

Instructions for Using Springer’s **11ncs** Class for Computer Science Proceedings Papers

11ncs, Version 2.25, September 3, 2026

Table of Contents

1	Introduction.....	1
2	Why Instructions Matter.....	2
3	Key Principles for Authors.....	2
4	Best Practice Guidelines for L ^A T _E X Manuscripts.....	2
5	Installation.....	5
6	Working with the 11ncs Document Class.....	5
	6.1 General Information.....	5
	6.2 How to Use the 11ncs Document Class.....	5
7	How to Code the Header of Your Paper.....	6
	7.1 Title.....	6
	7.2 Author(s).....	6
	7.3 Affiliations.....	7
	7.4 Format the Header.....	7
	7.5 Abstract and Keywords.....	7
8	How to Code the Body of Your Paper.....	8
	8.1 General Rules.....	8
	8.2 Special Math Characters.....	8
9	Theorems, Definitions, and Proofs.....	8
	9.1 Predefined Theorem-Like Environments.....	8
	9.2 User-Defined Theorem-Like Environments.....	9
10	Accessibility.....	10
11	Credits and Acknowledgments.....	10
12	References.....	11
13	Submission Checklist.....	12
14	Conclusion.....	12
15	Contact Information.....	12

1 Introduction

This document is designed to help you prepare your paper in a way that minimizes typesetting delays and ensures the best possible final product across all delivery formats. Adhering to these instructions will streamline the publishing process and help to deliver your work efficiently and accurately.

2 Why Instructions Matter

While L^AT_EX offers immense flexibility, its open-source nature and potential for custom implementations can create challenges in a standardized publishing workflow. The typesetting processes rely on automated systems and a consistent format to deliver high-quality products. As your manuscript will go through the process for making various output formats like web/print PDFs, XML, e-Pub, the deviations from these instructions can lead to significant delays and increased publishing costs. By adhering to the recommendations mentioned here, you will help us to:

- maintain quality,
- ensure consistency,
- ensure content integrity,
- reduce errors.

3 Key Principles for Authors

- **Focus on Content, Not Formatting:** Focus on the clarity and accuracy of your content. Avoid spending excessive time on intricate formatting details. Our typesetting team will apply the Proceedings style specifications during the typesetting process.
- **Simple, Clean, and Consistent:** Use standard LaTeX packages and commands whenever possible. Avoid custom macros and complex formatting tricks.
- **Adherence to Proceedings Style:** Familiarize yourself with the specific style specifications of the Proceedings to which you are submitting.
- **Collaboration:** Understand that your manuscript will be transformed into multiple formats. Your cooperation in following these instructions is greatly appreciated.

4 Best Practice Guidelines for L^AT_EX Manuscripts

Please note that observing the following details in creating your manuscript will promote smooth production of your work:

- Please ensure your L^AT_EX file can be compiled without errors in a recent version of L^AT_EX. We recommend uploading the manuscript to [Overleaf](#) (free service) and running the compiler there.
- Please avoid including multiple levels of linked sub-files. Well-organized file structure and clear file names improve handling enormously.
- Please avoid macro packages which change standard layout and enumeration settings, such as `fancyhdr`, `a4wide`, `enumerate`, and `enumitem`. These will have to be replaced with standard settings during production.

- The use of `\def` is not recommended. Instead, please replace all instances with the appropriate `\newcommand`. This prevents existing commands being inadvertently replaced, producing unexpected errors (more explanation below).
- Please use standard L^AT_EX commands consistently for character emphasis, such as `\mathbb`, `\mathcal`, or `\mathfrak` and avoid including additional font-related packages such as `bbm`, `dsfonts`, `eucal`, `mathrsfs`, `mathabx`, and `mathtools`.
- The `\text{...}` command is recommended for text in math environments rather than `\mbox` or `\hbox` constructions.
- Please do not use color for emphasis in running text, particularly not the `xcolor` package (see below for further explanation). As an exception, color may be used for highlighting syntax in code listings.
- Images should always be separated from the text (using proper `\includegraphics` commands), must have a caption and must be referenced in the text. Please do not use `wrapfigure` or `subfigure`.
- Please note that where `tikz` or `xy` packages (or similar ones creating diagram-like structures) are used, the output cannot be created on the fly for all publication formats produced, but only for PDF. For all other formats, the output has to be included as an image instead (see further details below).
- Please do not use `\pageref`, as this will lead to dead links in some output formats, since page orientation is only valid for the PDF (see explanations below).
- Please avoid linking back to the manuscript from the bibliography, and do not include footnotes in the bibliography.

Why are we asking you to observe these restrictions?

We are publishing and distributing your work not only in PDF, but also in other digital/online versions such as html and epub, which are based on XML, the industry standard for data exchange. Using XML as a basis allows us to provide data to other specific interfaces such as Braille machines as well as indexing, abstracting and library services. Satisfying all the requirements of these formats dictates many of the above restrictions, as these are produced from the L^AT_EX version. The functions and packages that are not recommended in the guidelines above may work in the PDF output, but not beyond that. Although the name PDF (Portable Document Format) suggests portability, it actually depends on the output medium: a professional postscript printer might not produce the same result as a local printer at home or at a department. A prime example of the limitations is that not all aspects of the page-oriented PDF output can be mirrored in other formats. This often requires the source to be adapted to allow all output formats to be produced from it.

Examples:

- Constructs such as

$$X+nY=0 \quad \text{for all } n>0$$

will not work properly and need to be replaced manually; instead use

$$X+nY=0 \quad \text{for all } n>0$$

to avoid nesting math environments. Note that the `\text` command also adds proper horizontal spacing.

- The command `\r` is already predefined as an internal command in T_EX; if you want to define the set of real numbers and use, e.g., `\def\r{\mathbb{R}}`, this internal command is overwritten. If you use `\newcommand{\r}{\mathbb{R}}` for the same purpose, it will result in an error stating that `\r` is already defined. To avoid this, you could use `\newcommand{\R}{\mathbb{R}}` which would work well, but of course all instances of `\r` in your document need to be replaced by `\R`. Avoid using `\renewcommand`.
- Commands such as `\enlargethispage` or `\pagebreak`, etc. only work with a fixed output page size which is not valid for all formats. Such commands are then either ignored or produce strange breaks.
- Using too many fonts can produce errors in some output formats due to a restriction on the number of fonts that can be used simultaneously. Hence, please consider carefully which fonts are really needed and use these consistently in your manuscript. Also, please do not use fonts that have no proper postscript version as these cannot be handled by professional printers. Avoid the set of so-called Type 3 Postscript fonts, which sometimes occur in specific packages or in figures, as their characters will be omitted in the output. To check whether the document includes such Type 3 fonts, refer to the fonts tab in “Document Properties” in [Adobe's Acrobat Reader](#): this will list all fonts used and whether these are Type 1, True Type (both of which are ok), or Type 3.
- Colors are problematic with regard to accessibility (lack of sufficient contrast between colors) and for other output formats, as colors cannot be freely integrated there. Such passages have to be embedded as images, which in turn will reduce readability. If, nevertheless, specific colors need to be defined, please include CMYK definitions of these colors as - depending on the output - some output drivers such as professional printers cannot deal with RGB colors. E.g.,

```
\definecolor{ultramarine}{RGB}{1,1,1}
%%\definecolor{ultramarine}{cmyk}{0,0,0,1}
```

```
\textcolor{ultramarine}{Colored text}
```

- For typesetting algorithms, please use either the `algorithms2e` package or ONE of the (`algpseudocode` OR `algcompatible` OR `algorithmic`) packages to typeset algorithm bodies and the `algorithm` package for captioning the algorithm.

- If you use the `newtxmath` package, do NOT include the `amsmath` package separately.
- Please try to avoid the `tikz`, `xy`, and `pstricks` packages if possible. These graphs/figures cannot be rendered in our other output formats, therefore can only be included there as rendered image files of a fixed resolution.
- Caution with packages which embed page-like structures within layout elements, such as `multicol` or `minipage` (sometimes used to create specific layout within `\mbox` or `\parbox`). These can cause significant problems for some output formats or can only be rendered as images.

5 Installation

Copy `llncs.cls` to a directory that is searched by $\text{\LaTeX}$, e.g. either your `texmf` tree or the local work directory with your main $\text{\LaTeX}$ file.

6 Working with the `llncs` Document Class

6.1 General Information

The `llncs` class is an extension of the standard $\text{\LaTeX}$ `article` class. Therefore, you may use all `article` commands in your manuscript.

If you are already familiar with $\text{\LaTeX}$, the `llncs` class should not give you any major difficulties. It basically adjusts the layout to the required standard, defining styles and spacing of headings and captions and setting the printing area to 122 mm horizontally by 193 mm vertically. To keep the layout consistent, we kindly ask you to refrain from using any $\text{\LaTeX}$ or $\text{\TeX}$ command that modifies these settings (e.g., `\textheight`, `\vspace`, `baselinestretch`).

In addition to defining the general layout, the `llncs` document class provides some special commands for typesetting the contribution header, i.e. the title, authors, affiliations, abstract, and additional metadata. These special commands are described in Sect. 7.

For a more detailed description of how to prepare your text, illustrations, and references, see the *Instructions for Authors of Papers to be Published in Springer Computer Science Proceedings*.

6.2 How to Use the `llncs` Document Class

The `llncs` class is invoked by replacing `article` by `llncs` in the first line of your $\text{\LaTeX}$ document:

```
\documentclass{llncs}
%
\begin{document}
  <Your contribution>
\end{document}
```

If your file is already coded with L^AT_EX, you can easily adapt it to the llncs document class by replacing

```
\documentclass{article}
```

with

```
\documentclass{llncs}
```

7 How to Code the Header of Your Paper

7.1 Title

`\title` Please code the title of your contribution as follows:

```
\title{<Your contribution title>}
```

Capitalize the first word of the title and all following words except articles, conjunctions, or prepositions that are four letters or less in length. Long titles that run over multiple lines can be wrapped explicitly with `\\`. Titles have no end punctuation.

`\fnmsep` If you need two or more footnotes, please separate them with `\fnmsep` (i.e. *footnote mark separator*).

`\titlerunning` If a long title does not fit in the single line of the running head, a warning is generated. You can specify an abbreviated title for the running head with the command

```
\titlerunning{<Your abbreviated contribution title>}
```

`\subtitle` An optional subtitle may also be added:

```
\subtitle{<subtitle of your contribution>}
```

7.2 Author(s)

`\author` The name(s) of the author(s) are specified by:

```
\author{<author(s) name(s)>}
```

The given name(s) should always be followed by the family name(s). Authors who have more than one family name should indicate which part of their name represents the family name(s), for example by using non-breaking spaces `Jos\'\{e} Martinez~Perez` or curly braces `Jos\'\{e} {Martinez Perez}`.

`\and` If there is more than one author, please separate them by `\and`. This ensures that the correct punctuation is inserted according to the number of authors.

`\inst` Numbers referring to different addresses or affiliations should be attached to each author with the `\inst{<number>}` command. If an author is affiliated with multiple institutions, the numbers should be separated by a comma, for example `\inst{2,3}`.

`\orcidID` ORCID identifiers can be included with

`\orcidID{<ORCID identifier>}`

`\authorrunning` As given name(s) are to be shortened to initials in the running heads, specifying an abbreviated author list with the optional command

`\authorrunning{<abbreviated author list>}`

might add some clarity about the correct representation of author names, in the running heads as well as in the author index.

7.3 Affiliations

`\institute` Addresses of institutes, companies, etc., should be given in `\institute`.

`\and` Multiple affiliations are separated by `\and`, which automatically assures correct numbering:

```
\institute{<name of an institute>
\and <name of the next institute>
\and <name of the next institute>}
```

`\email` Inside `\institute` you can use

`\email{<email address>}`

`\url` and

`\url{<url>}`

to provide author email addresses and Web pages. If multiple authors have the same affiliation, please check that the order of email addresses matches the sequence of (affiliated) author names.

Please note that if email addresses are given in your paper we assume you are giving us your consent to publish them and they will also be included in the online version.

7.4 Format the Header

`\maketitle` The command `\maketitle` formats the header of your paper.

7.5 Abstract and Keywords

`abstract (env.)` The abstract is coded as follows:

```
\begin{abstract}
<Text of the summary of your paper>
\end{abstract}
```

`\keywords` Keywords should be specified inside the abstract environment. Please capitalize the first letter of each keyword and again separate them with `\and`:

```
\keywords{First keyword \and Second keyword \and Third keyword}
```

The keyword separator will then be properly rendered as a middle dot.

8 How to Code the Body of Your Paper

8.1 General Rules

From a technical point of view, the llncls document class does not require any specific L^AT_EX coding in the body of your paper. You can simply use the commands provided by the “article” document class. For more information about what will be done with your manuscript before publication, please refer to the *Instructions for Authors of Papers to be Published in Springer Computer Science Proceedings*.

8.2 Special Math Characters

The llncls document class supports some additional special characters:

<code>\grole</code>	yields	$\geq$	<code>\getsto</code>	yields	$\Leftrightarrow$
<code>\lid</code>	yields	$\leq$	<code>\gid</code>	yields	$\geq$

If you need blackboard bold characters, i.e. for sets of numbers, please load the related $\mathcal{M}\mathcal{S}$ -T_EX fonts. If for some reason this is not possible, you can also use the following commands from the llncls class:

<code>\bbbc</code>	yields	$\mathbb{C}$	<code>\bbbf</code>	yields	$\mathbb{F}$
<code>\bbbh</code>	yields	$\mathbb{H}$	<code>\bbbk</code>	yields	$\mathbb{K}$
<code>\bbbm</code>	yields	$\mathbb{M}$	<code>\bbbn</code>	yields	$\mathbb{N}$
<code>\bbbp</code>	yields	$\mathbb{P}$	<code>\bbbq</code>	yields	$\mathbb{Q}$
<code>\bbbr</code>	yields	$\mathbb{R}$	<code>\bbbs</code>	yields	$\mathbb{S}$
<code>\bbbt</code>	yields	$\mathbb{T}$	<code>\bbbz</code>	yields	$\mathbb{Z}$
<code>\bbbone</code>	yields	$\mathbb{1}$			

Please note that all these characters are only available in math mode.

9 Theorems, Definitions, and Proofs

9.1 Predefined Theorem-Like Environments

<code>corollary (env.)</code>	Several theorem-like environments are predefined in the llncls document class.				
<code>definition (env.)</code>	The following environments have a bold run-in heading, while the text that				
<code>lemma (env.)</code>	follows is in italics:				
<code>proposition (env.)</code>	<code>\begin{corollary}</code>	<code><text></code>	<code>\end{corollary}</code>		
<code>theorem (env.)</code>	<code>\begin{definition}</code>	<code><text></code>	<code>\end{definition}</code>		
	<code>\begin{lemma}</code>	<code><text></code>	<code>\end{lemma}</code>		
	<code>\begin{proposition}</code>	<code><text></code>	<code>\end{proposition}</code>		
	<code>\begin{theorem}</code>	<code><text></code>	<code>\end{theorem}</code>		

case (*env.*) Other theorem-like environments render the text in roman, while the run-in conjecture (*env.*) heading is bold as well:

```
example (env.) \begin{case}      <text> \end{case}
exercise (env.) \begin{conjecture} <text> \end{conjecture}
note (env.) \begin{example}      <text> \end{example}
problem (env.) \begin{exercise}   <text> \end{exercise}
property (env.) \begin{note}      <text> \end{note}
question (env.) \begin{problem}   <text> \end{problem}
remark (env.) \begin{property}   <text> \end{property}
solution (env.) \begin{question}  <text> \end{question}
               \begin{remark}    <text> \end{remark}
               \begin{solution}  <text> \end{solution}
```

claim (*env.*) Finally, there are also two unnumbered environments that have the run-in heading in italics and the text in upright roman.

```
\begin{claim}      <text> \end{claim}
\begin{proof}      <text> \end{proof}
```

\qed Proofs may contain an eye-catching square, which can be inserted with \qed before the environment ends.

9.2 User-Defined Theorem-Like Environments

\spnewtheorem We have enhanced the standard \newtheorem command and slightly changed its syntax to get two new commands \spnewtheorem and \spnewtheorem* that now can be used to define additional environments. They require two additional arguments, namely the font style of the label and the font style of the text of the new environment:

```
\spnewtheorem{<env_nam>} [<num_like>] {<caption>} {<cap_font>} {<body_font>}
```

For example,

```
\spnewtheorem{maintheorem} [theorem] {Main Theorem} {\bfseries} {\itshape}
```

will create a *main theorem* environment that is numbered together with the predefined *theorem*. The sharing of the default counter ([theorem]) is desired. If you omit the optional second argument of \spnewtheorem, a separate counter for your new environment is used throughout your document.

In combination with the class option envcountsect the \spnewtheorem command also supports the syntax:

```
\spnewtheorem{<env_nam>} {<caption>} [<within>] {<cap_font>} {<body_font>}
```

With the parameter <within>, you can control the sectioning element that resets the theorem counters. If you specify, for example, subsection, the newly defined environment is numbered subsectionwise.

\spnewtheorem* If you wish to add an unnumbered environment, please use the syntax

```
\spnewtheorem*{<env_nam>} {<caption>} {<cap_font>} {<body_font>}
```

10 Accessibility

In accordance with the EU Accessibility Act and our commitment to Accessibility at Springer Nature, your publication will need to be accessible to all readers. Your content has to adhere to the Web Content Accessibility Guidelines (WCAG) that Springer Nature follows in regard to the (technical) layout and the presentation of the electronic versions. According to these guidelines, textual substitutes are required for non-text content, such as figures. As these texts are actual content, we request that alternative texts (also known as alt texts) are submitted with your final manuscript.

Alternative text is a brief and objective description of the content of an image and/or of the purpose it serves in a digital format. Alt text is crucial for individuals using screen reader technology, as well as for those trying to comprehend the content of an image if it doesn't load.

Alt text is not the same as a caption, which typically provides information that is not already in the visual element itself.

Requirements for Figures: When differentiating elements in charts and graphs, do not just change the color, please do also change shapes and patterns, or provide other visual differentiation like direct segment labels.

In LaTeX you may insert your alternative texts into your manuscript using the `\Description` command in a `figure` environment as follows.

For regular numbered figures:

```
\begin{figure}
\centering
\includegraphics{imagenam}
\Description{...}
\caption{Caption text of figure.}
\label{figlabel}
\end{figure}
```

For any unnumbered/inline figures:

```
\begin{figure}
\includegraphics{imagenam}
\Description{...}
\end{figure}
```

Alternative Text Assistant. Springer Nature offers an Alternative Text Assistant, a tool designed to assist you in writing alternative texts. Generally, editors will automatically receive a link to this tool. Editors are requested to forward a link to the chapter authors (description included in the tool).

11 Credits and Acknowledgments

`credits (env.)` Credits and acknowledgments should be placed at the end of the paper, just

before the references. Please use the `credits` environment to make sure that both text and run-in headings are printed in small font size.

`\ackname` There are two possible `\subsubsection` headings to provide such state-
`\discintname` ments: “Acknowledgments” and “Disclosure of Interests”. The `\ackname` and
`\discintname` macros are used to generate the correct run-in titles.

General acknowledgments can be provided in the (optional) paragraph “Acknowledgments”, which is followed by the (mandatory) paragraph “Disclosure of Interests”, where any competing interests of the authors are to be declared.

12 References

There are three options for citing references:

- Arabic numbers, i.e. [1], [3–5], [4–6,9],
- labels, i.e. [CE1], [AB1,XY2],
- author/year system (Smith et al. 2000), (Miller 1999a, 12; Brown 2018).

`citeauthoryear` We prefer citations with Arabic numbers, i.e. the usage of `\bibitem` without
an optional parameter. If you want to use the author/year system, you can use
the class option `citeauthoryear`, i.e.

```
\documentclass[citeauthoryear]{llncs}
```

Please note that this option does not automatically change your citations to the author/year style. It basically redefines the `\bibitem` command to take the publication year as an optional parameter that is displayed instead of an Arabic number. Author name(s) and, if necessary, parentheses are to be typed manually. If your reference reads

```
\bibitem[2016]{vdaalst:2016}
van der Aalst, W.: Process Mining, 2nd ed. Springer, Heidelberg (2016)
```

and is cited as follows:

```
...is shown by van der Aalst (\cite{vdaalst:2016})
```

the resulting text will be:

“...is shown by van der Aalst (2016).”

`splncs04.bst` We encourage you to use `BIBTEX` for typesetting your references. For formatting the bibliography according to Springer’s standard (for mathematics, physical sciences, and computer science), please use the bibliography style file `splncs04.bst` that comes with the `llncs` document class. You simply need to add `\bibliographystyle{splncs04}` to your document. DOIs should be provided in the `doi` field of your `.bib` database. `BIBTEX` will then automatically add them to your references.

`\doi` If you do not use `BIBTEX`, you can include a DOI with the `\doi` command:
`\doi{<DOI>}`

The DOI will be expanded to the URL `https://doi.org/<DOI>` in accordance with the CrossRef guidelines.

13 Submission Checklist

Before submitting your paper, please ensure that you have:

- Compiled your LaTeX source files without errors or warnings.
- Included all necessary files (.tex, .bib, .ind, image files, macro definitions).
- Provided a PDF version of your manuscript.
- Checked that all floating figures and tables have captions and are referenced in the text.
- Verified that all hyperlinks and cross-references within your manuscript are accurate and functional.
- Provided alt-text for all images.
- Removed any unnecessary packages or custom macros.
- Followed all the guidelines outlined in this document.
- Included a README file in case any non-standard LaTeX usage or dependencies.

14 Conclusion

Always adhere to the provided template and style guide. This includes using the correct environments, commands, and formatting for all elements of your manuscript. If you are unsure about how to format a specific element, consult the template documentation or contact the editorial office for clarification. By following these guidelines, you can help us ensure a smooth and efficient publishing process and deliver your work to the widest possible audience in a timely and accurate manner. Thank you for your cooperation.

15 Contact Information

We appreciate your cooperation in following the above guidelines. If you have any questions or concerns, please do not hesitate to contact the editor or typesetting team. We are here to help you prepare your manuscript for publication.

If you cannot find the answer you need, please contact `texsupport@straive.com`.