Article Title

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Abstract

The abstract serves both as a general introduction to the topic and as a brief, non-technical summary of the main results and their implications. Authors are advised to check the author instructions for the journal they are submitting to for word limits and if structural elements like subheadings, citations, or equations are permitted.

Keywords: keyword1, Keyword2, Keyword3, Keyword4

1 Introduction

The Introduction section, of referenced text [1] expands on the background of the work (some overlap with the Abstract is acceptable). The introduction should not include subheadings.

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2 Results

Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text.

3 This is an example for first level head—section head

3.1 This is an example for second level head—subsection head

3.1.1 This is an example for third level head—subsubsection head

Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text. Sample body text.

4 Equations

Equations in LyX can either be inline or on-a-line by itself ("display equations"). The equation $H\psi = E\psi$ is inline. For display equations (with auto generated equation numbers) one can use the EQUATION or EQNARRAY environments:

$$\|\tilde{X}(k)\|^2 \leq \frac{\sum_{i=1}^{p} \left\|\tilde{Y}_i(k)\right\|^2 + \sum_{j=1}^{q} \left\|\tilde{Z}_j(k)\right\|^2}{p+q} \tag{1}$$

where

$$D_\mu = \partial_\mu - ig\frac{\lambda^a}{2}A^a_\mu$$
$$F^a_{\mu\nu} = \partial_\mu A^a_\nu - \partial_\nu A^a_\mu + gf^{abc}A^b_\mu A^a_\nu \tag{2}$$

$$Y_\infty = \left(\frac{m}{\text{GeV}}\right)^{-3}\left[1 + \frac{3\ln(m/\text{GeV})}{15} + \frac{\ln(c_2/5)}{15}\right]$$

Commands like $\mathbb{R}$, $\mathscr{R}$, $\mathcal{R}$ are also supported.

5 Tables

Tables can be inserted via the normal table and tabular environment.

Table 1 Caption text

Column 1	Column 2	Column 3	Column 4
row 1	data 1	data 2	data 3
row 2	data 4	data 5[1]	data 6
row 3	data 7	data 8	data 9[2]

Source: This is an example of table footnote.
This is an example of table footnote.

[1]Example for a first table footnote.

[2]Example for a second table footnote.

Table 2 Example of a lengthy table which is set to full textwidth

	Element 1[1]			Element 2[2]		
Project	Energy	σ_{calc}	σ_{expt}	Energy	σ_{calc}	σ_{expt}
Element 3	990 A	1168	1547±12	780 A	1166	1239±100
Element 4	500 A	961	922±10	900 A	1268	1092±40

Note: This is an example of table footnote. This is an example of table footnote this is an example of table footnote this is an example of~table footnote this is an example of table footnote.

[1]Example for a first table footnote.

[2]Example for a second table footnote.

Table 3 Example of a rotated large table

	Element 1[1]			Element 2[2]		
Project	Energy	σ_{calc}	σ_{expt}	Energy	σ_{calc}	σ_{expt}
Element 3	990 A	1168	1547±12	780 A	1166	1239±100
Element 4	500 A	961	922±10	900 A	1268	1092±40
Element 5	990 A	1168	1547±12	780 A	1166	1239±100
Element 6	500 A	961	922±10	900 A	1268	1092±40

Note: This is an example of table footnote. This is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote.

[a]Example for a first table footnote.

[b]Example for a second table footnote.

6 Figures

Figures are included as usual

```
\includegraphics[options]{<eps-file>}
```

Figure 1 This is a widefig. This is an example of long caption this is an example of long caption this is an example of long caption this is an example of long caption

7 Cross referencing

Environments such as figure, table, equation and align can have a label declared, using the LyX "insert label" function. For figures and table environments put the label inside the caption. You can refer to labels by using the "Insert cross reference" function. Examples: Fig. 1, eq. (2), (1) on page 3, Figure 1 on page 5 on this page, Section Results, label sec:Results.

To reference line numbers in an algorithm, consider the label declared for the line number 2 of Algorithm alg:exp is `algln2`. To cross-reference it, use ERT, e.g. line ?? of Algorithm ??.

7.1 Details on reference citations

To support both numerical and author-year citations this template uses NATBIB package. For style guidance please refer to the template user manual.

Here is an example of citation: [1]. All cited bib entries are printed at the end of this article: [2, 3, 4, 5], refs. 6, 7, 8, [9, 10, 11].

8 Discussion

Discussions should be brief and focused. In some disciplines use of Discussion or Conclusion is interchangeable. It is not mandatory to use both. Some journals

prefer a section Results and Discussion followed by a section Conclusion. Please refer to Journal-level guidance for any specific requirements. [1][2, 6]

9 Conclusions

Conclusions may be used to restate your hypothesis or research question, restate your major findings, explain the relevance and the added value of your work, highlight any limitations of your study, describe future directions for research and recommendations.

In some disciplines use of Discussion or Conclusion is interchangeable. It is not mandatory to use both. Please refer to Journal-level guidance for any specific requirements.

Supplementary Information. If your article has accompanying supplementary file/s please state so here. Authors reporting data from electrophoretic gels and blots should supply the full unprocessed scans for key as part of their Supplementary information. This may be requested by the editorial team/s if it is missing. Please refer to Journal-level guidance for any specific requirements.

Acknowledgments. Acknowledgments are not compulsory. Where included they should be brief. Grant or contribution numbers may be acknowledged. Please refer to Journal-level guidance for any specific requirements.

Declarations

Some journals require declarations to be submitted in a standardised format. Please check the Instructions for Authors of the journal to which you are submitting to see if you need to complete this section. If yes, your manuscript must contain the following sections under the heading 'Declarations':

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- Code availability
- Authors' contributions

If any of the sections are not relevant to your manuscript, please include the heading and write 'Not applicable' for that section.

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1 Section title of first appendix

An appendix contains supplementary information that is not an essential part of the text itself but which may be helpful in providing a more comprehensive understanding of the research problem or it is information that is too cumbersome to be included in the body of the paper.

2 Example of another appendix section

Appendices may be used for helpful, supporting or essential material that would otherwise clutter, break up or be distracting to the text. Appendices can consist of sections, figures, tables and equations etc.

References

[1] Campbell, S.L., Gear, C.W.: The index of general nonlinear DAES. Numer. Math. **72**(2), 173–196 (1995)

[2] Slifka, M.K., Whitton, J.L.: Clinical implications of dysregulated cytokine production. J. Mol. Med. **78**, 74–80 (2000). https://doi.org/10.1007/s001090000086

[3] Babichev, S.A., Ries, J., Lvovsky, A.I.: Quantum scissors: teleportation of single-mode optical states by means of a nonlocal single photon. Preprint at https://arxiv.org/abs/quant-ph/0208066v1 (2002)

[4] Beneke, M., Buchalla, G., Dunietz, I.: Mixing induced CP asymmetries in inclusive B decays. Phys. Lett. **B393**, 132–142 (1997) https://arxiv.org/abs/0707.3168 [gr-gc]

[5] Stahl, B.: DeepSIP: Deep Learning of Supernova Ia Parameters, 0.42, Astrophysics Source Code Library (2020), https://ascl.net/2006.023

[6] Hamburger, C.: Quasimonotonicity, regularity and duality for nonlinear systems of partial differential equations. Ann. Mat. Pura. Appl. **169**(2), 321–354 (1995)

[7] Geddes, K.O., Czapor, S.R., Labahn, G.: Algorithms for Computer Algebra. Kluwer, Boston (1992)

[8] Broy, M.: Software engineering—from auxiliary to key technologies. In: Broy, M., Denert, E. (eds.) Software Pioneers, pp. 10–13. Springer, New York (1992)

[9] Seymour, R.S. (ed.): Conductive Polymers. Plenum, New York (1981)

[10] Smith, S.E.: Neuromuscular blocking drugs in man. In: Zaimis, E. (ed.) Neuromuscular Junction. Handbook of Experimental Pharmacology, vol. 42, pp. 593–660. Springer, Heidelberg (1976)

[11] Chung, S.T., Morris, R.L.: Isolation and characterization of plasmid deoxyribonucleic acid from Streptomyces fradiae. Paper presented at the 3rd international symposium on the genetics of industrial microorganisms, University of Wisconsin, Madison, 4–9 June 1978 (1978)