Template for preparing an academic article or lab report using the rho LaTeX class in Overleaf

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Abstract

Welcome to rho (ρ) LaTeX class for making academic articles and lab reports. In this example template, we will guide you through the process of using and customizing the document to your needs. For more information of this class check out the appendix section. There, you will find snippets codes that define key aspects of the template, allowing you to explore and modify them. It is worth to mention that this template is inspired by an earlier work, the tau LaTeX class, designed with academic intentions.

Keywords: Keyword 1, Keyword 2, Keyword 3, Keyword 4, Keyword 5

■ INTRODUCTION

Welcome to *rho class* template for preparing your academic article or lab report. Throughout this guide, we will show you how to use this template and how to make modifications to this class.

■ ABSTRACT

The abstract is placed with `\begin{abstract} \end{abstract}` command and is declared before the beginning of the document. Then, the keywords are placed with the command `\keywords{}`. The format of the abstract and keywords are declared in rho.cls file.

■ CORRESPONDING AUTHOR

When the abstract is generated, the corresponding author section is automatically added. In this section you can provide information that is important for your academic article (especially).

If you do not need this section, you can remove the `\vskip{10pt}` space and the command `\rhoinfo` to make it disappear and only the abstract is kept.

See apendix for more information.

■ LETTRINE

We included the `\rhostart{}` command, which provides a personalized lettrine for the beginning of a paragraph as shown in this document.

■ NUMBERLESS SECTIONS

If a numberless section is declared, a square appears followed by the section name. This style is characteristic of this class and is only for first level sections.

■ TABLE OF CONTENTS

The *rho class* provides a table of contents. Each level of the ToC provides a preview of the content and its location in the document.

Uncomment the command `\tableofcontents` to display it.

Remember that numberless sections will not appear in the ToC, however, you can place them manually with the command `\addcontentsline{toc}{section}{section name}`.

■ RHO ENVIRONMENTS

This template has its own environment package *rhoenvs.sty* designed to enhance the presentation of information within documents. Among these custom environments are *rhoenv*, *info* and *note*.

There are two environments which have a predefined title. These can be included by the command `\begin{note}` and `\begin{info}`. All the environments have the same style.

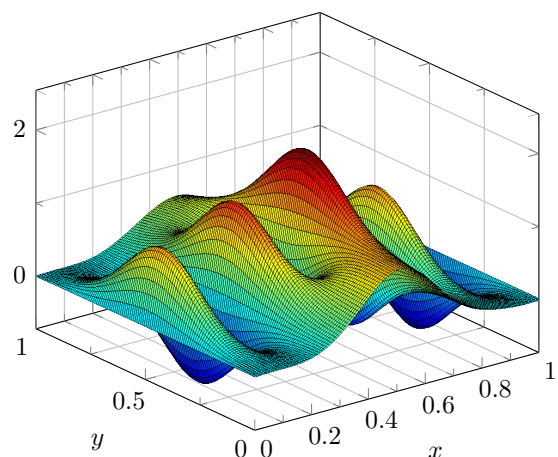An example using the rho environment is shown below.

> **Rho environment with custom title**
>
> Hello! I am an example of the *rhoenv* included in rhoenvs LaTeX package. Here you can include relevant information or notes about your work. You can modify my title directly in the code.

■ FIGURES AND TABLES

Sample figure

Figure 1 shows an example figure.

Figure 1. Example figure (obtained from *PGFPlots - A LaTeX package to create plots*. [Online]. Available: https://pgfplots.sourceforge.net/).

Sample table

Table 1, shows an example table.

■ EQUATION

Equation 1, shows the Schrödinger equation as an example.

$$\frac{\hbar^2}{2m}\nabla^2\Psi + V(\mathbf{r})\Psi = -i\hbar\frac{\partial\Psi}{\partial t} \tag{1}$$

The *amssymb* package was not necessary to include, because stix2 font incorporates mathematical symbols for writing quality equations. In case you choose another font, uncomment the package in *rho class* code.

If you want to change the values that adjust the spacing above and below in the equations, go to *rho class-math packages* section and play with `\setlength{\eqskip}{8pt}` value until the preferred spacing is set.

■ EMBEDDED CODES

This class[1] includes the *listings* package, which offers customized features for typesetting code snippets, specially for C, C++, LATEX and Matlab. You can customize the format in *rho class* file.

```matlab
function fibonacci_sequence(num_terms)
    % Initialize the first two terms of the
    sequence
    fib_sequence = [0, 1];

    if num_terms < 1
        disp('Number of terms should be greater
    than or equal to 1.');
        return;
    elseif num_terms == 1
        fprintf('Fibonacci Sequence:\n%d\n',
    fib_sequence(1));
        return;
    elseif num_terms == 2
        fprintf('Fibonacci Sequence:\n%d\n%d\n',
     fib_sequence(1), fib_sequence(2));
        return;
    end

    % Calculate and display the Fibonacci
    sequence
    for i = 3:num_terms
        fib_sequence(i) = fib_sequence(i-1) +
    fib_sequence(i-2);
    end

    fprintf('Fibonacci Sequence:\n');
    disp(fib_sequence);
end
```
Code 1. Example of matlab code.

You may modify the syntax colors to your preference.

■ REFERENCE STYLE

The default formatting for references follows the IEEE style. At the end of the document, you will find an example of the default reference formatting [1]. You can modify the style in rho.cls file.

■ CONTACT ME

Enjoy writing with rho LATEX class ☺

Links:
🔗 https://sites.google.com/memo-notess
✉ memo.notess1@gmail.com
⊡ memo.notess

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[1]Hello there! I am a footnote :)

■ APPENDIX

Numberless section style

This code defines the numberless section.

```latex
\titleformat{name=\section,numberless}[block]
    {\color{rhocolor}\sffamily\large\
bfseries}
    {}
    {0em}
    {\tikz\draw[rhocolor, fill=rhocolor]
(0,0) rectangle (6.6pt,6.6pt); \hspace{2.5pt
} {#1}}
    []
```
Code 2. Numberless section code.

If you do not want the numberless sections displays the square, make the following modification.

```latex
\titleformat{name=\section,numberless}[block]
    {\color{rhocolor}\sffamily\large\
bfseries}
    {}
    {0em}
    {#1}
    []
```
Code 3. Modification for numberless section code.

Article information

As mentioned before, the abstract and corresponding author are automatically displayed together and are defined by this code.

```latex
\newcommand{\rhocontent}{
    \ignorespaces
    {
    {\absheadfont\bfseries\abstractname}\vskip
0.5em\absfont\theabstract
    \vskip10pt
    {\keywordsfont\keywordname}\hspace*{0.1em} \
keywordsfont \@keywords%
    \vskip10pt
    \rhoinfo
    }
}
```
Code 4. Modification for numberless section code.

If you do not want the corresponding author section to appear and only the abstract to be displayed, you can make the following modification.

```latex
\newcommand{\rhocontent}{
    \ignorespaces
    {
    {\absheadfont\bfseries\abstractname}\vskip
0.5em\absfont\theabstract
    \vskip10pt
    {\keywordsfont\keywordname}\hspace*{0.1em} \
keywordsfont \@keywords%
    }
}
```
Code 5. Modification for numberless section code.

■ REFERENCES

[1]   A. Einstein, "Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]", *Annalen der Physik*, vol. 322, no. 10, pp. 891–921, 1905. DOI: http://dx.doi.org/10.1002/andp.19053221004.

Table 1. Table example

Day	Min Temp	Max Temp	Summary
Monday	11°C	22°C	A clear day with lots of sunshine. However, the strong breeze will bring down the temperatures.
Tuesday	9°C	19°C	Cloudy with rain, across many northern regions. Clear spells across most of Scotland and Northern Ireland, but rain reaching the far northwest.
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*, 2023. [Online]. Available: https://en.wikibooks.org/wiki/LaTeX/Tables