nu} := R^{\alpha}_{\mu\alpha\nu}$ , yields an expression (3) that helps exemplify the use of *splitting* [2]:

$$R_{\mu\nu} = R_{\mu\nu}(\{\}) + \tilde{\nabla}_{\nu}K^{\alpha}_{\alpha\mu} - \tilde{\nabla}_{\alpha}K^{\alpha}_{\nu\mu} + K^{\sigma}_{\nu\mu}K^{\alpha}_{\alpha\sigma} - K^{\sigma}_{\alpha\mu}K^{\alpha}_{\nu\sigma}, \quad (3)$$

In another complex expression by the same authors, we can show the addition of intercalated text (italics) in the combined Eqs. 4 and 5

$$\begin{aligned} R_{\mu\nu}\{\} - \frac{1}{2}g_{\mu\nu}R\{\} - \frac{1}{2}g_{\mu\nu}\kappa(\tilde{\nabla}_{\alpha}T^{\alpha} + T^{\alpha}T_{\alpha})^b \\ + \kappa b(\tilde{\nabla}_{\alpha}T^{\alpha} + T^{\alpha}T_{\alpha})^{b-1}T_{\mu}T_{\nu} \\ - \kappa bT_{\nu}\tilde{\nabla}_{\mu}[(\tilde{\nabla}_{\alpha}T^{\alpha} + T^{\alpha}T_{\alpha})^{b-1}] \\ = \frac{8\pi G}{c^4}\Sigma_{\mu\nu}, \end{aligned} \quad (4)$$

for the null variations with respect to the metric, and

$$2T_{\mu}(\tilde{\nabla}_{\alpha}T^{\alpha} + T^{\alpha}T_{\alpha})^{b-1} = \tilde{\nabla}_{\mu}[(\tilde{\nabla}_{\alpha}T^{\alpha} + T^{\alpha}T_{\alpha})^{b-1}] \quad (5)$$

## 4. USE OF HIGHLIGHT BOX

The new amb  $\LaTeX$  allows the authors to use a colored box to highlight a concept or equation, as shown in this example. The label and reference points of the section are included. Example: See the highlight box in section 4.

### Highlight Box

This is an example of a concept highlight box section. One can place anywhere in the body of the article to briefly summarize the important concepts, outcomes, remarks, notes etc. We do not allow this box larger than 50 words

## 5. FIGURES AND TABLES

### 5.1. Sample simple figure

Figure 1 shows an example of a simple figure occupying the space of a single column. In most cases, this is a good option for displaying a relatively simple scatter plot or histogram. We require that the font of the axis labels be at least as large as that of the caption.

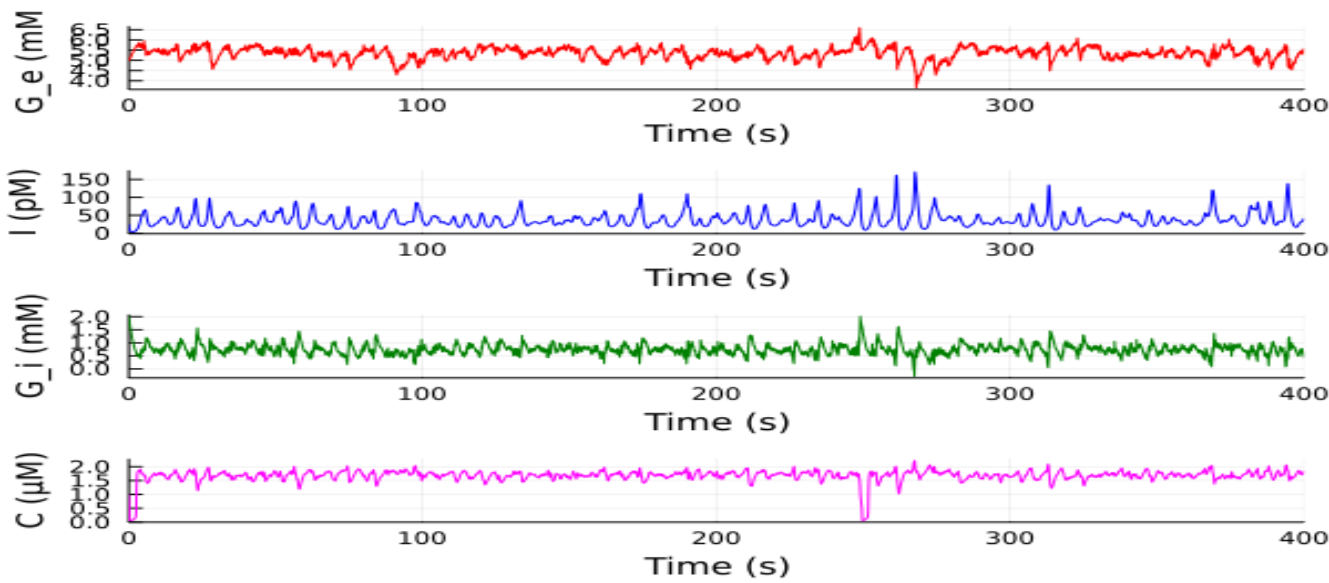


Figure 2. Second example figure for whole textwidth.

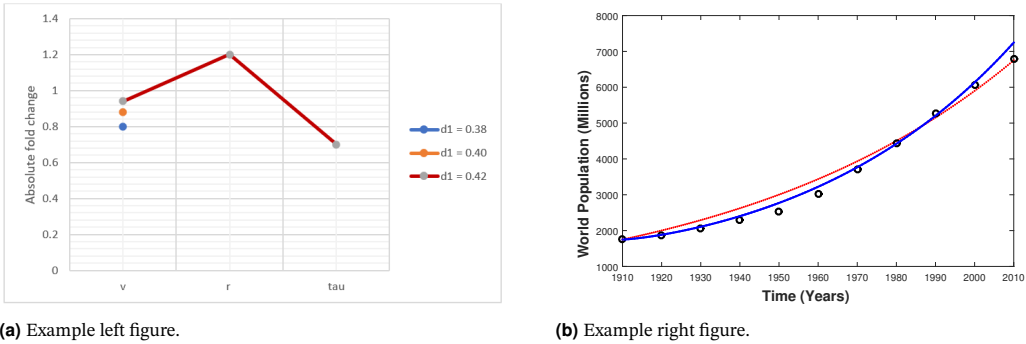


Figure 3. Example figure that covers the width of the page obtained from PGFPlots [3]. In this case, the caption length is quite long, so it is justified at the edges.

5.2. Sample wide figure

Figure 2 shows an example of another relatively simple figure, but this time the width of the figure is as large as the width of the page. In this example, the figure is placed at the top of the page.

5.3. Sample double figure

Figure 3 shows an example of a floating figure with two separate panels covering the width of the page. The figure can be placed at the top or bottom of the page. The space between the figures can also be modified using the `\hspace{Xpt}` command.

5.4. Sample simple table

Similar to figures, tables can be placed in one or two columns, depending on their length.

Table 1 is an example of a relatively simple table, with three columns, which is narrow enough to be shown inside a single column. The example is also useful as a quick guide to the symbols commonly used in astronomy.

5.5. Sample wide table

Table 2, shows a second example of a table. This time, the content of the table is more adequate for a larger horizontal size. The example is constructed such that the table covers the width of the page and is positioned at the bottom of a new page.

5.6. Landscape table

The third example of tables is shown in Table 2, where we show a more complex table rotated sideways to fit in the landscape mode. amb uses the `LaTeX` package `tabular`, which is adequate for most applications in this context.

We do not recommend publishing very long tables in your paper. Large data collections may be more useful to readers in a machine-readable format.

Table 1. This is a sample table

Serial no	Name with Degree	Address
01	Name One, MSc	Kolkata, India
01	Name One, MSc	Kolkata, India
01	Name One, MSc	Kolkata, India

6. FACILITIES

For observational research, authors must include a brief list of facilities and instruments used, as well as proper acknowledgment of public catalogs and virtual observatory resources.

## 7. CODES

This macro includes the *listings* package, which offers customized features for adding codes or pseudocodes. The package adds adequate syntax coloring for some of the most popular languages (C, C++, Python, and Matlab).

```
1 function fibonacci_sequence(num_terms)
2     fib_sequence = [0, 1];
3
4     for i = 3:num_terms
5         fib_sequence(i) = fib_sequence(i-1) +
6             ↪ fib_sequence(i-2);
7     end
8
9     fprintf('Fibonacci Sequence:\n');
10    disp(fib_sequence);
11 end
```

Code 1. Example of matlab code.

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3 from scipy.optimize import curve_fit
4
5 def linear_model(x, m, b):
6     return m * x + b
7
8
9 def plot_regression(x, y, ex, ey, m_opt, b_opt, m_err):
10    ↪ plt.errorbar(x, y, xerr=ex, yerr=ey, fmt='o',
11    ↪ label='Datos', ecolor='gray', capsize=3)
```

Code 2. Example of Python code.

During the paper edition process, line numbering will be enabled to facilitate referee revision. We recommend placing the command `\nolinenumbers` at the beginning and `\linenumbers` at the end of the code, respectively. This temporarily removes the line numbering for the manuscript and provides code line numbers.

## 8. REFERENCE STYLE

Our default formatting for references uses the journal-naming system from the AASTex style and the Astrophysics Data System (ADS). amb follows the ADS bibliographic codes for both refereed [https://adsabs.harvard.edu/abs\\_doc/refereed.html](https://adsabs.harvard.edu/abs_doc/refereed.html) and non-refereed [https://adsabs.harvard.edu/abs\\_doc/non\\_refereed.html](https://adsabs.harvard.edu/abs_doc/non_refereed.html) publications.

If a paper has more than five authors, only the first three will be listed, followed by “et al.”. The DOI of each publication was also included in the dataset. At the end of this document, you will find an example of the default reference formatting.

The default formatting for references follows the Astrophysics Data System (ADS) BibTeX style. The author should provide a bibliography file using the command `\bibliography{bibfile}`, where all references are included. At the end of this document, you will find an example of the default reference formatting. Note that the DOI code is linked to references that have one; therefore,

it is important to include it in the BibTeX bibliography (.bib) file.

The usual commands `\citep` for reference in parentheses, as in [4], and `\citet` for references with year in parentheses, as in Román-Zúñiga et al. [4], are used in the main body of the article.

Authors must include their bibliography file with their manuscript, i.e. the bib file. The **amb.bib** file is an example of a bib file that serves as a guide.

## 9. ACKNOWLEDGEMENTS

Acknowledgements may be included to recognize funding sources and grants, to provide standardized acknowledgement text (including required references) for facilities or resources, and/or to recognize individuals who contributed to the research with any relevant discussion, resources, or services but are not listed as coauthors.

## 10. APPENDICES

If you have appendices to your article, you can use something like the following:

```
\begin{appendices}
\section{First Appendix}
\label{sec:ap-A}}
\{Text of first appendix.\}
\section{Second Appendix}
\label{sec:ap-B}
\{Text of second appendix.\}
\end{appendices}
```

The appendices follow the acknowledgments section but precede the bibliography section. Equations in the appendices are labeled A1, A2, B1, B2, etc..

## REFERENCES

- [1] Carlos G. Román-Zúñiga, Jason E. Ybarra, Guillermo D. Megias, Mauricio Tapia, Elizabeth A. Lada, and João F. Alves. Star Formation Across the W3 Complex. *AJ*, 150(3):80, September 2015. .
- [2] E. Barrientos and S. Mendoza. MOND as the weak field limit of an extended metric theory of gravity with torsion. *European Physical Journal Plus*, 132(8):361, August 2017. .
- [3] C. Feuersänger. PGFPlots - A LaTeX package to create plots., 2012. URL <https://pgfplots.sourceforge.net/>.
- [4] Carlos G. Román-Zúñiga, Marina Kounkel, Jesús Hernández, Karla Peña Ramírez, Ricardo López-Valdivia, Kevin R. Covey, Amelia M. Stutz, Alexandre Roman-Lopes, Hunter Campbell, Elliott Khilfeh, Mauricio Tapia, Guy S. Stringfellow, Juan José Downes, Keivan G. Stassun, Dante Minniti, Amelia Bayo, Jinyoung Serena Kim, Genaro Suárez, Jason E. Ybarra, José G. Fernández-Trincado, Penélope Longa-Peña, Valeria Ramírez-Preciado, Javier Serna, Richard R. Lane, D. A. García-Hernández, Rachael L. Beaton, Dmitry Bizyaev, and Kaike Pan. Stellar Properties for a Comprehensive Collection of Star-forming Regions in the SDSS APOGEE-2 Survey. *AJ*, 165(2):51, February 2023. .
- [5] Wikimedia projects contributors. LaTeX/Tables, 12 2023. URL <https://en.wikibooks.org/wiki/LaTeX/Tables>.

**Table 2.** Table example that covers the width of the page.

Day	Min Temp	Max Temp	Summary
Monday	11°C	22°C	A clear day with lots of sunshine. Strong breezes lower temperatures.
Tuesday	9°C	19°C	Cloudy with rain across many northern regions.
Wednesday	10°C	21°C	Rain will still linger for the morning. Conditions will improve by early afternoon and continue throughout the evening.

Note: Obtained from Latex tables [5].