

# L<sup>A</sup>T<sub>E</sub>X Template for Writing Papers

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WORKING DRAFT

## Abstract

This file is a template file for writing papers in L<sup>A</sup>T<sub>E</sub>X. The main features are:

1. General variables to switch easily between working draft and submitted version and between proceedings and full versions. See [Section 2](#).
2. Macros to help compile the article into a clickable PDF document. See [Section 3](#)
3. Some useful macros. See [Section 4](#)

**Keywords:** L<sup>A</sup>T<sub>E</sub>X, hyperlinks

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# 1 How to use the template

**Note:** I assume that this is for installation on a PC, and WinEDT, MikTeX, and Acrobat reader are already installed.

1. Download `boaztemplate.zip` file and extract it to its own directory.
2. Rename `template.tex` and `template.bib` to `mypaper.tex` and `mypaper.bib` (assuming that you want to name your file `mypaper`).
3. Open `mypaper.tex` and change the title and author name (at the top).
4. Delete the contents of the abstract (between `\begin{abstract}` and `\end{abstract}`).
5. Delete the body of the document starting after the comment

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  
% BEGIN BODY of Document
```

and ending before the comment

```
% END BODY of document  
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

(You can also delete the sample appendix)

6. Change the line `\bibliography{template}` to `\bibliography{mypaper}` [**Boaz's Note: WinEDT behaves better when .tex file and .bib file have the same name**]
7. Type your paper as usual, when you refer to a section, use `\sectionref{sec:crosref}` instead of `Section~\ref{sec:crosref}` (See [Section 3](#) for more details).
8. Don't forget to run  $\LaTeX$  or PDF- $\LaTeX$  at least two times to get references and links right. If you are using BibTeX then run  $\LaTeX$  once, then BibTeX, and then run  $\LaTeX$  twice (same goes for PDF- $\LaTeX$ ).

## 1.1 Useful conventions

### 1.1.1 Bookmarks and macros.

There is a place in the template to add your own macros. It is marked with

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  
% Macros for this paper
```

I find it useful to always keep WinEDT bookmark number 0 (Ctrl+Shift+0) pointing to this location so I can jump there quickly when I add a macro. Keep book mark number 2 (Ctrl+Shift+2) pointing to the current place you are in the document so you'll be able to jump back.

### 1.1.2 Labelling

I find it useful to always label a section with the prefix `sec:`, a definition with the prefix `def:` etc.. It also helps with WinEDT because it sorts all the labels alphabetically. When you refer to a label, don't forget to use `\sectionref{sec:macros}` instead of `Section~\ref{sec:macros}`

### 1.1.3 Bibliography

Use the following convention when using `\cite{}` to refer to a work: Full name of first author, two letters from every other author and then two digits of year. Thus, if we want to refer to a paper by Goldwasser, Micali and Rackoff from 1989 [GMR89], we'll use `\cite{GoldwasserMiRa89}`. Of course, at some point you'll need to ensure that your file `mypaper.bib` indeed contains a BibTeX item with the appropriate key. The easiest way to do so would be to be to search for a BibTeX citation on the Collection of Computer Science Bibliographies on <http://liinwww.ira.uka.de/bibliography/>.

When you find a citation, you can copy and paste it into your `mywork.bib` file. Just don't forget to change the key according to the convention above.

This is an example for a BibTeX citation for the paper [GMR89] (as it is in the file `template.bib`):

```
@article {GoldwasserMiRa89,
  AUTHOR = {Goldwasser, Shafi and Micali, Silvio and Rackoff, Charles},
  TITLE = {The knowledge complexity of interactive proof systems},
  JOURNAL = {SIAM J. Comput.},
  FJOURNAL = {SIAM Journal on Computing},
  VOLUME = {18},
  YEAR = {1989},
  NUMBER = {1},
  PAGES = {186--208},
  ISSN = {0097-5397},
  CODEN = {SMJCAT},
  MRCLASS = {68T15 (03F07 68Q15 94A60)},
  MRNUMBER = {90f:68157},
  MRREVIEWER = {Robert M. Baer},
}
```

## 2 General variables

We have the following switches:

- `full`: 1 - Full version , 0 - Proceeding version
- `draft`: 1 - Working draft (show “working draft” on title, show Author’s notes) , 0- submitted version
- `hylinks`: 1 - Use the `hyperref` package to generate hyperlinks for cross-references, 0 - don't
- `usetitlepage`: 1 - Have the abstract and title on a separate page , 0 - don't.

## 3 Hyperlinks and Cross-referencing

To link to a section labeled `sec:macros` use `\sectionref{sec:macros}`. The resulting link looks like this: [Section 4](#). There are also analogous commands `\definitionref`, `\theoremref` etc. Thus it is possible also to link to definitions, such as [Definition 4.1](#) and theorems, such as [Theorem 4.2](#).

When you site a work (such as [GMR89]) using the `\cite` command, you also get a link to the bibliography.

<p><b>Public input:</b> <math>x \in \{0, 1\}^n</math> (statement to be proved is “<math>x \in L</math>”)</p> <p><b>Prover’s auxiliary input:</b> <math>w</math> (a witness that <math>x \in L</math>)</p>	
<p><b>Steps V1 (Send long random string):</b> Verifier sends <math>r \leftarrow_{\mathbb{R}} \{0, 1\}^{10n}</math>.</p> <p><b>Step P2 (WI Proof):</b> Prover proves to verifier using its input <math>w</math> via a witness-indistinguishable (WI) proof/argument system that either <math>x \in L</math> or <math>r \in \Lambda</math>, where <math>r \in \Lambda</math> iff there exists a Turing machine <math>M</math> of description length at most <math>\frac{ r }{2}</math> such that, on the empty input, <math>M</math> outputs <math>r</math> within <math>f(n)</math> steps. Verifier accepts if proof is completed successfully.</p>	

The right column contains a schematic description of the protocol as defined in the left column.

**Protocol 4.3.** Generic bounded non-uniformity zero-knowledge protocol.

## 4 Useful macros

### 4.1 Math Symbols (partial list)

$\backslash\text{eqdef} : \stackrel{\text{def}}{=}$      $\backslash\mathbb{N} : \mathbb{N}$      $\backslash\mathbb{R} : \mathbb{R}$      $\backslash\mathbb{Z} : \mathbb{Z}$      $\backslash\text{bits} : \{0, 1\}$   
 $\backslash\text{getsr} : \leftarrow_{\mathbb{R}}$      $\backslash\text{st} : \text{s.t.}$      $\backslash\mathbb{E} : \mathbb{E}$      $\backslash\text{e} : \epsilon$      $\backslash\text{To} : \rightarrow$   
 $\backslash\text{ceil}\{\} : \lceil x \rceil$      $\backslash\text{floor}\{\} : \lfloor x \rfloor$      $\backslash\text{angles}\{\} : \langle x, y, z \rangle$

### 4.2 Environments

List of environments:

- Theorems etc.: **theorem** , **claim** , **subclaim** (for a claim inside a proof of a theorem) , **lemma** , **corollary** , **conjecture** , **observation**.
- Definitions etc.: **definition** , **construction**, **example** , **remark**

Some examples:

**Definition 4.1.** A number  $x \in \mathbb{R}$  is *rational* if there exist two numbers  $m, n \in \mathbb{Z}$  such that  $x = \frac{n}{m}$ .

**Theorem 4.2.** *The number  $\sqrt{2}$  is not rational.*

There’s also a floating protocol environment, see [Protocol 4.3](#) for an example.

### 4.3 Complexity classes

We use  $\backslash\text{classname}$  to produce **P**, **NP**, **BPP**, **P/poly**, **EXP**, **NEXP**, **PCP**, **Dtime**, **Ntime**

### 4.4 Author’s note

To define an Author’s note command use a command like

```
 $\backslash\text{newcommand}\{\backslash\text{Bnote}\}[1]\{\{\backslash\text{authnote}\{\text{Boaz}\}\{\#\text{1}\}\}\}$ 
```

The effect is as follows: **[Boaz’s Note: The notes are not displayed if one uses the `draft=0` option.]**

## 5 The `boaz.sty` package

The `boaz.sty` package contains the macros needed for most of the above stuff. This document uses the line

```
\usepackage[draft,hylinks,notitlepage,full]{boaz}
```

### 5.1 Package options

**hylinks/nohylinks** Use or don't use hyperlinks.

**draft/final** Working draft (show author notes) or final version

**titlepage/notitlepage** Use/don't use a title page

**full/proceed** Full or proceeding version. Mainly changes the `full` variable, which you can use as follows:

```
\ifnum\full=1
  Write here the full proof
\else
  For proof see the full version of this paper.
\fi
```

This also changes the behavior of the command `\nnspace`. In `proceed` mode this command causes a small negative vertical space, while in `full` mode it does nothing. It also changes the behavior of the `\newitem` command which is the same as `\item` in `full` mode, and with a negative space in `proceed` mode.

**usetoc/nousetoc , uselot/nouselot , uselof/nouselof** Control whether or not the table of contents, the list of tables and the list of figures is displayed.

The default setting is **full,hylinks,draft,notitlepage,usetoc,nouselot,nouselof**

### 5.2 Important macros

**DOCheader environment** Use this environment around your abstract, keywords and everything else you want in the top of your document. Will create or not a title page based on the `titlepage/notitlepage` option.

**\DOCkeywords command** Use this command inside the `DOCheader` environment to state your papers keywords. The keywords will appear only if there is a title page. Example:

```
\DOCkeywords{\LaTeX , hyperlinks}
```

## References

- [GMR89] Shafi Goldwasser, Silvio Micali, and Charles Rackoff. The knowledge complexity of interactive proof systems. *SIAM J. Comput.*, 18(1):186–208, 1989.

## **A Sample Appendix**