Homework 5

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Abstract

The abstract summarizes this article. It should be concise and less than two hundred words.The abstract includes a description of the purpose of the article, a recap of the claim for novelty, brief description of methods, results and conclusions. Use the past tense and make the abstract stand alone. The abstract should agree with the text.

Contents

1 Introduction

For a research article the introduction section is usually less than two pages. We generally include citations of particularly relevant works [1]. The citations are expressed in "bibtex" format, kindly provided these days by google scholar.

2 Methods

In this section we typically discuss how we describe the methods (numerical, experimental,...) that we use to obtain the results to back up the claims in this article. For instance if we wish to describe a new approach to evaluating the Taylor series, given by

$$T_N(x) = f(0) + f'(0)x + f''(0)\frac{x^2}{2!} + \text{stuff}\,, \tag{1}$$

then it would be natural to introduce and describe it here.

We could have also used

$$T_N(x) = f(0) + f'(0)x + f''(0)\frac{x^2}{2!} + \text{stuff},$$

For shorter mathematical expressions we could use the math expression environment delimited by the dollar signs `$\sin(x)$` which yields $\sin(x)$.

3 Analysis of Methods

4 Results

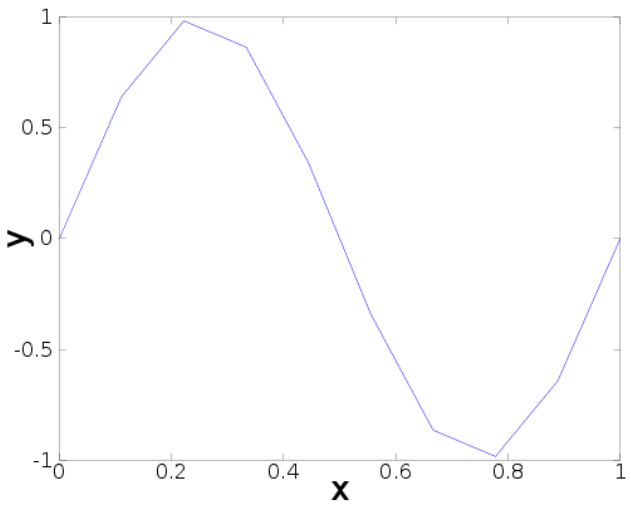

Figure 1: A graph of the sine function.

5 Conclusion

6 Appendix

Material that does not belong in the body of the text, for instance code included for completeness should be relegated to the appendix.An example is given in Listing 1.

```
1
2 #include <stdio.h>
3
4 main(){
5
6   printf("hello world\n");
7
8 }
```

Listing 1: hello world

To include a raw file use the `verbatiminput` command.

```
\documentclass[a4paper,10pt]{article}
%\usepackage[utf8x]{inputenc}

\usepackage{graphicx}
\usepackage{hyperref}
\usepackage{listings}
\usepackage{color}
\usepackage{verbatim}

\hypersetup{colorlinks=true}

\definecolor{lightgray}{rgb}{0.95,0.95,0.95}

\lstset{ %
language=C,                     % the language of the code
numbers=left,                   % where to put the line-numbers
numberstyle=\footnotesize,      % the size of the fonts that are used for the line-numbers
stepnumber=1,                   % the step between two line-numbers. If it's 1, each line
                                % will be numbered
numbersep=5pt,                  % how far the line-numbers are from the code
backgroundcolor=\color{lightgray},  % choose the background color. You must add \usepackag
showspaces=false,               % show spaces adding particular underscores
showstringspaces=false,         % underline spaces within strings
showtabs=false,                 % show tabs within strings adding particular underscores
frame=single,                   % adds a frame around the code
tabsize=2,                      % sets default tabsize to 2 spaces
captionpos=b,                   % sets the caption-position to bottom
breaklines=true,                % sets automatic line breaking
breakatwhitespace=false,        % sets if automatic breaks should only happen at whitespac
title=\lstname,                 % show the filename of files included with \lstinputlistin
```

```
escapeinside={\%*}{*)},          % if you want to add a comment within your code
morekeywords={*,...},            % if you want to add more keywords to the set
keywordstyle=\color{red},
framexleftmargin=20pt,
framexrightmargin=20pt,
}

%opening
\title{Homework 5}
\author{A. Student}

\begin{document}

\maketitle

\begin{abstract}
The abstract summarizes this article. It should
be concise and less than two hundred words.The abstract
includes a description of the purpose of the article,
a recap of the claim for novelty, brief description
of methods, results and conclusions. Use the
past tense and make the abstract stand alone. The
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\end{abstract}

\tableofcontents

\section{Introduction}

For a research article the introduction section is usually
less than two pages. We generally include citations of particularly
relevant works \cite{hesthaven2008nodal}. The citations are expressed in ‘‘bibtex’’
format, kindly provided these days by \href{http://scholar.google.com}{google scholar}.


\section{Methods}

In this section we typically discuss how we describe the methods
(numerical, experimental,...) that we use to obtain the results
to back up the claims in this article. For instance if we wish
to describe a new approach to evaluating the Taylor series,
given by
\begin{equation}
T_N(x) = f(0) + f’(0)x + f’’(0)\frac{x^2}{2!} + \mbox{stuff} \; ,
\end{equation}
then it would be natural to introduce and describe it here.

We could have also used
\[
 T_N(x) = f(0) + f’(0)x + f’’(0)\frac{x^2}{2!} + \mbox{stuff},
```

```
\]

For shorter mathematical expressions we could use the
math expression environment delimited by the
 dollar signs \verb|$\sin(x)$| which yields $\sin(x)$.

\section{Analysis of Methods}

\section{Results}

\begin{figure}[ht!]
 \centering
\includegraphics[width=4in]{./graph.pdf}
 % graph.pdf: 612x792 pixel, 72dpi, 21.59x27.94 cm, bb=0 0 612 792
 \caption{A graph of the sine function.}
 \label{fig:graph}
\end{figure}


\section{Conclusion}

\section{Appendix}

Material that does not belong in the body of the text, for instance code
included for completeness should be relegated to the appendix.An example
is given in Listing \ref{lst:helloworld}.
\lstinputlisting[language=C, caption=hello world, label=lst:helloworld]{helloworld.c}

To include a raw file use the \verb|verbatiminput| command.
\verbatiminput{main.tex}

\bibliographystyle{plain}
\bibliography{main}

\end{document}
```

References

[1] J.S. Hesthaven and T. Warburton. *Nodal discontinuous Galerkin methods: algorithms, analysis, and applications*, volume 54. Springer Verlag, 2008.