

Buckling and dynamic collapse of the bicycle wheel

M. Ford^{*}, J.M. Papadopoulos[#], O. Balogun[†]

^{*} Department of Mechanical Engineering
Northwestern University
2145 Sheridan Road, Evanston, IL 60208, USA
e-mail: mford@u.northwestern.edu

[#] Department of Mechanical and Industrial Engineering
Northeastern University
360 Huntington Ave., Boston, MA 02115, USA
e-mail: j.papadopoulos@neu.edu

[†] Department of Civil Engineering
Northwestern University
2145 Sheridan Road, Evanston, IL 60208, USA
e-mail: o.balogun@northwestern.edu

ABSTRACT

The first page begins with the title of the paper, the authors, affiliations, abstract and keywords as it is shown in this document. The title of the paper should be typed in 14 pt bold font and be centred. It should be separated from the symposium name by a 12 pt space and from authors' names by an 18 pt space. Authors' names should be typed in bold font. Affiliations should be typed in a general formatting style, centred within a corresponding bounding box. The abstract part of the final paper should not be longer than about 300 words, so it fits on the title page. The abstract begins with the "ABSTRACT" header typed in bold 11 pt font. The abstract text should be separated from the header by an 11 pt space. The abstract should be followed by a list of keywords after the header "Keywords:" typed in bold 11 pt font. The keywords should be separated by commas. A dot should be placed after the last keyword. Up to about five keywords are allowed. Title, affiliations, abstract and keywords have to fit on the title page. The Introduction paragraph may start already on the title page provided there is enough space.

Keywords: guidelines for authors, template, final symposium paper, formatting instructions.

1 INTRODUCTION

All text should be written in 11 pt Times New Roman font. General text should be justified and divided into logical paragraphs separated by 11 pt spaces. Single line spaces are required. All section headers except abstract and references header should be numbered with Arabic numbers without a trailing dot. Top level headers should be typed in capital characters. Subsections should be numbered with multilevel numbering. A maximum of two sublevels is allowed. Subheaders should be typed in normal word case. Font size of 11 pt should be used if not specified otherwise.

2 GENERAL INSTRUCTIONS

The paper must be written in English. It must contain the full name, address and e-mail address of each author. No hard limits on the total length of the paper are set, but it should better not exceed

20 pages. All page margins should be 3 cm. The paper used should have the size 210 x 297 mm which is the European (German) A4 size. It is suggested to use styles for formatting and automatic reference, figure numbering to avoid editorial errors. To avoid compatibility problems it is advised to use only upper or lower case Latin alphabet, numbers and the underscore character in the file name.

2.1 Equations

Equations should be numbered continuously according to the format shown in Equation (1):

$$e^{i\pi} + 1 = 0, \quad (1)$$

where the unknown symbols are explained after the equation.

2.2 Figures and tables

Table 1. Example of a table with a short caption.

	x	y	z
x'	α_1	β_1	γ_1
y'	α_2	β_2	γ_2
z'	α_3	β_3	γ_3

All figures should be clearly readable and relevant to the presented text. Use of at least 300 dpi resolution for pictures and 600 dpi for line art is required, 1 px wide lines in figures should be avoided as they may become invisible in print. There is no limit on the amount of figures as long as they do not dominate the text and the total length of the paper is within the specified limits. Both figures and tables should be centred on the page.

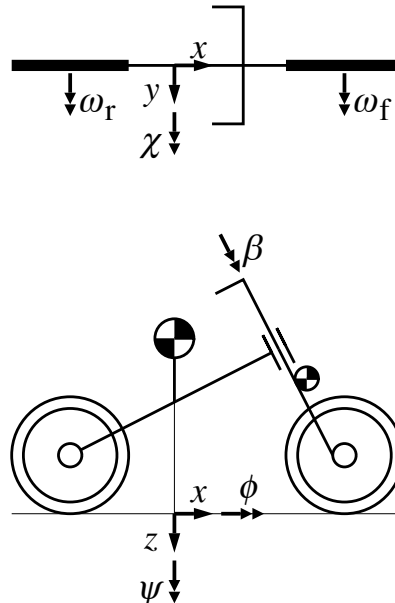


Figure 1. An example of a figure caption. Use 10 pt Times New Roman. For long captions, use a text width of 13 cm. Use the same style for the tables.

Figures, graphs and tables must be included in the same style as shown for Figure 1 and Table 1.

2.3 References

Bibliographical citations should be written in the order in which they are cited, see the References section below, where Reference [1] exemplifies the case of a textbook, while Reference [2] is an article in conference proceedings and Reference [3] is an article in a journal. Use can be made of a pre-existing bibtex style which uses a similar style.

3 SUBMISSION OF PAPER

The paper should be submitted by e-mail to jbrendelson@bmd2016mke.org with the email subject containing the phrase “*BMD 2016 paper submission - submitting author last name*”. The deadline is September 1st, 2016. The file of the paper must be in the Portable Document Format (PDF) and the file size should be within the limit of 10 MB. Exceptionally, other file formats can be accepted if the symposium organizers have been informed beforehand.

Please make sure that the final version of the paper complies with the standards set here. Please note slightly different formatting requirements of the abstract and the final paper.

4 CONCLUSIONS

We very much look forward to welcoming you in Milwaukee! Best wishes and the warmest regards from the Organizing Committee of Bicycle and Motorcycle Dynamics 2016.

REFERENCES

- [1] H. B. Pacejka, *Tyre and Vehicle Dynamics*, Butterworth and Heinemann, Oxford, 2002.
- [2] E. Bertolazzi, F. Biral, M. Da Lio and V. Cossalter, “The influence of rider’s upper body motions on motorcycle minimum time maneuvering”, in C. L. Bottasso, P. Masarati and L. Trainelli (eds), *Proceedings, Multibody Dynamics 2007, ECCOMAS Thematic Conference*, Milano, Italy, 25–28 June 2007, Politecnico di Milano, Milano, 2007, 15 pp.
- [3] R. S. Sharp, “The stability and control of motorcycles”, *Proceedings of the IMechE, Part C, Journal of Mechanical Engineering Science* **13** (1971), pp. 316–329.