Guidelines for writing a BEP paper in LaTeX

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Abstract— **The abstract contains a concise summary of your research. It usually contains the motivation, the objective(s) of this research or design project, the approach taken and main methods used, the main results and main conclusions. The abstract should not contain any new information that was not reported in the paper itself.**

I. LAYOUT OF BEP PAPER

This document contains guidelines for the layout and structure of the BEP paper. The original version was written by W.-P. Breugem, BEP coordinator of the P&E department, and later adapted to LaTeX by S.C. Bregman. The `ieeeconf` package is used to format the document.

A. Layout guidelines

In this subsection the guidelines for the layout are given.

- The BEP paper has to be written in English.
- Minimum number of pages = 6, maximum number is 10.
- The formatting is taken care of by the `ieeeconf`-package, please do not change this.

B. Including figures and tables

Put captions under figures and tables, which can be done by using the `caption`-command. Never include a figure or table in the paper without any reference to it in the text. An example of a figure is shown in Fig. 1 and an example of a table is Table I (by the way, the '∼' symbol is used to add a space between two words, but to prevent them being on different lines). In general LaTeX will put the figures and tables on the *best* place it can find, near the text where it is inserted in the `tex` code. As a rule of thumb, try to make sure that a figure or table ends up on the same (or if not possible, the next) page as where you refer to it for the first time.

1) Figures: A figure is included using some specific commands, see Fig. 1. Many kinds of image file formats are supported, such as:

1) Portable network graphics (PNG)
2) Joint Photographic Experts Group (JP(E)G)
3) Portable Document Format (PDF)
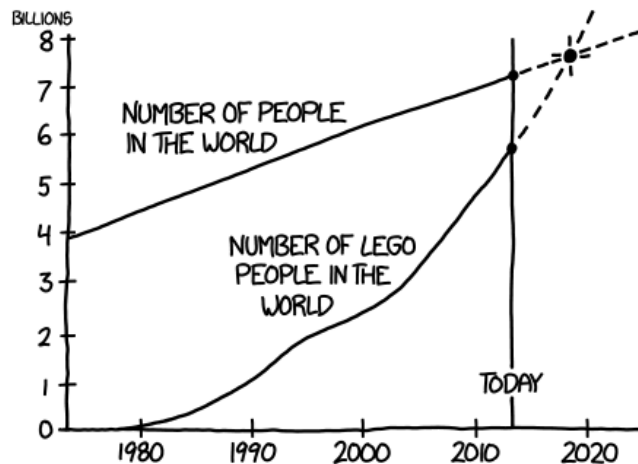4) Etcetera (BMP, EPS, PS, ...).

Fig. 1. Natural people will be outnumbered soon. When writing papers, it is good practice to create figures that are useful when printed in one column. Try to make sure that text and / or numbers within your figure are readable when printed in this size.

TABLE I

AN EXAMPLE OF A TABLE

One	Two	Three	Four
Five	Six	Seven and Eight	

2) Tables: Tables are included in a document using some specific commands as well, see Table I. For constructing tables with complex shapes, try to search the web for instance for '`latex table`'. By the way, the 'table' and 'figure' environments decide for themselves what the best position is, in most cases this will be on the top of some column. One can force such 'floating' environments to be placed where they are entered in the text by adding '[h]' directly after the environment declaration:

II. EQUATIONS

LaTeX is especially suited for editing and printing complex equations, such as the one in (1)[1].

$$L' = L\sqrt{1 - \frac{v^2}{c^2}} \qquad (1)$$

Equations / math can be entered in various ways, including more than one line at a time, using 'align' (2a, 2b). This can

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Here you could add contact information, through which the interested reader may contact the author(s), such as `info@tudelft.nl`

[1]This "(1)" is the preferred way of refering to equations / mathematical expressions that are numbered.

be done with or without a `subequations` environment:

$$\dot{x_1} = 2x_1 + \mu x_2 \tag{2a}$$
$$\dot{x_2} = x_1 + \alpha \sin(x_2) \tag{2b}$$

Or, as in (3) and (4):

$$f(x) = ax^2 + bx + c \qquad g(x) = dx^3 \tag{3}$$
$$f'(x) = 2ax + b \qquad g'(x) = 3dx^2 \tag{4}$$

In general, see `https://en.wikibooks.org/wiki/LaTeX` for many more examples on how to include math in your document. Two last tips: when you use some functions that are described by letters (such as the sinus, or logarithm), always start them with a slash. Otherwise the letters will look like variables: $y = \sin(x)$ or $y = sin(x)$ (by the way, the dollar signs let you use math outside of the official *equations*-environments). The other tip is to always (always!) declare the variables that you use somewhere in your text, either in a small (sub) section following your introduction, or where ever you first use them.

III. REFERENCES

There are many ways to include references in your LATEX document, such as [1]. In this template we use *BibTex*, which is one of the more automated ways of taking care or your referencing. Notice that when you change the `paper.bib`-file, you need to run `bibtex paper` in order to include the changes that you have made in the document. When you use a proper editor for writing your LATEX -document, this will probably be taken care of automatically.

References are listed at the end of the paper. Never put a reference in the list of references without referencing to it in the text, and try to use references that make sense to include in your document [2].

IV. STRUCTURE OF BEP PAPER

This section gives guidelines for the structure of the BEP paper. A scientific paper/report usually contains the following elements:

1) An introduction section:
- Give a motivation for the present study and some background information when necessary: what is the relevance of your project from a societal, environmental, political and/or economic point of view?
- What is the relevance of the project from a scientific point of view? Briefly review the literature: what has already been done and what are open questions?
- Formulate the scientific objectives of the present study. What are the questions that you want to answer and/or what are the hypotheses you want to check?
- How are you going to reach your goal(s) or going to answer your research question(s)? Give a concise and brief description of the approach taken / the methodology used. You will discuss this further in a separate section later on in the paper.

- Briefly describe the setup / sections of the paper.
- Mention at the end of the introduction that this research / design study has been conducted as part of the Bachelor End Project for Mechanical Engineering students at the TU Delft in the third year of their Bachelor studies.

2) Theory: You can provide here background theory that is relevant for your project and that you need for the analysis of the data / to answer your research questions.

3) Methods: Describe here the methods used, the experimental setup, the measurement procedure, the procedure for processing of data, etc.

4) Results: Show and discuss your results; check your hypotheses and answer your research questions.

5) Discussion: You may want to include a separate discussion section in your paper to put the results in a bigger picture (comparison with other studies reported in literature, implications, to propose a new conceptual picture of underlying physical mechanisms of the observations made, etc), to discuss shortcomings of the present study, to provide an error analysis, among others.

6) Conclusions and recommendations:
- Give a summary of the conclusions here. Make connection with the objective(s) and the research questions mentioned in the introduction section.
- Provide recommendations for future research.

V. CLOSING REMARKS

- The guidelines for the structure of the BEP paper are not absolute, but indicative only. You may have good reasons to deviate from it. There is no unique format for writing a scientific paper. It also depends on whether your project is a research or design project.
- It is advisable to first write the abstract when you start writing the BEP paper and to make the figures you would like to put in the paper. This helps you to keep focus and to get a fluent story line.
- When you have finished the first draft of the paper, carefully check spelling, references, figure/table captions, explanation of symbols, etc. Writing is usually an iterative process and the last version may deviate quite a bit from the first draft!
- Ask your supervisors for feedback! They presumably have a lot of experience with writing a scientific paper.

ACKNOWLEDGEMENTS

Acknowledge here your supervisor(s) and others who contributed to this research / design project. Note: don't put a section number in front of the Acknowledgements (by using an asterisk (*) between 'section' and the title of the section).

REFERENCES

[1] S. T. Abedon, P. Hyman, and C. Thomas, "Experimental examination of bacteriophage latent-period evolution as a response to bacterial availability," *Applied and Environmental Microbiology*, vol. 69, pp. 7499–7506, 2003.

[2] A. Einstein, B. Podolsky, and N. Rosen, "Can quantum-mechanical description of physical reality be considered complete?" *Physical Review*, vol. 47, no. 10, p. 777, 1935.