

# The lipics-v2018 Class

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### Abstract

This document provides a manual of the `lipics-v2018` class including a description of the most relevant changes in the new version `lipics-v2018` of the LIPICs style compared to the previous version `lipics-v2016`. Furthermore we provide a short guideline to switch an article from `lipics-v2016` to `lipics-v2018`.

**2012 ACM Subject Classification** General and reference → Computing standards, RFCs and guidelines

**Keywords and phrases** L<sup>A</sup>T<sub>E</sub>X, style, changelog

**Supplement Material** The style file including a sample document can be found at <http://drops.dagstuhl.de/styles/lipics-v2018/lipics-v2018-authors.tgz>

## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>How to use the package</b>	<b>2</b>
<b>3</b>	<b>Some important settings and commands</b>	<b>2</b>
3.1	Paper format . . . . .	2
3.2	Language . . . . .	2
3.3	Input encoding . . . . .	3
3.4	Fonts . . . . .	3
3.5	Titles . . . . .	3
3.6	Mathematical formulas . . . . .	4
3.7	Theorem-like environments . . . . .	4
3.8	Lists . . . . .	4
3.9	Listings . . . . .	4
3.10	Graphics . . . . .	5
3.11	Tables . . . . .	5
3.12	Rotating floats . . . . .	5
3.13	Sub-captions . . . . .	5
3.14	Bibliography . . . . .	5
3.15	Line numbers . . . . .	5
3.16	Adding further packages and new macros . . . . .	5
<b>4</b>	<b>Changes in lipics-v2018 compared to lipics-v2016</b>	<b>6</b>
<b>5</b>	<b>How to switch from lipics-v2016 to lipics-v2018</b>	<b>7</b>
<b>6</b>	<b>lipics-v2018 enumeration styles</b>	<b>8</b>



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## 1 Introduction

The `lipics-v2018` class assists in preparing articles for *Leibniz International Proceedings in Informatics* with L<sup>A</sup>T<sub>E</sub>X. It adapts L<sup>A</sup>T<sub>E</sub>X’s standard `article` class to meet some requirements for LIPIcs and provides a specific layout.

The package consists of the following files:

`lipics-v2018-manual.pdf` this documentation  
`lipics-v2018-sample-article.tex` the L<sup>A</sup>T<sub>E</sub>X master file, to be used as a template  
`lipics-v2018.cls` the L<sup>A</sup>T<sub>E</sub>X class file<sup>1</sup>, providing adaptations for LIPIcs and producing the layout  
`cc-by.pdf` logo<sup>1</sup> for Creative Commons CC BY  
`lipics-logo-bw.pdf` logo<sup>1</sup> for LIPIcs  
`orcid.pdf` logo<sup>1</sup> for ORCID

This documentation is not intended to give an introduction to L<sup>A</sup>T<sub>E</sub>X. For questions concerning T<sub>E</sub>X systems/installations or the L<sup>A</sup>T<sub>E</sub>X mark-up language in general please visit [www.tug.org](http://www.tug.org), [www.dante.de](http://www.dante.de), [uk.tug.org](http://uk.tug.org) or any other T<sub>E</sub>X user group worldwide. The essential reference for L<sup>A</sup>T<sub>E</sub>X is *Mittelbach F., Goossens M. (2004) The L<sup>A</sup>T<sub>E</sub>X Companion. 2nd edn.*, but there are many other good books delivering insight into L<sup>A</sup>T<sub>E</sub>X.

`lipics-v2018` tries to benefit as far as possible from standard L<sup>A</sup>T<sub>E</sub>X packages. (Have a look at `lipics-v2018.cls` to see which packages are used.) Therefore, it should also be easy to compile an already written manuscript with the `lipics-v2018` layout. To learn more about the underlying packages we refer to their documentations (try e.g. `texdoc [package name]` at your shell prompt or visit [tug.ctan.org](http://tug.ctan.org)).

## 2 How to use the package

We suggest to employ a recent T<sub>E</sub>X installation: the most important distributions, T<sub>E</sub>X Live, MiK<sub>T</sub><sub>E</sub>X/proT<sub>E</sub>Xt and MacT<sub>E</sub>X, all provide at least 2017 versions. But older versions should (in principle) work as well.

To use `lipics-v2018`, put “`lipics-v2018-sample-article.tex`”, “`lipics-v2018.cls`”, “`cc-by.pdf`”, “`lipics-logo-bw.pdf`”, and “`orcid.pdf`” in your working directory, edit the file “`lipics-v2018-sample-article.tex`” in your preferred text editor and run L<sup>A</sup>T<sub>E</sub>X as usual. (See the following section for more detailed advises.)

## 3 Some important settings and commands

### 3.1 Paper format

You can choose between the A4 format and the US-letter format. The respective options “`a4paper`” or “`letterpaper`” must be inserted in the optional argument of `\documentclass`. For LIPIcs, A4 format is preferred and will be used to prepare the final version.

### 3.2 Language

The document language is chosen in the optional argument of the `\documentclass` command in the L<sup>A</sup>T<sub>E</sub>X master file. Possible values are `USenglish`, `UKenglish` and many others.

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<sup>1</sup> Available on <http://drops.dagstuhl.de/styles/lipics-v2018/lipics-v2018-editors.tgz>

### 3.3 Input encoding

`lipics-v2018` preselects UTF-8 as input encoding. Please do not change the input encoding because otherwise the volume compilation might become difficult.

### 3.4 Fonts

`lipics-v2018` uses the Latin Modern font family. This is a recent redesign of the good old Computer Modern fonts. Latin Modern provides a lot of characters and all necessary math fonts. If your  $\text{\TeX}$  installation does not provide the Latin Modern family, Computer Modern is used as a fallback.

`lipics-v2018` preloads the package “`amssymb`” to make additional mathematical symbols available. Other symbol packages, e.g. `stmaryrd`, may be added, of course. Moreover, the script math alphabet is provided by loading the `eucal` package. – But please avoid loading the `MnSymbol` package. (Note that the `lipics-v2018` removes all symbol re-definitions done by `MnSymbol` anyhow, but would retain its newly introduced symbol definitions.)

### 3.5 Titles

The prelims of a LIPICs article is the only part where some specific commands are required:

- The title is tagged as usual with the `\title{...}` command. If you need a short form for the running head, use the optional `\titlerunning{...}`.
- Authors and their affiliations are rendered blockwise for LIPICs <sup>2</sup>. The information for each author is to be tagged with a re-define `\author` macro which has the structure: `\author{name}{affil}{email}{orcid}{funding}`. – There is an additional `\authorrunning{...}` for the running header; it must be used.
- `\Copyright{...}` has just one argument for the copyright holder.
- `\subjclass{...}` is for classification information following the ACM 2012 Computing Classification System; it is required, too.
- `\keywords{...}` must be used to capture keywords.
- `\category{...}` may be used to provide category information.
- `\relatedversion{...}` may be used to denote a related version.
- `\supplement{...}` may be used to denote supplements.
- `\funding{...}` may be used to capture a funding statement.
- `\acknowledgements{...}` may be used to capture an acknowledgement.

The commands mentioned so far should be used in the document preamble of the  $\text{\LaTeX}$  file. Providing a title, at least one author, copyright information, subject classification, and keywords is required.

To typeset an abstract use `\begin{abstract}... \end{abstract}`. The environment must be placed after `\begin{document}` and `\maketitle!`

Note that subject classifications, keywords, ..., and acknowledgements will be rendered together with the abstract. So it is necessary to use the `abstract` environment in order to get the output for `\subjclass` etc.

The `\hideLIPICs` command is to mask all copyright information (and a possible DOI specification) on the first page.

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<sup>2</sup> This has changed in 2017; the formerly used “`authblk`” mechanism to output authors and affiliations in footnote style is deprecated; the `\affil` command is now obsolete for the `lipics-v2018class`.

### 3.6 Mathematical formulas

The `amsmath` package is preloaded, and you are encouraged to use the mark-up it provides instead of old-style standards like the `eqnarray` environment or the `\over` command.

### 3.7 Theorem-like environments

The `amsthm` package is preloaded, and the following environments are already introduced: `theorem`, `lemma`, `corollary`, `definition`, `example` and `remark`.

Setting up additional environments works with the `+e` mechanism from the `amsthm` package. For example, add to your document preamble

```
\theoremstyle{plain}
\newtheorem{conjecture}[theorem]{Conjecture}
```

See also the `amsthm` package documentation.

Available `\theoremstyle`s are: `plain`, `definition`, and `remark` (all from the `amsthm` package, but slightly modified for LIPICs).

Note that for LIPICs all numbered theorem-like environments should use one and the same counter, i. e. the counter of the default environment "`theorem`".

By default, theorem-like environments are numbered consecutively throughout the document. To number the environments subordinately within sections use the class option "`numberwithinsect`":

```
\documentclass[numberwithinsect]{lipics-v2018}.
```

### 3.8 Lists

List labels are set flush left. For enumerations with more than 9 items please insert `\addtolength\leftmargini{0.5em}` before `\begin{enumerate}`.

The `enumerate` package is preloaded, so you can use `\begin{enumerate}[(a)]` or the like.

### 3.9 Listings

The `listings` package is preloaded. It provides the `lstlisting` environment to typeset displayed code. Here, the package is configured to get a grey background for listings.

The following example shows how to use captions and labels with the `lstlisting` environment:

```
\begin{lstlisting}[caption={Useless code},label=list:8-6,float,
                    abovecaptionskip=-\medskipamount]
for i:=maxint to 0 do
begin
  j:=square(root(i));
end;
\end{lstlisting}
```

Note also the `float` option to make the listing floating. Instead of the `caption` option one might prefer the `title` option which outputs the argument without the "Listing" label. To globally change the label name from "Listing", add to your document preamble e.g.

```
\renewcommand*\lstlistingname{Algorithm}
```

Please read the package documentation for more information on the `lstlisting` environment and how to adapt it locally.

### 3.10 Graphics

The standard interface for graphic inclusion is the `\includegraphics` command provided by the `graphicx` package. Note that the `\graphicspath` command allows to declare one or more folders where the `graphicx` package looks for the image files; so providing the path with each `\includegraphics` command is not necessary.

### 3.11 Tables

Preloaded packages are: the `array` package (for introducing new column types), the `multirow` package (row spanning cells) and the `tabularx` package (automatic column width calculation).

In order to allow easy use of table footnotes, the `threeparttable` package is preloaded. Please read the short documentation in `threeparttables.sty` to see how the related commands are applied.

### 3.12 Rotating floats

The preloaded `rotating` package provides the two environments “`sidewaysfigure`” and “`sidewaystable`”. They allow the rotation of floating objects.

### 3.13 Sub-captions

The preloaded `subcaption` package provides the `\subcaption` command to add sub-captions. Please do not load the aged `subfig` package.

### 3.14 Bibliography

It is highly recommended to use `BIBTEX` as the standard bibliography mechanism. For `BIBTEX`, the standard bibliography style for `LIPICs` is “`plainurl`”. Please do not change the bibliographic style. `LIPICs` only allows numerical citation and forbids author-year citations. (So the `natbib` package is not used by `lipics-v2018`.)

### 3.15 Line numbers

The `lineno` package is loaded, and line numbering is switched on by default. To switch line numbering (globally) off, use `\noLINenumbers` (in the document preamble).

### 3.16 Adding further packages and new macros

Feel free to add further packages if you need extra structural mark-up. But keep in mind that you should not change the general layout of the article. Changing text width or linespreads, for example, are forbidden.

Happy `TEX`ing!

## 4 Changes in lipics-v2018 compared to lipics-v2016

- In lipics-v2018, authors and their affiliations are rendered blockwise. The formerly used “authblk” mechanism to output authors and affiliations in footnote style is deprecated; the `\affil` command is now obsolete for lipics-v2018. The information for each author is to be tagged with a re-defined `\author` macro which has the structure: `\author{name}{affil}{email}{orcid}{funding}`. While the parameters `name` and `affil` are mandatory, the latter parameters `email`, `orcid`, and `funding` are optional and can be empty.
- The usage of an ORCID is currently optional but highly recommended. For more details regarding ORCID, please visit <https://orcid.org>. If you don’t have yet an ORCID, the registration is very quick and simple (see <https://orcid.org/register>).
- In lipics-v2018, the newest ACM Classification System is used: the 2012 ACM Computing Classification System<sup>3</sup>. In the revised macro `\subjclass`, it is also possible to use the LaTeX snippet generated in the ACM digital library<sup>4</sup> to enter the ACM classification (e.g., `\ccsdesc[500]{Hardware~3D integrated circuits}`).
- Several new (but optional) commands has been added to the style to allow explicit labeling of frequently provided and searched information characterizing the document:
  - `\category{...}` may be used to provide category information (e.g., “Invited Talk”).
  - `\relatedversion{...}` may be used to denote a related version (e.g., an extended version hosted on arXiv).
  - `\supplement{...}` may be used to denote supplements (e.g., research artifacts, like data or source code hosted on a public repository like zenodo<sup>5</sup> or GitHub<sup>6</sup> or published in a venue like DARTS<sup>7</sup>).
  - `\funding{...}` may be used to capture a funding statement, which applies to all authors. Please enter author specific funding statements as fifth argument of the `\author` macro.
  - `\acknowledgements{...}` may be used to capture an acknowledgment.
  - If mandatory data are missing (`\title`, `\author`, `\authorrunning`, `\copyright`, `\subjclass` and `\keywords`), the resulting PDF will contain a colored warning. For example, if the `\title` is missing or empty, the alternative title “**Author: Please provide a title**” is shown.
  - The `enumerate` package is preloaded in lipics-v2018, so it is possible to flexibly define own enumeration styles besides the normal `\begin{enumerate}`, e.g., `\begin{enumerate}[a]`. Furthermore, lipics-v2018 contains some more pre-defined `enumerate` environments: `\begin{romanenumerate}`, `\begin{alphaenumerate}`, and `\begin{bracketenumerate}`. See Section 6 for more details.
  - The `\hideLIPICs` command masks all information related to the series (e.g., copyright information and a possible DOI specification) on the first page. This might be used e.g. to prepare an extended version to be uploaded to arXiv.

<sup>3</sup> <https://www.acm.org/publications/class-2012>

<sup>4</sup> [https://dl.acm.org/ccs/ccs\\_flat.cfm](https://dl.acm.org/ccs/ccs_flat.cfm)

<sup>5</sup> <https://zenodo.org/>

<sup>6</sup> <https://github.com/>

<sup>7</sup> <http://www.dagstuhl.de/darts/>

- To ease the communication during the review and typesetting phase, the `lineno` package is loaded and line numbering is switched on by default. To switch line numbering (globally) off, use `\nolinenumbers` (in the document preamble).
- Bugfixes:
  - \* A bad line break of the `copyright` line has been fixed (Only visible, if the paper has many authors and so the `\copyright` macro is longer than one line).
  - \* The `subcaption` package is preloaded in `lipics-v2018` but also in `lipics-v2016`. Due to incompatibilities to the (outdated) `subfig` package, an error is thrown in `lipics-v2018` to avoid undefined behaviors when both packages `subcaption` and `subfig` are loaded.
  - \* In previous style versions, the usage of the `MnSymbol` package results in replacing the default symbols (e.g., provided by the `amsmath` package). In `lipics-v2018`, the usage of the `MnSymbol` should still be avoided but now, only undefined/non-existing symbol definitions are replaced by this package.
  - \* To number the theorem-like environments subordinately within sections, it is possible to use the class option “numberwithinsect”. In `lipics-v2016`, these environments wasn’t numbered correctly, when they was part of the appendix. This is fixed in `lipics-v2018`.
  - \* When compiling the `LATEX`sources, not only a PDF but also a `vtc` file is generated. This file contains the data for the table of contents in the frontmatter for the respective paper, namely the authors, the title and the page range. In previous versions of the style, footnotes associated to authors was also exported in the `vtc` file and must be manually removed when preparing the table of contents. In `lipics-v2018`, no footnotes will be exported.

## 5 How to switch from `lipics-v2016` to `lipics-v2018`

The following steps are mandatory to switch a document from the `lipics-v2016` to the `lipics-v2018` document class:

1. Copy the files `lipics-v2018.cls` and `orcid.pdf` to your document folder.
2. Open your main `LATEX`file and
  - a. change the document class from `\documentclass[...]{lipics-v2016}` to `\documentclass[...]{lipics-v2018}`;
  - b. for every author, revise the existing `\author` macro by
    - removing the (optional) affiliation number (e.g. change `\author[1]{John Doe}` to `\author{John Doe}`),
    - adding four (empty) fields to the `\author` macro (e.g. change `\author{John Doe}` to `\author{John Doe}{ }{ }{ }`),
    - moving the affiliation (incl. the address) to the second field of the `\author` macro (e.g. `\author{John Doe}{Dummy University, Address/City, Country}{ }{ }`),
    - moving the email address to the third field of the `\author` macro,
    - deleting `\affil` commands,
    - (optionally) adding the ORCID id as forth field of the `\author` macro,
    - (optionally) moving a footnote associated to the author to the fifth field of the `\author` macro;
  - c. remove current content of the `\subjclass` macro and add appropriate 2012 ACM classifications to the macro (e.g. retrieved from [https://dl.acm.org/ccs/ccs\\_flat.cfm](https://dl.acm.org/ccs/ccs_flat.cfm));

The following steps are optional:

1. Add a reference to a related version of the document (e.g. a reference to an extended or full version mentioned usually as a title footnote or at end of the introduction) to the `\relatedversion` macro (e.g. `\relatedversion{A full version of the paper is available at \url{XXX}.}`)
2. Move funding acknowledgments (e.g. mentioned in an acknowledgments section or in a footnote associated to the title) to the `\funding` macro.
3. Move acknowledgments from a separate section (e.g. provided at the end of the conclusions) to the `\acknowledgements` macro.

## 6 lipics-v2018 enumeration styles

List of different pre-defined enumeration styles:

■ `\begin{itemize}...\end{itemize}`

■ ...

■ ...

■ ...

1. `\begin{enumerate}...\end{enumerate}`

2. ...

3. ...

4. ...

(a) `\begin{alphaenumerate}...\end{alphaenumerate}`

(b) ...

(c) ...

(d) ...

(i) `\begin{romanenumerate}...\end{romanenumerate}`

(ii) ...

(iii) ...

(iv) ...

(1) `\begin{bracketenumerate}...\end{bracketenumerate}`

(2) ...

(3) ...

(4) ...