

Writing an Article for Technische Mechanik Journal

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Abstract: Each contribution should be preceded by an concise and factual abstract (ca. 200 words) that summarizes the content. The abstract should state briefly the purpose of the research, the principal results and major conclusions. It will appear *online* at www.ovgu.de/techmech, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. Please use the `abstract` environment for typesetting the text of the abstracts (cf. source file of this template) and include them with the source files of your manuscript.

Keywords: Please provide a maximum of 6 comma-separated keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

1 General Information

1.1 About Technische Mechanik

Technische Mechanik (TechMech) is a scientific journal for fundamentals and applications of engineering mechanics and publishes peer-reviewed articles on the latest advances and progresses in mechanics science and technology. It aims to disseminate new knowledge to the broad mechanics community in a timely fashion with a rapid review and publication process. TechMech accepts manuscripts reporting creative concepts and new findings in design, state-of-the-art approaches in processing, synthesis, characterization and mechanics modeling. In addition survey and educational articles are encouraged.

The journal is endorsed by the Otto von Guericke University Magdeburg ([OvGU](http://www.ovgu.de)) and the Magdeburg Association for Engineering Mechanics ([MATEM](http://www.matem.de)).

1.2 TechMech template

This template helps you to create a properly formatted \LaTeX manuscript. (Word templates are not accepted anymore!) Thereby, the `techmech` document class was developed to format \LaTeX articles for submissions to the **Technische Mechanik** journal. Therefore, knowledge of \LaTeX is a prerequisite! However, please do not make any changes at the article class file (`techmech.cls`) or affiliated bibliography style files (`natbib.sty` and `kbib.bst`). Note the following.

- Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- Author names and affiliations. Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a superscript numeral immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the E-mail address of each author.
- Corresponding author. Clearly indicate who will handle correspondence at all stages of reviewing and publication, also post-publication. Ensure that the E-mail address is given and that contact details are kept up to date by the corresponding author.
- Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address.

Please write your text in good English (American or British usage is accepted, but not a mixture of these).

The following points would be helpful when structuring your manuscript.

- Introduction
- Material and methods
- Theory/calculation
- Results
- Discussion
- Conclusions

2 Text Segments

For typesetting numbered lists, we recommend to use the `enumerate` environment – it will automatically render **Technische Mechanik**'s preferred layout.

1. Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.
 - (a) Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.
 - (b) Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.
2. Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.

For unnumbered lists, we recommend to use the `itemize` environment – it will automatically render **Technische Mechanik**'s preferred layout also.

- Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development, cf. Table
 - Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.
 - Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.
- Livelihood and survival mobility are oftentimes outcomes of uneven socioeconomic development.

Please do not use quotation marks when quoting texts! Simply use the `quotation` environment – it will automatically render the journals preferred layout.

Refer to figures, tables and equations in the text as Fig. 1, Tab. 1 or Eq. (1).

3 Mathematical Expressions

3.1 General Remarks

Please do not submit math equations as images. Present simple formulas in line with normal text where possible by using the Dollar-Symbol (\$). Use formula environments like `equation`, `align`, or `alignat` for more complex mathematical expressions. These environments are left aligned.

$$\frac{d}{dt} \left(\int_{\Omega} \rho \eta \, dV \right) \geq \int_{\partial\Omega} \rho \eta (u_n - \mathbf{v} \cdot \mathbf{n}) \, dA - \int_{\partial\Omega} \frac{\mathbf{q} \cdot \mathbf{n}}{T} \, dA + \int_{\Omega} \frac{\rho s}{T} \, dV \tag{1}$$

In principle, variables are to be presented in italics. Units and operators are to be presented in upright letters. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

In order to tackle the wild growth of various notations in the field of mechanics, we introduce a (essential) uniform notation in our journal. Thereby we divide between Tensor and Vector-Matrix Notation.

Tab. 1: Please write your table caption here

Classes	Subclass	Length	Action Mechanism
Translation	mRNA ^a	22 (19–25)	Translation repression, mRNA cleavage
Translation	mRNA cleavage	21	mRNA cleavage
Translation	mRNA	21–22	mRNA cleavage
Translation	mRNA	24–26	Histone and DNA Modification

3.2 Tensor Notation

The following commands are introduced for Tensors.

0th order tensors `a, A` a, A – , italic, normal font weight

1st order tensors `\tena{a}` \mathbf{a} lowercase, italic, bold

2nd order tensors `\tenb{A}` \mathbf{A} uppercase, italic, bold

4th order tensors `\tend{A}` \mathbb{A} uppercase, upright, black board bold

Thus we can give equations as follows.

$$\rho \ddot{\mathbf{u}} = \nabla \cdot \mathbf{T} + \rho \mathbf{b} \quad (2)$$

$$\mathbf{T} = \mathbb{C} : \mathbf{E} \quad \mathbb{C} = 2\mu \mathbb{I}^{\text{sym}} + \lambda \mathbf{I} \otimes \mathbf{I} \quad (3)$$

$$\mathbf{E} = \nabla^{\text{sym}} \mathbf{u} \quad (4)$$

These restrictions should be sufficient for most of the work. However, if tensors of further orders are necessary, they should be defined in an analogous manner and applied consistently.

3.3 Vector-Matrix Notation

In Vector-Matrix Notation, we use following specifications.

vectors `\vek{a}` \mathbf{a} lowercase, upright, sans serif, bold

matrices `\mat{A}` \mathbf{A} uppercase, upright, sans serif, bold

The following description is thus achieved.

$$\mathbf{K} \mathbf{u} = \mathbf{r} \quad (5)$$

$$\begin{bmatrix} K_{11} & K_{12} & K_{13} \\ K_{21} & K_{22} & K_{23} \\ K_{31} & K_{32} & K_{33} \end{bmatrix} \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} = \begin{bmatrix} r_1 \\ r_2 \\ r_3 \end{bmatrix} \quad (6)$$

If necessary, one can declare the size of a matrix by $\mathcal{R}^{m \times n}$ where m is the number of rows and n is the number of columns.

3.4 Sets, Groups, and Spaces

Please use calligraphic letters and compilations thereof like $\mathcal{R}, \mathcal{N}, \mathcal{F}, \mathcal{L}, \mathcal{I}, \mathcal{U}, \mathcal{S}, \mathcal{K}, \mathcal{O}$ or \mathcal{O} as they are reserved for sets, groups, and spaces. However, with the aid of these designators we can specify tensors like $\mathbf{T} \in \mathcal{S}$.

4 Figures

Graphics and diagrams created as vector graphics should be submitted in `eps` or `pdf` with fonts embedded. However, all figures should be prepared carefully. It is of high importance that all illustrations are clear and legible. Figures submitted in color will appear in color. However, for maximum clarity, use different fill patterns, such as cross hatches, rather than shades of gray, to differentiate elements in a figure or chart. Scanned graphics and diagrams should be saved as `.png` with a minimum resolution of 1200 dpi. The lettering in figures should use the same typeface and font sizes as applied in the text.

Please **do not**:

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and a limited set of colors;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

Technische Mechanik is not accepting any advanced constructions created for example with `TikZ`, `pgfplots` or `pstricks` in the main file. Please create these figures in a subfile and include resulting graphic into the main file.

When typesetting figures, put them at the top or at the bottom of a page, exceptionally. In no circumstances, figures should be placed in the middle of a page. Avoid pages with only one or two images placed on. These points also hold true for tables.

5 Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

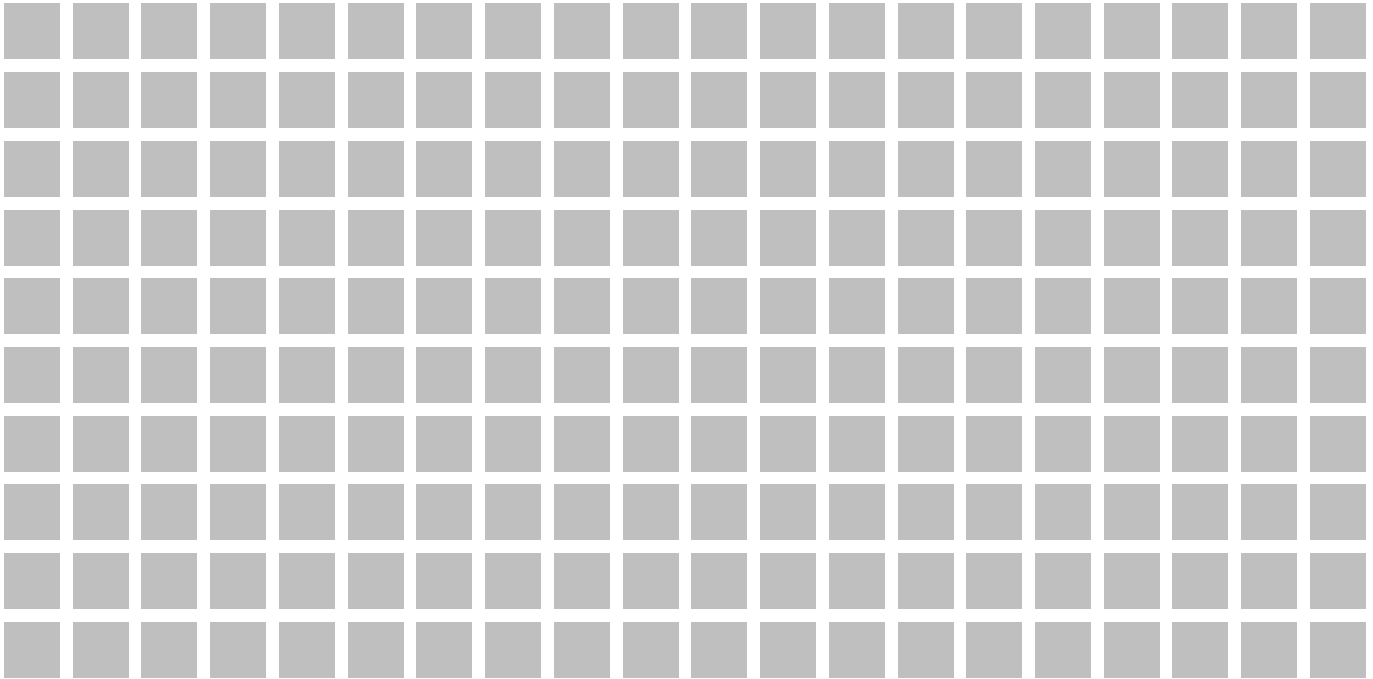


Fig. 1: A more advanced example graphic created with the `picture` environment

6 Referencing

A BibTeX style file for preparation of the list of references according to the style guidelines is provided along with this template. Use of BibTeX is strongly recommended. Do citations as in natbib, e.g. in the standard way: [Author \(2000\)](#). Where “author:2000” corresponds to a label defined in the bibtex file

- conference contribution [Rychlewski \(2000\)](#)
- journal article [Einstein \(1905\)](#)
- book contribution [Truesdell and Toupin \(1960\)](#)
- book [Eringen \(1999\)](#)
- etc.

At the end of the text, the list of references, headed "References", is arranged alphabetically.

7 Packages already loaded

In the sequel we list the package already loaded in present document class to avoid any clashes.

- | | | |
|-------------|-------------|-------------|
| • microtype | • xcolor | • pict2e |
| • multicol | • graphicx | • caption |
| • calc | • tabularx | • mathtools |
| • geometry | • microtype | • amssymb |
| • natbib | • enumitem | • hyperref |

If one needs to add package options to these packages, one has to pass the options with `\PassOptionsToPackage{option}{package}` before `\documentclass{techmech}`. If necessary, additional packages can be loaded in the preamble as usual.

Acknowledgment and Funding Information

Collate acknowledgments in a separate, *unnumbered* section (`\section*{Acknowledgement}`) at the end of the article before the appendix and do not include them as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

List funding sources in this standard way to facilitate compliance to funder’s requirements: *This work was supported by the Charité university hospital (grant numbers xxxx, yyyy), the Rainer Lemoine Foundation (grant number zzzz), and the German Research Foundation (grant number aaaa)*. It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding. If no funding has been provided for the research, please include the following sentence: *This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors*.

8 Submission process

You can use the following list to carry out a final check of your submission before you send it to the journal for review. Ensure that the following items are present.

8.1 Necessary Data

One author have to be designated as the corresponding author with following contact details:

- E-mail address
- Full postal address

8.2 Necessary Files

Necessary files to be submitted are as follows:

- Cover letter addressed to the editor-in-chief
- Manuscript (pdf version)
- zip-file of your whole directory used to create the L^AT_EX-Manuscript including
 - original figure files
 - further style-files (if needed)
 - final versions of your figures should be renamed like fig-1.fileype, fig-2.filetype, fig-3.filetype, etc.

8.3 Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the reference list are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
-
- Referee suggestions and contact details provided, based on journal requirements

8.4 Referees

Please submit the names, postal addresses and institutional E-mail addresses of min. 2 potential referees. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

8.5 Submission

Please submit all data mentioned above to technische.mechanik@ovgu.de.

Appendix

A.1 First subsection of the appendix

If there is more than one appendix, they should be identified as A.1, A.2, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1) etc. Similarly for tables and figures: Tab. A.1; Fig. A.1, etc.

$$K u = r \tag{A.1}$$

References

A. Author. Example article. *Technische Mechanik*, 2000.

A. Einstein. Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig? *Annalen der Physik*, 323(13):639–641, 1905. doi: [10.1002/andp.19053231314](https://doi.org/10.1002/andp.19053231314).

Tab. A.1: Please write your table caption here

Classes	Subclass	Length	Action Mechanism
Translation	mRNA ^a	22 (19–25)	Translation repression, mRNA cleavage
Translation	mRNA cleavage	21	mRNA cleavage
Translation	mRNA	21–22	mRNA cleavage
Translation	mRNA	24–26	Histone and DNA Modification

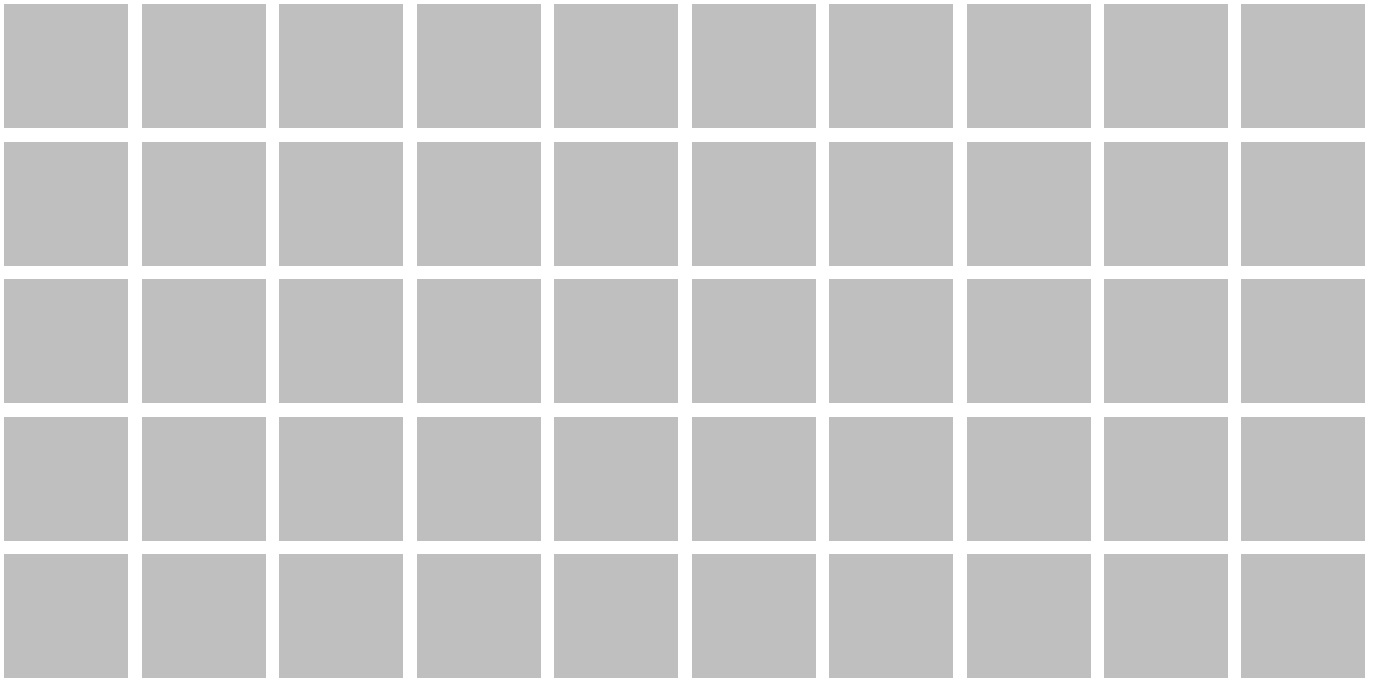


Fig. A.1: A figure in the appendix

- A. C. Eringen. *Microcontinuum Field Theories I. Foundations and Solids*. Springer, New York, 1999. doi: [10.1007/978-1-4612-0555-5](https://doi.org/10.1007/978-1-4612-0555-5).
- J. Rychlewski. On the detectability of constitutive laws in solid mechanics and physics. In *Proceedings of the Symposium on Trends in Application of Mathematics to Mechanics*, pages 185–191, 2000. doi: [10.1145/1217935.1217951](https://doi.org/10.1145/1217935.1217951).
- C. Truesdell and R. A. Toupin. The Classical Field Theories. In S. Flügge, editor, *Encyclopedia of Physics - Principles of Classical Mechanics and Field Theory*, volume 2/3/1, pages 226–858. Springer, Berlin · New York, 1960. doi: [10.1007/978-3-642-45943-6_2](https://doi.org/10.1007/978-3-642-45943-6_2).