



Descriptive Complexity of Formal Systems
Preparing Papers with the \LaTeX 2_ε
'dcfs08' Class
Guidebook for Authors

Prompt advice for impatient: The file 'dcfs08ex.tex' contains a sample input (with embedded %-comments), to help you skip reading this guidebook. Compile with \LaTeX and compare the generated output with the source text.

Quick reference handbook: The files 'dcfs08qk.pdf' and 'dcfs08qk.ps' contain a brief summary of all commands.

Guidebook for authors: The files 'dcfs08dc.pdf' and 'dcfs08dc.ps' contain a more detailed documentation about the class. [This document.]

Take and drop installation: Just put the file 'dcfs08.cls' in the file directory (folder) in which you are going to prepare your \LaTeX contribution.

More permanent installation: Put 'dcfs08.cls' in the file directory (folder) in which your \LaTeX machine keeps its document class files, like, e.g. 'article.cls'. Then run an application promising to 'update your \LaTeX database' or something similar. (This is required, since a typical \LaTeX installation does not check its file directories for presence/absence of files.)

Software requirements: A running \LaTeX 2_ε machine with installed 'article' document class.

Files coming with this distribution: dcfs08.cls (document class);
dcfs08ex.tex (sample input); dcfs08qk.pdf, dcfs08qk.ps (quick reference);
dcfs08dc.pdf, dcfs08dc.ps (detailed documentation)

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1 Introduction

The `dcfs07` document class was designed to produce, in a uniform way, the right layout of all contributions in the proceedings of the workshop Descriptive Complexity of Formal Systems in 2007.

For 2008 we consider that we should continue to use the same framework. The new files are updated for to the 2008 edition of DCFS. The new class is `dcfs08`.

This class, designed for the needs of a conference, can actually run in several different ways. First, in the standard mode, which you can use while preparing a manuscript. Then, by simply turning on a class option named `[sub]`, you can hide confidential information (such as names of authors, their addresses, and participation in grant projects) before sending your submission to a program committee and referees. Then there is an `[acc]` class option, checking consistency of cross-references in a version of the paper destined for a proceedings. (Hence, details presented in an appendix for

the program committee should be ignored). Finally, there is a mode reserved for volume editors.

One of the main reasons for preparing documents with \LaTeX is the fact that many document classes agree in the input syntax for the main body of documents (describing the logical structure of the text rather than formatting itself), though different document classes may use different layouts for the generated output.

However, the existing classes still differ in the syntax for the front page, displaying the title, names of authors, their addresses, and footnote like things thanking for grant support. The reason is that the standard `article` class did not provide a satisfactory universal solution.

We have used the output layout designed for the front page in the Springer-Verlag's `llncs` document class as a starting point. However, rather than output formatting, and in accordance with the spirit of \LaTeX , the input syntax of our `dcfs08` document class describes the logical structure of the preamble.

Among others, linking among different entries in the front page is automatized, so that the authors do not have to be concerned about the actual numerical values of such links. This is done in the same way as in the well established `\label-\ref` mechanism.

Last but not least, we hope that the new syntax for the preamble will be easy for \LaTeX users.

2 Converting from ‘article’ to ‘dcfs08’ or vice versa

The `dcfs08` class is build on top of the standard class `article`, so that \LaTeX users should not have any serious problems with conversion, in either direction. (The major differences are in the preamble, which will be explained in Sections 4 and 5 below.) The class is invoked by replacing `\documentclass{article}` at the beginning of the file by

```
\documentclass{dcfs08},
\documentclass[sub]{dcfs08}, or
\documentclass[acc]{dcfs08}.
```

2.1 The class options

- If neither of the above options is present, the class is working in the standard mode. Immediately before *submitting*, turn ‘sub’ on.
- [sub] If this option is on, confidential information will be hidden. That is, data entered in your \LaTeX input file by `\author`, `\runningauthors`, `\address`, or `\thanks` commands will produce only a white ‘phantom’ space in the output. This ensures that referees will not know authors and, at the same time, that the page breaks will be preserved in the original locations.
- [acc] This option is used for the final accepted version, or for checking consistency of cross-references under assumption that the paper will be accepted. Namely, all text below the `\PCappendix` command will be ignored. Turn ‘acc’ on, and

compile at least twice. If, in the *.log output, you see something like ‘... reference “xx” undefined ...’ but such warning did not appear with ‘acc’ off, you have an inconsistent reference. For example, you used ‘... by Lemma~\ref{xx}’ in the main body, but this lemma will not be accessible in the final version, since it is in the appendix presenting details for the program committee.

[acc*] You cannot activate this option, reserved for volume editors. For your information, the output produced by ‘acc*’ differs from ‘acc’ in two details. (1) The header at the top of the first page will show bibliographic data about the proceedings, including the page range of your paper. (2) Since your paper will not start at page 1, numbers produced by the \pageref command will change. For example, ‘See page~\pageref{xy} for...’ producing ‘See page 5 for...’ may change, e.g., to ‘See page 115 for...’.

2.2 Compatibility with ‘article’

For compatibility reasons, all remaining options are passed to the `article` class, *unless they do not contradict* the layout designed for the DCFS proceedings. Such options are ignored, you only get some warning.¹

For example, `\documentclass[10pt,letterpaper]{article}` corresponds to

```
\documentclass[10pt,letterpaper]{dcfs08},
\documentclass[sub,10pt,letterpaper]{dcfs08}, or to
\documentclass[acc,10pt,letterpaper]{dcfs08}.
```

However, since `dcfs08` keeps the layout of all contributions in the proceedings uniform, the document is still in 11pt normal size and fits to a4 paper. You only get two warning messages.

In the same spirit, commands like

```
\tableofcontents, \listoffigures, or \pagestyle
```

are silently ignored, this time without any warning message. However, there are good reasons for some few exceptions, e.g.:

```
\twocolumn      produces an error, while
\thispagestyle   is permitted.
```

Typesetting in the two-column format is a serious deviation from our standard layout, so it is in your own interest to receive a serious message, which gives you a chance to fix the problem by yourself. On the other hand, occasionally, you may need `\thispagestyle{empty}`, for a page with some picture on top. (Use this feature only when really necessary, and *never* for your first or the last page.)

Notice: Even if the converted L^AT_EX source compiles without problems, keep in mind that you also have to look after the line and page breaks in the output. The breaks may appear in very strange places, once the paper layout has been changed...

¹Which actually means that the author of the `dcfs08` class is not aware of the existence of an option passed to `article`.

3 General structure of a dcfs08 document

This can be easily understood from the following frame:

```
\documentclass{dcfs08}, \documentclass[sub]{dcfs08},
  or \documentclass[acc]{dcfs08}
  * package loading (if any)
  * user-defined new commands (macros)
\begin{document}
\title{...}
  * preamble (names of authors, addresses, thanks for grant support...)
\maketitle
\begin{abstract}
  * brief description of results
\keywords
  * list of keywords
\end{abstract}
  *
  * main body of the paper (keep page limit!)
  *
\begin{thebibliography}{#}
  * list of references
\end{thebibliography}
\PCappendix (optional)
  * details for the program committee, e.g.,
  proofs not included in the main body, due to the page limit
\end{document}
```

4 Preamble commands, by examples

4.1 First example

To open the front page and introduce the title of the contribution, we begin with the `\title` command, followed by footnote like things related to the paper as a whole or to the title itself:

```
\title{An Input Head Movement in the Hierarchy\\
  of Finite Automata}
\thanks{This paper does not contain any valuable information, it is just
  an illustrating example, for using the 'dcfs08' document class.}
```

Note that a long title can be divided into several lines, by the use of `\\` commands (new lines) inside. The above `\title` command produces the following output:

..... *Header at the Top of the First Page*

An Input Head Movement in the Hierarchy
of Finite Automata

The `\thanks` command presented above produces the following footnote at the bottom of the first page:

This paper does not contain any valuable information, it is just an illustrating example, for using the ‘dcls08’ document class.

..... *Bottom of the First Page*

All footnotes related to the paper as a whole, or to the title itself, should appear in separate `\thanks{...}` commands (without an optional `[label]` parameter) placed immediately below the `\title{...}`.

Notice: On purpose, there is no footnote mark (like ¹ or *) at the end of the title itself, nor in front of any footnote related to the `\title`. So do not try to place them there by some tricky \TeX -ing.

Instead, all footnotes without a printed footnote mark, placed immediately below the line separating the footnotes from the main text on the first printed page, should be considered as related to the whole paper, its title, and/or all its authors.

Now, the names of authors, together with their addresses and footnote like remarks related to those authors should be given. We begin with coding all necessary data about the first author first:

```
\author[MI,CAL]{Umberto Castelli}
\address[MI]{Dipartimento di Scienze Supernaturali\withinline
  Universit\‘{a} di Arti Decorative\
  piazza d.\ Tricolore 59\withinline
  20137 Milano\withinline
  Italy\
  \email{castelli@dsn.uniadmi.it}
  \email{veronesi@dsn.uniadmi.it}
}
\thanks[CAL]{Partially supported by CALCIO Grant Agency, under the
  project DCPMRS ‘Descriptive complexity of pawn movement and
  related structures’$!\$@.}
```

Here ‘MI’, used in the first parameter of the `\author` command, is a simple label standing for some university in MIlano. The same label is used as a first parameter in the `\address` command, which links the first author, some U. Castelli, to this university. Similarly, the second label ‘CAL’, standing for some CALCIO Grant Agency, links this author to the grant support presented in the `\thanks[CAL]{...}` command.

In the output, these labels are displayed as superscripts, for example, the name of the above author will look like Umberto Castelli^(U,V), where U, V are some values obtained from the labels MI,CAL, respectively. Do not worry about the actual values of such links. They are computed automatically, in a way very similar to the well established `\label-\ref` mechanism, used for numbering sections, equations, theorems, etc.

Notice: Information about preamble labels is passed to different locations in your paper via the auxiliary `*.aux` file, which requires more than one compilation for obtaining the correct values for these labels.

The text of address can be divided into several lines by the use of `\\` inside. Note also that some `\\` (new line) commands were replaced by `\withinline`. This is done to save some vertical space, the command represents a ‘new line without actually entering a new line’. That is, some logical blocks of text representing separate lines (when written down on the envelope) will be printed within the same line, and separated in a different way. (See a sample output below.)

E-mail address(es), for all authors linked to the given `\address`, should be placed in the last line, by the use of `\email` commands. Do *not* insert line separators in between several different `\email`-s. (In our example, also the third author, some M.V. Veronesi, will be affiliated with the same university department, so her `\email` is also placed here.)

In the same way, we can code all data related to the second author:

```
\author[KSC]{Oliver Debn\'}{a}{r}
\address[KSC]{Department of Palmistry\withinline
  J.~Hra\v{s}ko University\\
  Hamiltonov Cyklus 15\withinline
  04021 Ko\v{s}ice\withinline
  Slovakia\\
  \email{odr@ujh.sk}
}
\address[KSC]{Castillo de San Marco\withinline
  13352 Traveling Salesman Dr.\ \#122\\
  St.\,Augustine, FL 32084\withinline
  U.S.A.
}
\thanks[KSC]{Supported by the Slovak Wizing Association, under
  contract SWA-07-28557448.}
```

The first important thing to notice is that we use a *separate* `\author` command for each of the authors. The `dcfs08` class is responsible for collecting all `\author` commands together and for producing a single list of authors (in order of their appearance in the source input). Similarly, all `\address`-es are collected and formatted into a single unit, the same holds for the `\thanks` commands. In accordance with the spirit of \LaTeX , the source input describes the logical structure rather than formatting itself. (So do *not* try, e.g., to use an ‘`\and`’ inside an argument of some `\author` command.)

Since the second author is affiliated with two institutions, we put two `\address` commands below the `\author`: always use a separate `\address` command for each of the addresses. (Among others, a vertical space between addresses can potentially be different from the vertical space between lines within a single address.)

Note also that we did not use 3 different labels here (one per each `\address` plus one for `\thanks`) but, rather, a single label. We have utilized the fact that, except for the second author, no one else is linked to the `\address`-es and `\thanks` presented here. Hence, a single label ‘KSC’ (standing here for some author from KoŠiCe) can make a reference link from `\author[KSC]{...}` to all 3 entries declaring the same label.

Such over-declaration of a label is encouraged here, it reduces the number of labels used in the preamble, which simplifies the appearance of the output.

Now we can enter data related to the third author (the last one in our example), and then close the preamble by the use of `\maketitle` command:

```
\author[MI,GIO]{Maria Vittoria Veronesi}
\thanks[GIO]{Supported by GIOCHI Grant Agency, under the project
‘Formal languages, informal dialects, and understandability’$!\$@.}

\maketitle
```

Since the third author is affiliated with the same university department as the first author, we do not have to duplicate the same address twice, putting the label ‘MI’ pointing to this address in the argument of `\author` will do. Linking to a separate `\thanks` for the grant support is done in the standard way, via a label named ‘GIO’, standing for some GIOCHI Grant Agency.

Notice: The front page entries must begin with `\title{...}` and end by `\maketitle`. That is, these two commands form some kind of enclosing parentheses. Without `\maketitle` at the end, no preamble will be printed!

In the example presented above, the list of authors, followed by the addresses related to these authors, will be formatted as follows:

Umberto Castelli^(A,B) Oliver Debnár^(C) Maria Vittoria Veronesi^(A,D)

^(A)Dipartimento di Scienze Supernaturali – Università di Arti Decorative
piazza d. Tricolore 59 – 20137 Milano – Italy
castelli@dsn.uniadmi.it veronesi@dsn.uniadmi.it

^(C)Department of Palmistry – J. Hraško University
Hamiltonov Cyklus 15 – 04021 Košice – Slovakia
odr@ujh.sk

^(C)Castillo de San Marco – 13352 Traveling Salesman Dr. #122
St. Augustine, FL 32084 – U.S.A.

The corresponding footnote like remarks, placed at the bottom of the first page, will look like this:

This paper does not contain any valuable information, it is just an illustrating example, for using the ‘dcls08’ document class.

^(B)Partially supported by CALCIO Grant Agency, under the project DCPMRS ‘Descriptive complexity of pawn movement and related structures’.

^(C)Supported by the Slovak Wizarding Association, under contract SWA-07-28557448.

^(D)Supported by GIOCHI Grant Agency, under the project ‘Formal languages, informal dialects, and understandability’.

..... *Bottom of the First Page*

4.2 Examples with some entries without labels

Let us take the previous example as a starting point, but without the second author. Updating the \LaTeX source is very easy; delete `\author[ksc]{Oliver Debn\‘{a}r}` and

all entries related to this author (two `\address-es` and one `\thanks`, placed immediately below). Note that now all remaining authors are affiliated with the same address, namely, some university in Milano, labeled by ‘MI’. In such case, no label is required for linking authors to the address, the `\address` itself appears without any `[label]` parameter:

```
\title{An Input Head Movement in the Hierarchy\\ of Finite Automata}
\thanks{This paper does not contain any valuable information, it is just
  an illustrating example, for using the ‘dcfs08’ document class.}

\author[CAL]{Umberto Castelli}
\address{Dipartimento di Scienze Supernaturali\withinline
  Universit\‘{a} di Arti Decorative\\
  piazza d.\ Tricolore 59\withinline
  20137 Milano\withinline
  Italy\\
  \email{castelli@dsn.uniadmi.it}
  \email{veronesi@dsn.uniadmi.it}
}
\thanks[CAL]{Partially supported by CALCIO Grant Agency, under the
  project DCPMRS ‘Descriptive complexity of pawn movement and
  related structures’$!\$@.}

\author[GIO]{Maria Vittoria Veronesi}
\thanks[GIO]{Supported by GIOCHI Grant Agency, under the project
  ‘Formal languages, informal dialects, and understandability’$!\$@.}

\maketitle
```

This will be formatted as follows:

Umberto Castelli^(A) Maria Vittoria Veronesi^(B)

Dipartimento di Scienze Supernaturali – Università di Arti Decorative
 piazza d. Tricolore 59 – 20137 Milano – Italy
 castelli@dsn.uniadmi.it veronesi@dsn.uniadmi.it
 ⋮

This paper does not contain any valuable information, it is just an illustrating example, for using the ‘dcfs08’ document class.

^(A)Partially supported by CALCIO Grant Agency, under the project DCPMRS ‘Descriptive complexity of pawn movement and related structures’.

^(B)Supported by GIOCHI Grant Agency, under the project ‘Formal languages, informal dialects, and understandability’.

..... *Bottom of the First Page*

Similarly, one can imagine a situation in which all `\author-s` are supported by the same grant project, and hence linked to the same `\thanks` command, but residing at different `\address-es`. In such case, the corresponding `\thanks` command (placed below the first `\author`) will appear without any `[label]` parameter, but `\address-es` will be linked by the use of labels.

Finally, if all author(s) are supported by the same grant project(s), and also reside at the same address(es), the use of labels is not required at all, not even in the `\author` commands. Thus, if U. Castelli were the only author, we could code the preamble as follows:

```
\title{An Input Head Movement in the Hierarchy\\ of Finite Automata}
\thanks{This paper does not contain any valuable information, it is just
  an illustrating example, for using the ‘dcfs08’ document class.}

\author{Umberto Castelli}
\address{Dipartimento di Scienze Supernaturali\withinline
  Universit\‘{a} di Arti Decorative\\
  piazza d.\ Tricolore 59\withinline
  20137 Milano\withinline
  Italy\\
  \email{castelli@dsn.uniadmi.it}
}
\thanks{Partially supported by CALCIO Grant Agency, under the
  project DCPMRS ‘Descriptonal complexity of pawn movement and
  related structures’$!\$@.}

\maketitle
```

4.3 Overflow in running headlines

The `dcfs08` document class displays also some running headlines; running authors on even pages and running title on odd pages, excluding the first page of the paper. By default, it takes the text introduced in the `\title` command as the running title (after removing line separators), and the names of authors collected from all `\author` commands as the running authors.

If a long title does not fit into a single line in the running head, you can override the default by the use of the `\runningtitle` command. For example:

```
\runningtitle{Finite Automata and Head Movement}
```

Similarly, `\runningauthors` will help if the list of authors is too long. As a first attempt, try to use an abbreviated list of all authors, e.g.:

```
\runningauthors{U.~Castelli, O.~Debn\’{a}r, M.V.~Veronesi}
```

If this does not help, select one author and type:

```
\runningauthors{Maria Vittoria Veronesi et.~al.}
```

These two commands can appear anywhere between `\title` and `\maketitle`, however, neither of them can be used more than once, for obvious reasons.

4.4 An optional identification of email addresses

Recall that, in the first example above, there were two authors, namely, U. Castelli and M.V. Veronesi, affiliated with the same university department, and hence their email

addresses, `castelli@dsn.uniadmi.it` and `veronesi@dsn.uniadmi.it`, were included below the standard mail address for this department. This did not cause any confusion, since the owners of email addresses could easily be identified from the email addresses themselves.

However, if their emails are `uca23@dsn.uniadmi.it` and `mvv11@dsn.uniadmi.it`, respectively, the identity of owners cannot be deduced so easily. In such cases, you can enter an abbreviated author's name as an additional optional parameter for the `\email` command. For example:

```
\address[MI]{Dipartimento di Scienze Supernaturali\withinline
  Universit\{'a} di Arti Decorative\
  piazza d.\ Tricolore 59\withinline
  20137 Milano\withinline
  Italy\
  \email[U.~Castelli]{uca23@dsn.uniadmi.it}
  \email[M.V.~Veronesi]{mvv11@dsn.uniadmi.it}
}
```

This will be formatted as follows:

^(A)Dipartimento di Scienze Supernaturali – Università di Arti Decorative
 piazza d. Tricolore 59 – 20137 Milano – Italy
 uca23@dsn.uniadmi.it (U. Castelli) mvv11@dsn.uniadmi.it (M.V. Veronesi)

Note that the optional parameter is *not* required for the second author O. Debnár, even though his email is `odr@ujh.sk`, since he is the only author linked to the address in Košice, and hence there are no problems with identification.

4.5 Exceptional footnotes in the preamble

Below `\maketitle`, the standard L^AT_EX commands for handling footnotes, namely, `\footnote`, `\footnotemark`, and `\footnotetext`, can be used. However, they are prohibited in the preamble, since they would interfere with the footnotes produced by the `\thanks` commands.

If, for some exceptional reasons, you are forced to insert a footnote not worrying about a grant support here, you can produce the text of the footnote by the `\thanks[...]{...}` command, a substitute for `\footnotetext`. Such command must use a new label, and must be placed immediately above `\maketitle`.

However, you have also to produce a footnote mark for this footnote text. If the footnote concerns an author's name, you are lucky; just append the same label to the list of labels in the corresponding `\author[...]{...}` command.

But if the footnote mark should appear in a different place, you need a substitute for `\footnotemark`, which is the `\thanksmark{label,...,label}` command. It prints a list (V,\dots,V) , obtained by computing the values of the respective labels.

For example, we want to announce two things: (1) U. Castelli will be wandering around the South pole, and (2) his department will be renamed. First, we pick up some suitable label names, e.g., 'MIGR' for MIGRation, and 'REN' for RENamed, and then code:

```

\title{An Input Head Movement in the Hierarchy\\ of Finite Automata}
\thanks{This paper does not contain any valuable information, it is just
  an illustrating example, for using the ‘dcfs08’ document class.}

\author[CAL,MIGR]{Umberto Castelli}
\address{Dipartimento di Scienze Supernaturali\thanksmark{REN}\withinline
  Universit\‘{a} di Arti Decorative\\
  piazza d.\ Tricolore 59\withinline
  20137 Milano\withinline
  Italy\\
  \email[U.~Castelli]{uca23@dsn.uniadmi.it}
  \email[M.V.~Veronesi]{mvv11@dsn.uniadmi.it}
}
\thanks[CAL]{Partially supported by CALCIO Grant Agency, under the
  project DCPMRS ‘Descriptive complexity of pawn movement and
  related structures’$!\$@.}

\author[GIO]{Maria Vittoria Veronesi}
\thanks[GIO]{Supported by GIOCHI Grant Agency, under the project
  ‘Formal languages, informal dialects, and understandability’$!\$@.}

\thanks[MIGR]{During the period January 2009 -- June 2009, this
  author will be wandering around the North Pole, and hence not
  accessible at the address shown above.}
\thanks[REN]{This department will be renamed to ‘Dipartimento di
  Scienze Naturali’$!\$@.}
\maketitle

```

This will be formatted as follows:

Umberto Castelli^(A,C) Maria Vittoria Veronesi^(B)

Dipartimento di Scienze Supernaturali^(D) – Università di Arti Decorative
 piazza d. Tricolore 59 – 20137 Milano – Italy
 uca23@dsn.uniadmi.it (U. Castelli) mvv11@dsn.uniadmi.it (M.V. Veronesi)
 :
 :

This paper does not contain any valuable information, it is just an illustrating example, for using the ‘dcfs08’ document class.

^(A)Partially supported by CALCIO Grant Agency, under the project DCPMRS ‘Descriptive complexity of pawn movement and related structures’.

^(B)Supported by GIOCHI Grant Agency, under the project ‘Formal languages, informal dialects, and understandability’.

^(C)During the period January 2009 – June 2009, this author will be wandering around the North Pole, and hence not accessible at the address shown above.

^(D)This department will be renamed to ‘Dipartimento di Scienze Naturali’.

..... *Bottom of the First Page*

5 Preamble commands, summary

5.1 List of commands

`\documentclass[options]{dcfs08}` Invoking the `dcfs08` class at the beginning of the file. Available options:

[sub] Hides confidential information. That is, all data entered by `\author`, `\runningauthors`, `\address`, or `\thanks` commands produce only a white ‘phantom’ space in the output. Use before sending a submission to the program committee.

[acc] All text below `\PCappendix` is ignored as a comment. Use for the final accepted version, or for checking consistency of cross-references in a version of the paper destined for a proceedings.

`\begin{document}` For simplicity, imagine that it closes macro definitions and opens the mode producing output. (Actually, among others, it reads the `*.aux` file containing label values computed in the previous compilation.)

`\title{text_of_title}` Saves `text_of_title` in an internal TeX variable, to be used as a title of the paper. The title should be capitalized. Commands inside `text_of_title`:

`\\` New line, used to divide a long `text_of_title` into several lines.

`\author[label,...,label]{name_of_author}` Appends one entry to an internal list of authors. This entry is in the form `name_of_author(V,...,V)`, where V, \dots, V are values obtained by computation from the respective labels in the list `[label,...,label]`. This is done in a way very similar to the `\label-\ref` mechanism.

Therefore, each `label` links the given `\author` to all `\address`-es and `\thanks`-es bearing the same particular label.

Each of the authors must be introduced by a separate `\author` command. (Do not try an ‘`\and`’ inside the `name_of_author`!)

`\address[label]{text_of_address}` Appends one entry to an internal list of addresses. This entry is in the form `(V)text_of_address`, where V is a value obtained from the `label` by the `\label-\ref`-like mechanism. Therefore, each `\author` using the same `label` is linked to the given `\address`.

Each address should be introduced by a separate `\address` command. (Do not pack them together into one `\address` entry.) Commands inside `text_of_address`:

`\\` New line, used to divide the given address into several lines.

`\withinline` Used to replace `\\`, in order to save some vertical space. That is, some logical blocks of text representing separate lines (when written down on the envelope) will be printed within the same line.

`\email[short_author's_name]{em@il_address}` Provides one email address, in the form `em@il_address (short_author's_name)`. E-mail addresses for all authors linked

to the given `\address` should be introduced by separate `\email` commands. The optional `[short_author's_name]` can be omitted, if the owner's identity can be deduced easily from the `em@il_address` itself.

`\thanks[label]{text_of_footnote}` Appends one entry to an internal list of footnotes, in the form $^{(V)}$ text_of_footnote, where V is a value obtained from the `label` by the `\label-\ref`-like mechanism. Therefore, each `\author` using the same `label` is linked to the given `\thanks` footnote.

All footnotes related to the paper as a whole, or to the title itself, should appear immediately below `\title`, without the optional `label`.

`\runningtitle{short_text_of_title}` Saves `short_text_of_title` in an internal \TeX variable, to be used as a running title on odd pages. If the command is not present, the text introduced in the `\title` command is used (after removing line separators). The running title should be capitalized.

`\runningauthors{short_names_of_authors}` Saves `short_names_of_authors` in an internal \TeX variable, to be used as a running list of authors on even pages. If the command is not present, the list of authors collected from all `\author` commands is used. If there are too many authors, you can also select a name of one author (not abbreviated in this case), followed by ‘`_et._al.`’.

`\thanksmark[label,...,label]` Provides a list of footnote marks, in the form $^{(V,...,V)}$, where $V,...,V$ are values obtained from the respective labels in the list `label,...,label`, by the `\label-\ref`-like mechanism. Combined with `\thanks[.]{...}`, it can imitate an exceptional footnote (not thanking for a grant support). This command can be used only in `text_of_address` or in `text_of_footnote`, that is, for a footnote in an address or for a footnote in another footnote.

`\maketitle` Closes the preamble and prints it out. Without `\maketitle` at the end, no front matter will be printed!

5.2 Relative order and labeling by default

`\title` is always the first one below `\begin{document}`.

`\author`: The relative order of the `\author` commands determines the order of appearance of authors.

`\address` should go below the first `\author` linked to the given `\address`. If all `\author`-s are affiliated with all `\address`-es, no labels are in `\address`-es. However, if there is any difference in affiliation, labels are used.

`\thanks`, if thanking for a grant support: It should go below the first `\author` related to the given `\thanks`. If all `\author`-s are linked to all such `\thanks` commands, no labels are used. However, if there is any difference among the authors in grant support, labels are used.

`\thanks`, as a footnote related to the paper as a whole, or to the title itself: It should appear immediately below `\title`, and never with the optional `[label]` parameter.

`\thanks`, if imitating a footnote not thanking for a grant support: This should go immediately above `\maketitle`, and always linked with the optional `[label]` parameter.

`\runningtitle` can be placed anywhere.

`\runningauthors` can be placed anywhere.

`\thanksmark` can go nowhere, except for an inside of some `text_of_address` or `text_of_footnote` parameter.

`\maketitle` is always the last one.

6 Abstract and keywords

The first thing after the preamble should be an abstract containing a brief summary of the main results, followed by a list of keywords. This material is encoded into a single environment `\begin{abstract}...\keywords...\end{abstract}`.

```
\begin{abstract}
  We shall show an upper bound for the conversion of  $n$ -state
  nondeterministic finite automata into equivalent deterministic
  finite state automata, not using more than  $n^{3.2}$  states in the
  worst case. The result is proved under assumption that NP coincides
  with P.
\keywords
  finite-state automata, regular sets, Turing machines
\end{abstract}
```

The above text (by the way, saying that $P \neq NP$) will be printed as follows.

Abstract. We shall show an upper bound for the conversion of n -state nondeterministic finite automata into equivalent deterministic finite state automata, not using more than $n^{3.2}$ states in the worst case. The result is proved under assumption that NP coincides with P.

Keywords: finite-state automata, regular sets, Turing machines

The keywords are separated by commas, not capitalized (nor even the first one), without any ending period.

7 Appendix for the program committee

If you believe that more details are necessary to substantiate the main claims of the paper, but these details would not fit within the given page limit, you may include an appendix that will be read at the discretion of the Program Committee. This material should appear at the very end, below the

```
\PCappendix
```

command. This command comes together with the `[acc]` class option, described in Sections 4 and 5. (The appendix should not be introduced with something like `\section*{..}`.)

8 Predefined theorem-like environments

The following built-in environments are at your disposal.

```
\begin{theorem}.....\end{theorem}
\begin{lemma}.....\end{lemma}
\begin{corollary}....\end{corollary}
\begin{problem}.....\end{problem}
\begin{definition}...\end{definition}
\begin{remark}.....\end{remark}
\begin{example}.....\end{example}

\begin{claim}.....\end{claim}
\begin{proof}.....\end{proof}
\begin{proofof}{s}...\end{proofof}
```

Except for `claim`, `proof`, and `proofof`, these environments are numbered uniformly with a single counter. They are formatted as follows.

Theorem 1. *A theorem in this document class begins with a bold run-in heading followed by an italicized text. By the use of `\label`, you can assign the theorem a suitable name (called a key or a label). For example, this theorem has been introduced by `\begin{theorem}\label{t:alpha}`, for future reference.*

Now we can reference the above theorem by its name rather than by a number (which may change), e.g., ‘by Theorem~\ref{t:alpha}’ will produce ‘by Theorem 1’.

Lemma 2. *An example of a lemma, formatted in the same way as a theorem.*

Corollary 3. *An example of a corollary, formatted in the same way as a theorem.*

Problem 4. *An example of a problem, formatted in the same way as a theorem.*

Definition 5. *An example of a definition, which begins with a bold run-in heading followed by a roman environment body.*

Remark 6. *An example of a remark, formatted in the same way as a definition.*

Example 7. *An example of an example, formatted in the same way as a definition.*

Claim 1. *An example of a claim, which begins with a bold italicized run-in heading followed by an italicized text. Note that the claims are numbered in a different way. Actually, this claim produces a warning message, since it should be nested in a proof. (See Section 8.2.)*

8.1 Additional information in run-in headings

Each of the above environments can use an optional parameter to introduce an inventor, citation, or common name. For example, `\begin{theorem}[(Distribution of Primes)]` produces:

Theorem 8 (Distribution of Primes). *The number of primes not exceeding n is...*

Simple citations should appear without enclosing parentheses, since they are already enclosed in brackets. For example, `\begin{theorem}[\cite{Ve70}]` gives:

Theorem 9 [8]. *The number of primes not exceeding n is...*

If the body of the optional parameter contains a ‘`]`’, enclose this body in `{..}`, or else the \TeX machine will take this ‘`]`’ as a character terminating the optional parameter, which produces an error. For example, `\begin{theorem}[{(Maria V.\ Veronesi~\cite[Thm.~4.1]{Ve70})}]` gives:

Theorem 10 (Maria V. Veronesi [8, Thm. 4.1]). *The number of hyenas in Africa is...*

Similarly, if the body of the environment begins with a ‘`[`’, enclose this body (or at least this character) in `{..}`, or else the \TeX machine will think that the theorem-like environment uses an optional parameter. For example, `\begin{theorem}{[Number of]} hyenas` produces:

Theorem 11. *[Number of] hyenas in Africa...*

8.2 Proofs and claims

If a proof of a theorem (lemma, corollary, ...) follows immediately below the corresponding theorem, it should be enclosed in between `\begin{proof}` and `\end{proof}`:

Theorem 12. *A theorem can be followed by a proof environment.*

Proof: A proof begins with an italicized run-in heading, which is not numbered, followed by a roman environment body. The proof is ended by a ‘`□`’, an eye catching square. □

However, if the theorem and its proof are far away from each other, we should use `\begin{proofof}{subject_of_the_proof}` and `\end{proofof}` instead:

Proof of Theorem 1. This is a proof of Theorem 1, which has been introduced earlier and labeled by `\label{t:alpha}`. Therefore, we began this proof with `\begin{proofof}{Theorem~\ref{t:alpha}}`, and we shall end it by `\end{proofof}`.

The `proofof` environment behaves in the same way as `proof`, but it begins with a bold run-in heading which displays also the `subject_of_the_proof`. □

An auxiliary statement formulated inside a proof can be introduced as a claim, enclosed in between `\begin{claim}` and `\end{claim}`. Such claims can have their own proofs (nested in the main proof), which illustrates the following (rather silly) example.

Theorem 13. *The number of hyenas living in Africa is smaller than the number of all prime numbers.*

Proof: The argument presents two auxiliary statements first, formulated as two claims, named `c:hyenas` and `c:primes`. (By the use of `\begin{claim}\label{...}`.)

Claim 1. *The number of hyenas living in Africa is finite.*

Proof: Here we give an upper bound on the number of hyenas in Africa... □□

Claim 2. *For each n , there exists a prime number p satisfying $n < p \leq 2n$.*

Proof: Here we give an argument for this celebrated result coming from the number theory. □□

Now, it is easy to see that, by Claim 2, the number of primes is infinite. Thus, by combining Claims 1 and 2, we get the statement of the theorem. □

Inside the scope of the main (outermost) proof, the claims can be referenced as usual, e.g., ‘by combining Claims~`\ref{c:hyenas}` and~`\ref{c:primes}`’. However, an exceptional reference outside this scope should be more specific. For example, you can use something like ‘As pointed out by Claim~`\ref{c:hyenas}` in the proof of Theorem~`\ref{t:hyepimes}`,’....

This is required because the claims are always numbered from the beginning of the main proof. Hence, a numbering of nested claims in a proof of a *subsequent* theorem will *again* start from 1.

Note also that a proof nested in another proof is ended by ‘□□’ (end of a second-level proof). As you may have guessed, the L^AT_EX syntax does not prohibit a claim inside a proof of another claim, potentially with its own, third-level proof, and so on. However, even though the T_EX machine does not reject a paper with such constructions, potential readers will certainly do.

8.3 Defining your own theorem-like environments

Additional environments can be defined in a very simple way, e.g.,

```
\newtheorem{hypo}[theorem]{Hypothesis}
```

will allow you to use `\begin{hypo}` and `\end{hypo}` in the same way as the `theorem` environment, with the run-in headings captioned by ‘Hypothesis’ instead of ‘Theorem’.

If you want bold italicized run-in headings, use ‘`\itshape Hypothesis`’ instead of ‘Hypothesis’, the bold is set on by default. (Any font-changing commands should work for run-in headings.) If you want to change the default italicized body to a roman environment body, use ‘`Hypothesis\dromanb`’. (For the body of the environment, there are only two choices; either italicized like `theorem`—without `\dromanb`; or roman like `definition`—with `\dromanb`.) For example,

```
\newtheorem{exercise}[theorem]{\itshape Exercise\dromanb}
```

produces a `\begin{exercise} ... \end{exercise}` environment, numbered like theorems, with bold italicized run-in headings and roman bodies inside.

9 A sequence of items in a list

Such material can be coded by the following standard L^AT_EX environments.

```
\begin{itemize}.....\end{itemize}
\begin{description}...\end{description}
\begin{enumerate}.....\end{enumerate}
```

In all of them, each new item begins with an `\item` command. This can be used in three different forms; `\item[text]` (explicit); `\item[]` (empty); `\item` (implicit).

Here we point out some simple standard features that are quite often forgotten. Combined with the new layout for the generated output, these features make the lists more flexible.

9.1 Vertical space surrounding the list

All three environments above can be used either in closed or in open composition, which changes the vertical space around. Consider the following simple example.

```
\begin{description}
  \item[NP] The class of languages recognizable by nondeterministic
    algorithms in polynomial time.
  \item[NPC] The class of languages that are NP-complete, under
    deterministic reductions in polynomial time.
  \item[NPC-LOG] The class of languages that are NP-complete, under
    deterministic reductions in logarithmic space.
\end{description}
```

In closed composition, without any empty line separating the text above from `\begin{description}`, the surrounding vertical space is smaller:

```
NP    The class of languages recognizable by nondeterministic algorithms in poly-
      nomial time.
NPC   The class of languages that are NP-complete, under deterministic reductions in
      polynomial time.
NPC-LOG The class of languages that are NP-complete, under deterministic reduc-
      tions in logarithmic space.
```

However, by inserting an empty line above `\begin{description}`, we get an open composition, with a larger vertical space around:

```
NP    The class of languages recognizable by nondeterministic algorithms in poly-
      nomial time.
NPC   The class of languages that are NP-complete, under deterministic reductions in
      polynomial time.
NPC-LOG The class of languages that are NP-complete, under deterministic reduc-
      tions in logarithmic space.
```

The same trick can be used for other environments as well, like, e.g., `abstract`, `quote`, `quotation`, `center`,

9.2 Lists with explicit item labels

To get a list with item labels flushed left, use the `description` environment, exactly in the same way as shown by the previous example. If you want to have a list with item labels flushed right, just put the same list in between `\begin{itemize}` and `\end{itemize}`, instead of using the `description` environment. This gives:

- NP The class of languages recognizable by nondeterministic algorithms in polynomial time.
- NPC The class of languages that are NP-complete, under deterministic reductions in polynomial time.
- NPC-LOG The class of languages that are NP-complete, under deterministic reductions in logarithmic space.

9.3 Nesting and empty item labels

The parameter of `\item[]` may be empty, which produces an empty item label. Combining this with the fact that list-making environments can be nested within one another and that each nested level adds an extra indentation, we can create nested structures like simple program codes.

```
\begin{itemize}\item[ ]
  print ‘Matrix:’;\ \ \ print new\_line;\
  for $i:=1$ to $n$ do
    \begin{itemize}\item[ ]
      for $j:=1$ to $m$ do
        \begin{itemize}\item[ ]
          print $a_{i,j}$;
        \end{itemize}
      end;\
    print new\_line;
  \end{itemize}
end;
\end{itemize}
```

This produces the following output:

```
print ‘Matrix:’; print new\_line;
for  $i := 1$  to  $n$  do
  for  $j := 1$  to  $m$  do
    print  $a_{i,j}$ ;
  end;
  print new\_line;
end;
```

However, the list-making environments are *not* designed for writing program codes but, rather, for preparing texts with a suitable indentation. (For example, the `tabbing` environment is much more suitable for complex program codes.)

9.4 Lists with implicit item labels

Without any optional parameter, `\item` produces an implicit item label, depending on the environment in which it is embedded. If such `\item`-s are used in between `\begin{enumerate}` and `\end{enumerate}`, they will produce a list with automatically numbered items. Such numbers can be named, by the use of `\item\label{..}`, and later referenced by `\ref{..}`. As an example:

```
\begin{enumerate}
  \item\label{i:nfa} Nondeterministic finite state automata.
  \item\label{i:afa} Alternating finite state automata, i.e., automata
    making both existential and universal decisions. (We shall not use
    negating states.)
  \begin{enumerate}
    \item\label{i:afa:b} Finite state automata with a bounded number
      of alternations ( $\Sigma_k$ - and  $\Pi_k$ -alternating).
    \begin{enumerate}
      \item\label{i:afa:be} Automata making only existential choices.
      \item\label{i:afa:bu} Automata making only universal choices.
    \end{enumerate}
  \end{enumerate}
  \item\label{i:afa:u} Finite state automata with an unbounded number
    of alternations.
\end{enumerate}
```

This will produce:

- (i) Nondeterministic finite state automata.
- (ii) Alternating finite state automata, i.e., automata making both existential and universal decisions. (We shall not use negating states.)
 - (A) Finite state automata with a bounded number of alternations (Σ_k - and Π_k -alternating).
 - (1) Automata making only existential decisions.
 - (2) Automata making only universal decisions.
 - (B) Finite state automata with an unbounded number of alternations.

Now we can code, e.g., ‘Note that the automata listed in `item~(\ref{i:afa:be})` coincide with those in `(\ref{i:nfa})`’ This produces ‘Note that the automata listed in item (ii.A.1) coincide with those in (i).’ If we decide later to insert a new item on top, e.g., `\item\label{i:dfa} Deterministic...`, the referencing numbers will be automatically updated to (iii.A.1) and (ii), respectively.

`\item`-s without optional parameters combined with the `itemize` environment are used for lists in which implicit item labels are not going to be referenced. If, in the above example, we replace ‘`enumerate`’ everywhere by ‘`itemize`’ and remove all `\label{..}` commands, the following will be produced:

- Nondeterministic finite state automata.
- Alternating finite state automata, i.e., automata making both existential and universal decisions. (We shall not use negating states.)

- * Finite state automata with a bounded number of alternations (Σ_k - and Π_k -alternating).
 - Automata making only existential decisions.
 - Automata making only universal decisions.
- * Finite state automata with an unbounded number of alternations.

Between `\begin{description}` and `\end{description}`, an `\item` without any optional parameter behaves in the same way as `\item[]`, they both produce empty item labels.

10 List of references

This should go to the end of the paper. (Optionally, it can be followed by a Program Committee Appendix — see Section 7.) The entries in the following example are fictitious, but covering the most typical situations.

```
\begin{thebibliography}{9}

\bibitem{Ca76}
U.~Castelli. \newblock An article published in a journal.
\newblock \emph{J.~Comput.~System Sci.}, 12, 144--57, 1976.

\bibitem{CD86}
U.~Castelli, O.~Debn\’{a}r. \newblock An article published in a journal,
  requiring later corrections.
\newblock \emph{Theoret.~Comput.~Sci.}, 47, 157--68, 1986\@.
\newblock (Corrigendum:~\emph{ibid.}, 302, 398--402, 2003).

\bibitem{CDV71}
U.~Castelli, O.~Debn\’{a}r, M.V.~Veronesi. \newblock A~contribution in
  a proceedings not published in a book series.
\newblock In \emph{Proc.~Descr.~Compl.~Formal Syst.}, 200--215\@.
Univ.~Milano, 1971.

\bibitem{CV94}
U.~Castelli, M.V.~Veronesi. \newblock A~contribution in a proceedings
  which appeared in a book series.
\newblock In \emph{Proc.~Math.~Found.~Comput.~Sci.},
\emph{Lect.~Notes Comput.~Sci.}, 841, 203--5\@. Springer-Verlag, 1994.

\bibitem{DD85}
O.~Debn\’{a}r, R.~Debn\’{a}r. \newblock \emph{A~Book on Composite
  Numbers}. \newblock John Veronesi \& Sons, 1985.

\bibitem{DV89b}
O.~Debn\’{a}r, M.V.~Veronesi.
\newblock A~chapter in a book edited by someone else.
\newblock In U.~di Castelli, J.~Veronesi (eds.), \emph{Handbook of
  Curious Ideas in Theoretical Computer Science}. Elsevier Science, 1989.

\bibitem{DV89t}
O.~Debn\’{a}r, M.V.~Veronesi. \newblock A~technical report.
```

```

\newblock Tech.\ Rep.\ {IRR-TR-283}, Xa\~na\~du State University, 1989\@.
\newblock (Available from
  {http://$!\$/ftpsrv.diagon.dragon/\linebreak[0]%
  science/\linebreak[0]ujh.sk/pub/\linebreak[0]%
  techreports/TR-33-98.ps.Z}).

\bibitem{Ve70}
M.V.~Veronesi. \newblock A~simple argument for showing that
  $\mathrm{P}\backslash\mathrm{neq}\mathrm{NP}\backslash\mathrm{NP}$.
\newblock Unpublished man\~u\~script, Xanadu University, 1970.

\end{thebibliography}

```

The parameter ‘9’ in the thebibliography environment represents the widest label number. (Use a suitable number from the sequence 9, 19, 99, 199, 999, ...)

To reduce ugly horizontal underflows, a long website address can be split into several lines. Instead of the standard hyphenation with `\-`, use `\linebreak[0]` behind a ‘.’ (dot) or a ‘/’ (slash).

11 Before sending your submission

Prepare the following two files:

- (1) Either a `*.pdf` or `*.ps` output containing your contribution, compiled with the ‘sub’ class option on, i.e., *not containing* any confidential information. (See Sections 4 and 5 for this class option.)
- (2) A plain ascii `*.txt` file containing (2.A) confidential information, i.e., name(s) of author(s), their address(es) and email(s), with clearly marked corresponding author, and (2.B) title, abstract, and keywords. (A copy pasted from your `*.tex` file will do.)

12 Before sending the final version

Prepare the following files for the accepted contribution:

- (1) Either a `*.pdf` or `*.ps` output containing your contribution, compiled with the ‘acc’ class option on. (See Sections 4 and 5 for this class option.) This is required for comparison with the output produced by volume editors.
- (2) A L^AT_EX source `*.tex` file. If your input is scattered in several files (e.g., you used the `\input{..}` command), make sure that the paper compiles well with all input files placed in a single file directory (folder), not depending on the path from the root of your disk volume, and send all necessary files. In this case, the main file should be named ‘main.tex’.