





DISSERTATIONES INFORMATICAЕ UNIVERSITATIS TARTUENSIS  
**XX**

**FIRSTNAME LASTNAME**

Dissertation Title

TARTU 2021

Institute of Computer Science, Faculty of Science and Technology, University of Tartu, Estonia.

Dissertation has been accepted for the commencement of the degree of Doctor of Philosophy (PhD) in Computer Science on XXX, 20XX by the Council of the Institute of Computer Science, University of Tartu.

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The public defense will take place on XX, 20XX at XX:XX in XXX.

The publication of this dissertation was financed by the Institute of Computer Science, University of Tartu.

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ISSN 1024-4212  
ISBN 978-9949-XX-XXX-X (print)  
ISBN 978-9949-XX-XXX-X (PDF)

University of Tartu Press  
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*To my family and friends*

## ABSTRACT

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# CONTENTS

<b>List of original publications</b>	<b>11</b>
<b>Preface</b>	<b>12</b>
<b>1. Introduction</b>	<b>13</b>
<b>2. Content chapter title</b>	<b>14</b>
2.1. Section title . . . . .	14
2.2. Section title . . . . .	14
<b>3. Content chapter title</b>	<b>15</b>
3.1. Section title . . . . .	15
3.1.1. Subsection title . . . . .	15
3.1.2. Subsection title . . . . .	15
3.2. Section title . . . . .	15
<b>4. Conclusion</b>	<b>16</b>
<b>Appendix A. Appendix title</b>	<b>18</b>
A.1. Appendix section title . . . . .	18
A.2. Appendix section title . . . . .	18
<b>Appendix B. Appendix title</b>	<b>19</b>
<b>Acknowledgements</b>	<b>20</b>
<b>Sisukokkuvõte (Summary in Estonian)</b>	<b>21</b>
<b>Publications</b>	<b>22</b>
First article title . . . . .	24
Second article title . . . . .	29
<b>Curriculum Vitae</b>	<b>44</b>
<b>Elulookirjeldus (Curriculum Vitae in Estonian)</b>	<b>45</b>

## LIST OF FIGURES

1. A sample figure . . . . .	13
------------------------------	----



## LIST OF TABLES

1. A sample table . . . . .	13
-----------------------------	----

# LIST OF ABBREVIATIONS

## Acronyms

**LA** Los Angeles. 12

**NY** New York. 12, 16

**UN** United Nations. 12

## Nomenclature

*A* The area of the needle point. 12

*N* The number of angels per needle point. 12

*a* The number of angels per unit area. 12

## LIST OF ORIGINAL PUBLICATIONS

### Publications included in the thesis

- I **First Author**, Second Author, and Third Author. “Title of the Journal Paper I”. In: *Name of the Journal* 322.10 (1905), pp. 891–921. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.
- II First Author, **Second Author**, and Third Author. “Title of the Journal Paper II”. In: *Name of the Journal* 322.10 (1905), pp. 891–921. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.
- III First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.
- IV First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.
- V First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.

### Publications not included in the thesis

- VI First Author, **Second Author**, and Third Author. “Title of the Journal Paper II”. In: *Name of the Journal* 322.10 (1905), pp. 891–921. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.
- VII First Author, **Second Author**, and Third Author. “Title of the Journal Paper II”. In: *Name of the Journal* 322.10 (1905), pp. 891–921. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.

### Other published work of the author

- VIII Third Author **First Author** Second Author. *Title of the Paper*. URL: <http://www-cs-faculty.stanford.edu/~uno/abcde.html>.  
<https://www.overleaf.com/project/5ff81dd67c1950f2da8527d4>

## PREFACE

New York (NY), Los Angeles (LA) and United Nations (UN) are abbreviations whereas *a*, *N* and *A* are part of the

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# 1. INTRODUCTION

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**Figure 1.** A sample figure

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**Table 1.** A sample table

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4	545	18744	7560
5	88	788	6344

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## **2. CONTENT CHAPTER TITLE**

**2.1. Section title**

**2.2. Section title**

### **3. CONTENT CHAPTER TITLE**

#### **3.1. Section title**

##### **3.1.1. Subsection title**

##### **3.1.2. Subsection title**

#### **3.2. Section title**

## 4. CONCLUSION

Referencing your own papers like this which will be all not only getting listed in the list of publications enumerated as Roman numerals but also in the bibliography where you can reference it yourself, or not. [FAA05; ASA05a; AAT93a; AAT93b; AAT93c; ASA05b; ASA05c; Fir]

Reference other papers such as [Ein05; Knu; GMS93] just like that.

Using the abbreviations as acronyms or nomenclature in your text using the command gls like this NY.



## BIBLIOGRAPHY

- [AAT93a] First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.
- [AAT93b] First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.
- [AAT93c] First Author, Second Author, and **Third Author**. “Title of the Conference Paper”. In: ed. by The editor. Vol. 4. 5. An optional note. The organization. The address of the publisher: The publisher, July 1993, p. 213.
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- [GMS93] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The L<sup>A</sup>T<sub>E</sub>X Companion*. Reading, Massachusetts: Addison-Wesley, 1993.
- [Knu] Donald Knuth. *Knuth: Computers and Typesetting*. URL: <http://www-cs-faculty.stanford.edu/%5C~%7B%7Duno/abcde.html>.

## **Appendix A. APPENDIX TITLE**

**A.1. Appendix section title**

**A.2. Appendix section title**

## **Appendix B. APPENDIX TITLE**

## **ACKNOWLEDGEMENTS**

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# **SISUKOKKUVÕTE**

**Töö pealkiri**

## **PUBLICATIONS**



F. Author, S. Author  
First article title  
Journal, number, pages

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# Instructions for Preparing and Transferring Final Papers to ICPRS 2021

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\*Affiliation, Country and contact details

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**Keywords:** Maximum 5 keywords placed before the abstract.

## Abstract

This is where the abstract should be placed. It should consist of one paragraph and a concise summary of the material discussed in the article below. It is preferable not to use footnotes in the abstract, the title or indeed anywhere in the paper. The acknowledgement for funding organisations etc. is placed in a separate section at the end of the text. We wish you success with the preparation of your manuscript.

## 1 Introduction

Papers for ICPRS-2021 need to be submitted for review by the **15 November 2020**. The submission should be the format described here and should be **anonymous**. If your paper is accepted, a final camera-ready non-anonymous version should be submitted, using the same electronic submission system, no later than the **29 January 2021**. Papers received after that date will not be included in the Proceedings. Your final version should be prepared taking into account the comments made by the reviewers and available to authors via the submission system. The Proceedings produced for ICPRS-2021 will contain **all** the papers accepted and **presented** in the conference.

## 2 Manuscript preparation

Full papers must be typed in English. This instruction page is an example of the format and font sizes to be used. MS Word users can download from the conference site these instructions in Word format. LaTeX is preferred as it is easier to change paper style and formatting.

These are detailed instructions valid for any word processor. In the title of the paper the initial letters should be capitalised in all words except articles and prepositions (e.g.: in, a, an, and, the, there, their, do, on, of, from, with, at etc.). E.g. "ErDoped Si Nanocrystals as a Candidate for Optical Amplification" The type should be boldface 18pt and centred on the page. The authors' names (in the final non-anonymous version) are typed in capital and lower case bold letters and centred on the page. Directly under the authors' names in capital and lower case letters and also centred are the authors' affiliation(s), address(es), plus email address(es) of (at least) the corresponding author. Manuscripts must be typed single spaced

using 10 point characters. Only Times, Times Roman, Times New Roman and Symbol fonts are accepted. The text must fall within a frame of 18 cm x 24 cm centred on an A4 page (21 cm x 29.7 cm). Paragraphs are separated by 6 points and with no indentation. The text of the full papers is written in two columns and justified. Each column has a width of 8.8 cm and the columns are separated by a margin of 0.4 cm. The maximum length of the full paper is 6 pages (min 4 pages). **Do not number the pages and avoid the use of footnotes.** The final format in which the papers will appear on the Proceedings will be a PDF file. Authors are required to upload a **PDF** file of their final paper to be included directly in the Proceedings. **All PDF files should NOT be locked and all fonts and graphics should be embedded.**

### 2.1 Figures and tables

Figures and tables should be centred in the column, numbered consecutively throughout the text, and each should have a caption underneath it (see for example Table 1). Care should be taken that the lettering is not too small. All figures and tables should be included in the electronic versions of the full paper. We cannot guarantee that any printed version of the proceedings will use colour.



Figure 1. This is an example of a figure caption.

nn!1
2
31
6

Table 1. This is an example of a table caption.

## 2.2 Equations

Equations should be typed within the text, centred, and should be numbered consecutively throughout the text. They should be referred to in the text as Equation (n). Their numbers should be typed in parentheses, flush right, as in the following example.

$$PA + A'P - PBR^{-1}B'P + Q = 0 . \quad (1)$$

## 3 Generating a PDF file

The PDF format will be the final format under which the papers will appear in the Proceedings. Therefore you are required to submit your paper as a PDF document. If this is not possible, Postscript format is also accepted as long as no fonts other than the recommended fonts are used.

You can use any of the popular free LaTeX editors (e.g. Kile, TexMaker, etc).

## 4 Electronic submission of the full paper

The submission process for ICPRS 2021 should be done on line at <http://www.icprs.org>

A PDF version of your final paper is required. It should be expected that after your submission, your paper is published directly from the file you send without any further proofreading. Therefore, it is advisable for the authors to print a hard copy of their final version and read it carefully.

Note that the publisher reserves the right not to publish a paper that is deemed to be poorly formatted or with poor use of English.

## 5 Your References

The list of references should be ordered in the same order as first cited in the text. All references should be cited in the text, and using square brackets such as [1] and [1, 2]. We recommend the use of IEEE Transactions style for references. *Avoid any references that could identify any of the authors, e.g. avoid "as we showed in ..."*

## Acknowledgements

The acknowledgement for funding organisations etc. should be placed in a separate section at the end of the text.

Thank you for your cooperation in complying with these instructions.

## References

- [1] A. B. Author and C. D. Author, "Title of the Article," *The Journal*, 2006.
- [2] E. Author and F. Author, "Title of the Paper," in *International Conference on Something*, (Place (Country)), 2007.





F. Author, S. Author  
Second article title  
Journal, number, pages

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## L<sup>A</sup>T<sub>E</sub>X Command Summary

This listing contains short descriptions of the control sequences that are likely to be handy for users of L<sup>A</sup>T<sub>E</sub>X v2.09 layered on T<sub>E</sub>X v2.0. Some of these commands are L<sup>A</sup>T<sub>E</sub>X macros, while others belong to plain T<sub>E</sub>X; no attempt to differentiate them is made.

- `\_` — ordinary space after period.
- `\!` — negative thin space =  $-\frac{1}{6}$  quad; `xx\!x` yields *xx x* (math mode).
- `\"` makes an umlaut, as ö.
- `\#` prints a pound sign: #.
- `\$` prints a dollar sign: \$.
- `\%` prints a percent sign: %.
- `\&` prints an ampersand: &.
- `\'` in `tabbing` environment moves current column to the right of the previous column. Elsewhere, acute accent, as ó.
- `\(` — start math mode. Same as `\begin{math}` or `\$`.
- `\)` — end math mode. Same as `\end{math}` or `\$`.
- `\*` is a discretionary multiplication sign, at which a line break is allowed.
- `\+` moves left margin to the right by one tab stop. Begin tabbed line.
- `\,` — thin space =  $\frac{1}{6}$  quad; `xx\,x` yields *xx x*. It is not restricted to math mode.
- `\-` in `tabbing` environment, moves left margin to the left by one tab stop. Elsewhere, optional hyphenation.
- `\.` puts a dot accent over a letter, as ó.
- `\/` inserts italics adjustment space.
- `\:` — medium space =  $\frac{2}{9}$  quad; `xx\:x` yields *xx x* (math mode).
- `\;` — thick space =  $\frac{5}{18}$  quad; `xx\;x` yields *xx x* (math mode).
- `\<` in `tabbing` environment, puts text to left of local left margin.
- `\=` in `tabbing` environment, sets a tab stop. Elsewhere, makes a macron accent, as ō.
- `\>` in `tabbing` environment is a forward tab. Otherwise, medium space =  $\frac{2}{9}$  quad (math mode).
- `\@` declares the period that follows is to be a sentence-ending period.
- `\[` — same as `\begin{displaymath}` or `\$\$`.
- `\` terminates a line.
- `\*` terminates a line, but disallows a pagebreak.
- `\]` — same as `\end{displaymath}` or `\$\$`.
- `\^` makes a circumflex, as ô.
- `\_` is an underscore, as in *hours\_worked*.
- `\‘` in `tabbing` environment moves all text which follows (up to `\)` to the right margin. Elsewhere, grave accent, as ò.
- `\{` prints a curly left brace: {.
- `\|` is || (math mode).
- `\}` prints a curly right brace: }.
- `\~` makes a tilde, as ñ.
- `\a’` makes an acute accent in `tabbing` environment, as ó.
- `\a‘` makes a grave accent in `tabbing` environment, as ò.
- `\a=` makes a macron accent in `tabbing` environment, as ō.
- `\aa` is å. `\AA` is Å.
- `\acute` makes an acute accent: *á* (math mode).
- `\addcontentsline{toc}{section}{name}` adds the command `\contentsline{section}{name}` to the `.toc` file.
- `\address{text}` declares the return address in the `letter` document style.
- `\addtocontents{toc}{text}` writes `text` to the `.toc` file.
- `\addtocounter{name}{amount}` adds `amount` to counter `name`.
- `\addtolength{nl}{length}` adds `length` to length command `nl`. See also `\setlength`, `\newlength`, `\settowidth`.
- `\ae` is æ. `\AE` is Æ.
- `\aleph` is ℵ (math mode).
- `\alph{counter}` prints `counter` as lower-case letters. `\Alph{counter}` prints upper-case letters.
- `\alpha` is α (math mode).
- `\amalg` is II (math mode).
- `\and` separates multiple authors for the `\maketitle` command.
- `\angle` is ∠ (math mode).
- `\appendix` starts appendices.
- `\approx` is ≈ (math mode).
- `\arabic{counter}` prints `counter` as arabic numerals 1, 2, etc.
- `\arccos` is arccos (math mode).
- `\arcsin` is arcsin (math mode).

- `\arctan` is arctan (math mode).
- `\arg` is arg (math mode).
- `\arraycolsep` — width of the space between columns in an `array` environment.
- `\arrayrulewidth` — width of the rule created in `tabular` or `array` environment by `|`, `\hline`, or `\vline`.
- `\arraystretch` — scale factor for interrow spacing in `array` and `tabular` environments.
- `\ast` is \* (math mode).
- `\asymp` is  $\simeq$  (math mode).
- `\author{names}` declares author(s) for the `\maketitle` command.
- `\b` is a “bar-under” accent, as  $\underline{o}$ .
- `\backslash` is  $\backslash$  (math mode).
- `\bar` puts a macron over a letter:  $\bar{a}$  (math mode).
- `\baselineskip` — distance from bottom of one line of a paragraph to bottom of the next line.
- `\baselinestretch` — factor by which `\baselineskip` is multiplied each time a type size changing command is executed.
- `\begin{environment}` — always paired with `\end{environment}`. Following are the assorted environments.
- `\begin{abstract}` starts an environment for producing an abstract.
- `\begin{array}{lrc}` starts array environment with 3 columns, left-justified, right-justified, and centered. Separate columns with `&`, and end lines with `\\`. `@{text}` between `l`, `r` or `c` arguments puts `text` between columns.
- `\begin{center}` starts an environment in which every line is centered. End lines with `\\`.
- `\begin{description}` starts a labeled list. Items are indicated by `\item[label]`.
- `\begin{displaymath}` sets mathematics on lines of its own. Same as `\[` or `$$`.
- `\begin{document}` starts the actual text of a document. Required.
- `\begin{enumerate}` starts a numbered list.
- `\begin{eqnarray}` starts a `displaymath` environment in which more than one equation can be accommodated. Separate equations with `\\` or `\\*`; use `\nonumber` to suppress numbering a particular equation.
- `\begin{eqnarray*}` begins an environment like the `eqnarray` environment except that the equations aren’t numbered.
- `\begin{equation}` starts a `displaymath` environment and adds an equation number.
- `\begin{figure}[pos]` begins a floating environment, which may be optionally placed at `pos` (see `positions` on page 8). Document styles `report` and `article` use the default `tbp`.
- `\begin{figure*}[pos]` begins a two-column-wide figure. See `\begin{figure}`.
- `\begin{flushleft}` starts environment with ragged right-hand margin. Separate lines with `\\`. See `\raggedright`.
- `\begin{flushright}` starts environment with ragged left-hand margin. Separate lines with `\\`. See `\raggedleft`.
- `\begin{itemize}` starts a “bulleted” (•) list. Start each item with `\item`.
- `\begin{list}{labeling}{spacing}` starts a general list environment. `labeling` specifies how items are labeled when `\item` has no argument. `spacing` is an optional list of spacing parameters.
- `\begin{math}` starts a math display like this:  $x^2 + y^2$ , within text. Same as `$` or `\(`.
- `\begin{minipage}[pos]{vsize}` starts a box of height `vsize`. Text will be positioned according to `pos` (see `positions` on page 8).
- `\begin{picture}(x,y)(x_l,y_l)` starts a picture environment whose width is `x` units, height is `y` units, and lower-left corner is the point  $(x_l, y_l)$ . Set units with `\unitlength`.
- `\begin{quotation}` starts an environment with wider margins, normal paragraph indenting, and offset from the text at top and bottom.
- `\begin{quote}` starts an environment with wider margins, no paragraph indenting, and offset from the text at top and bottom.
- `\begin{tabbing}` starts a columnar environment. Use commands `\=` (set tab), `\>` (tab), `\<` (backtab), `\+` (indent one tab stop), `\-` (outdent one tab stop), `\’` (flush right), `\’` (flush left), `\pushtabs`, `\poptabs`, `\kill`, `\\`.
- `\begin{table}[pos]` begins a floating environment, which may be optionally placed at `pos` (see `positions` on page 8). Document styles `report` and `article` use the default `tbp`.
- `\begin{table*}[pos]` begins a two-column-wide table. See `\begin{table}`.
- `\begin{tabular}{arg}` starts an array environment which can be used in or out of math mode. `arg` contains column text positioning commands `r`, `l`, `c`, `@{...}`, `p{length}` (see `positions` on page 8). `|` produces vertical line between columns. `*{7}{r|l|}` repeats that entry 7 times.

- `\begin{theorem}` — see `\newtheorem`.
- `\begin{titlepage}` is an environment with no page number, and causes following page to be numbered “1”.
- `\begin{verbatim}` starts an environment which will be typeset exactly as you type it, carriage returns and all, usually in `typewriter` font.
- `\begin{verse}` starts an environment for poetry with wider margins, no paragraph indenting, and ragged right margin.
- `\beta` is  $\beta$  (math mode).
- `\bf` switches to **bold face** type.
- `\bibitem{ref} text` creates a bibliography entry `text`, numbers it, and labels it with reference label `ref`.
- `\bibliography{file}` — insert bibliography from file `name.bib` at this point in text.
- `\bibliographystyle{style}` — a format specifier, like `\documentstyle`.
- `\bigcap` is  $\cap$  (math mode).
- `\bigcirc` is  $\bigcirc$  (math mode).
- `\bigcup` is  $\cup$  (math mode).
- `\bigodot` is  $\odot$  (math mode).
- `\bigoplus` is  $\oplus$  (math mode).
- `\bigotimes` is  $\otimes$  (math mode).
- `\bigtriangledown` is  $\nabla$  (math mode).
- `\bigtriangleup` is  $\triangle$  (math mode).
- `\bigskip` — standard “big” vertical skip.
- `\bigskipamount` — default length for `\bigskip`.
- `\bigsqcup` is  $\sqcup$  (math mode).
- `\biguplus` is  $\uplus$  (math mode).
- `\bigvee` is  $\vee$  (math mode).
- `\bigwedge` is  $\wedge$  (math mode).
- `\bmod` is binary modulo expression  $u \bmod m$  (math mode).
- `\boldmath` changes math italics and math symbols to boldface. Should be used *outside* of math mode.
- `\bot` is  $\perp$  (math mode).
- `\bottomfraction` — maximum fraction of page occupied by floats at the bottom.
- `\bowtie` is  $\bowtie$  (math mode).
- `\Box` is  $\square$  (math mode).
- `\breve` makes a breve accent:  $\breve{a}$  (math mode).
- `\bullet` is  $\bullet$  (math mode).
- `\c` is a cedilla, as  $\c{c}$ .
- `\cal` produces calligraphic letters, as  $\mathcal{B}$  (math mode).
- `\cap` is  $\cap$  (math mode).
- `\caption[loftitle]{text}` creates a numbered caption in a `figure` or `table` environment. Optional `loftitle` contains entry for the list of figures if different from `text`.
- `\cc{text}` declares list of copy recipients for `letter` document style.
- `\cdot` is  $\cdot$  (math mode).
- `\cdots` makes three dots centered on the line:  $\cdots$  (cf. `\ldots`) (math mode).
- `\centering` declares that all text following is to be centered (cf. `\begin{center}`).
- `\chapter[toctitle]{text}` begins a new section, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.
- `\chapter*{title}` is like `\chapter{title}`, but adds no chapter number or table of contents entry.
- `\check` makes a háček, as  $\check{u}$  (math mode).
- `\chi` is  $\chi$  (math mode).
- `\circ` is  $\circ$  (math mode).
- `\circle{diameter}` as a valid argument for `\put` in a `picture` environment, draws a circle.
- `\circle*{diameter}` is like `\circle`, but draws a solid circle.
- `\cite[subcit]{ref}` produces a reference, in square brackets, to a bibliographic item created with `\bibitem{ref}`. Optional sub-citation `subcit` can be inserted in the entry.
- `\cleardoublepage` forces next page to be a right-hand, odd-numbered page.
- `\clearpage` ends a page where it is, and puts pending figures or tables on separate float pages with no text.
- `\cline{i-j}` draws a horizontal line across columns `i` through `j` inclusive in `array` or `tabular` environments.
- `\closing{text}` declares the closing in `letter` document style.
- `\clubsuit` is  $\clubsuit$  (math mode).
- `\columnsep` — distance between columns in two-column text.
- `\columnseprule` — width of the rule between columns on two-column pages.
- `\columnwidth` — width of the current column. Equals `\textwidth` in single-column text.
- `\cong` is  $\cong$  (math mode).
- `\coprod` is  $\coprod$  (math mode).



- `\copyright` is ©.
- `\cos` is cos (math mode).
- `\cosh` is cosh (math mode).
- `\cot` is cot (math mode).
- `\coth` is coth (math mode).
- `\csc` is csc (math mode).
- `\cup` is  $\cup$  (math mode).
- `\d` is a “dot under” accent, as  $\underset{\cdot}{o}$ .
- `\dag` is †.
- `\dagger` is † (math mode).
- `\dashbox{dwid}{width,height}[pos]{text}` creates a dashed rectangle around `text` in a `picture` environment. Dashes are `dwid` units wide; dimensions of rectangle are `width` and `height`; `text` is positioned at optional `pos` (see positions on page 8).
- `\dashv` is  $\dashv$  (math mode).
- `\date{adate}` declares the date for the `\maketitle` command. The default is `\today`.
- `\day` — current day of the month.
- `\dblfloatpagefraction` — minimum fraction of a float page that must be occupied by floats, for two-column float pages.
- `\dblfloatsep` — distance between floats at the top or bottom of a two-column float page.
- `\dbltextfloatsep` — distance between double-width floats at the top or bottom of a two-column page and the text on that page.
- `\dbltopfraction` — maximum fraction at the top of a two-column page that may be occupied by floats.
- `\ddag` is ‡.
- `\ddagger` is ‡ (math mode).
- `\ddot` makes a dieresis over a letter:  $\ddot{a}$  (math mode).
- `\ddots` produces a diagonal ellipsis  $\ddots$ . (math mode).
- `\deg` is deg (math mode).
- `\delta` is  $\delta$ . `\Delta` is  $\Delta$  (math mode).
- `\det` is det (math mode).
- `\diamond` is  $\diamond$ . `\Diamond` is  $\Diamond$  (both math mode).
- `\diamondsuit` is  $\diamondsuit$  (math mode).
- `\dim` is dim (math mode).
- `\displaystyle` switches to `displaymath` or `equation` environment typesetting (math mode).
- `\div` is  $\div$  (math mode).
- `\documentstyle[substy]{sty}` determines default font, headings, etc., for document of style `sty` (and optional substyle `substy`). Styles: `article`, `book`, `letter`, `report`, `slides`. Substyles: `11pt`, `12pt`, `acm`, `draft`, `fleqn`, `leqno`, `twocolumn`, `twoside`.
- `\dot` makes a dot over a letter:  $\dot{a}$  (math mode).
- `\doteq` is  $\doteq$  (math mode).
- `\dotfill` expands to fill horizontal space with row of dots.
- `\doublerulesep` — horizontal distance between vertical rules created by `||` in `tabular` or `array` environment.
- `\downarrow` is  $\downarrow$ . `\Downarrow` is  $\Downarrow$  (math mode).
- `\ell` is  $\ell$  (math mode).
- `\em` toggles between roman and *italic* fonts for *emphasis*.
- `\emptyset` is  $\emptyset$  (math mode).
- `\encl{text}` declares a list of enclosures for `letter` document style.
- `\end{environment}` ends an environment begun by `\begin{environment}` (q.v.).
- `\epsilon` is  $\epsilon$  (math mode).
- `\equiv` is  $\equiv$  (math mode).
- `\eta` is  $\eta$  (math mode).
- `\evensidemargin` — distance between left side of page and text’s normal left margin, for even-numbered pages in two-sided printing.
- `\exists` is  $\exists$  (math mode).
- `\exp` is exp (math mode).
- `\fbox{text}` makes a framed box around `text`.
- `\fboxrule` — thickness of ruled frame for `\fbox` and `\framebox`.
- `\fboxsep` — space between frame and text for `\fbox` and `\framebox`.
- `\fill` — rubber length (glue) that can stretch to arbitrary length. Usually used to justify text a particular way.
- `\flat` is  $\flat$  (math mode).
- `\floatpagefraction` — minimum fraction of a float page occupied by floats.
- `\floatsep` — distance between floats that appear at the top or bottom of a text page.
- `\flushbottom` causes pages to be stretched to `\textheight`.
- `\fnsymbol{counter}` prints `counter` as one of the set of “footnote symbols”. `counter` must be less than 10.

- `\fotheight` — height of box at bottom of page that holds page number.
- `\footnote{text}` creates a footnote of `text`.
- `\footnotemark` puts a footnote number into the text.
- `\footnotesep` — height of strut placed at beginning of footnote.
- `\footnotesize` switches to footnote-sized type.
- `\footskip` — vertical distance between bottom of last line of text and bottom of page footing.
- `\footnotetext{text}` specifies the text for a footnote which was indicated by a `\footnotemark`.
- `\forall` is  $\forall$  (math mode).
- `\frac{numerator}{denominator}` produces a fraction in `math` environments.
- `\frame{text}` makes a framed (outlined) box around `text`, with no margin between the text and the frame.
- `\framebox[size][pos]{text}` produces a framed box of dimension `size` containing `text`, optionally positioned `l` or `r`.  
In `picture` environment,  
`\framebox(width,height)[pos]{text}` creates a rectangle around `text`; dimensions of rectangle are `width` and `height`; `text` is positioned at optional `pos` (see `positions` on page 8).
- `\frown` is  $\frown$  (math mode).
- `\fussy` is the default declaration for the line-breaking algorithm (cf. `\sloppy`).
- `\gamma` is  $\gamma$ . `\Gamma` is  $\Gamma$  (math mode).
- `\gcd` is `gcd` (math mode).
- `\ge` is  $\geq$  (math mode).
- `\geq` is  $\geq$  (math mode).
- `\gets` is  $\leftarrow$  (math mode).
- `\gg` is  $\gg$  (math mode).
- `\glossary{text}` appends `text` to the `.glo` file by writing a `\glossaryentry` command.
- `\glossaryentry{text}{ref}` is written to the `.glo` file for `\glossary{text}` occurring at reference `ref`.
- `\grave` makes a grave accent:  $\grave{a}$  (math mode).
- `\H` prints a long Hungarian umlaut, as  $\ddot{o}$ .
- `\hat` makes a circumflex:  $\hat{a}$  (math mode).
- `\hbar` is  $\hbar$  (math mode).
- `\headheight` — height of box at top of page that holds running head.
- `\headsep` — vertical distance between bottom of head and top of text.
- `\heartsuit` is  $\heartsuit$  (math mode).
- `\hfill` is `\hspace{\fill}` (cf. `\fill`).
- `\hline` draws a horizontal line across all columns of a `tabular` or `array` environment.
- `\hom` is  $\text{hom}$  (math mode).
- `\hookleftarrow` is  $\hookleftarrow$  (math mode).
- `\hookrightarrow` is  $\hookrightarrow$  (math mode).
- `\hrulefill` expands to fill horizontal space with horizontal rule.
- `\hspace{len}` leaves a horizontal space of dimension `len`.
- `\hspace*{len}` is like `\hspace{len}` but space is not removed at the beginning or end of a line.
- `\huge` switches to a very large typeface. `\Huge` is even bigger.
- `\hyphenation{wordlist}` declares hyphenation as indicated; `wordlist` contains words separated by spaces, with hyphens indicated (e.g. “aard-vark cal-i-bra-tion”).
- `\i` is *i*.
- `\iff` is  $\iff$  (math mode).
- `\Im` is  $\Im$  (math mode).
- `\imath` is  $\imath$  (math mode).
- `\in` is  $\in$  (math mode).
- `\include{filename}` brings in `filename` text at that point.
- `\includeonly{file1,file2,...}` limits recognition of `\include` files.
- `\index{text}` appends `text` to the `.idx` file by writing an `\indexentry` command.
- `\indexentry{text}{ref}` is written to the `.idx` file for `\index{text}` occurring at reference `ref`.
- `\indexspace` puts blank space before first index entry starting with a new letter.
- `\inf` is  $\text{inf}$  (math mode).
- `\infty` is  $\infty$  (math mode).
- `\input{file}` brings in text from `file.tex` at that point.
- `\int` is  $\int$  (math mode).
- `\intextsep` — vertical space placed above and below float in middle of text.
- `\iota` is  $\iota$  (math mode).
- `\it` switches to *Italic* type.
- `\item[text]` indicates a list entry. `text` is optional, used in `description` environment.

- `\itemindent` — extra indentation before label in list item. Default is 0mm.
- `\itemsep` — vertical space between successive list items.
- `\j` is  $j$ .
- `\jmath` is  $j$  (math mode).
- `\Join` is  $\bowtie$  (math mode).
- `\kappa` is  $\kappa$  (math mode).
- `\ker` is  $\ker$  (math mode).
- `\kill` — in a `\tabbing` environment, deletes previous line so tabs can be set without outputting text.
- `\l` is  $l$ . `\L` is  $L$ .
- `\label{text}` provides a reference point that is accessed with `\ref{text}` or `\pageref{text}`.
- `\labelwidth` — width of box containing list item label.
- `\labelsep` — space between box containing list item label and text of the item.
- `\lambda` is  $\lambda$ . `\Lambda` is  $\Lambda$  (math mode).
- `\land` is  $\wedge$  (math mode).
- `\langle` is  $\langle$  (math mode).
- `\large`, `\Large`, and `\LARGE` switch to successively larger than `\normalsize` type sizes.
- `\LaTeX` produces the L<sup>A</sup>T<sub>E</sub>X logo.
- `\lbrace` is  $\{$  (math mode).
- `\lbrack` is  $[$  (math mode).
- `\lceil` is  $\lceil$  (math mode).
- `\ldots` makes three dots at the base of the line: ... (cf. `\cdots`).
- `\le` is  $\leq$  (math mode).
- `\leadsto` is  $\rightsquigarrow$  (math mode).
- `\left*` (where `*` is a delimiter) must be paired with `\right*` (not necessarily using the same delimiter). ‘.’ acts as a null delimiter (math mode).
- `\leftarrow` is  $\leftarrow$ . `\Leftarrow` is  $\Leftarrow$  (math mode).
- `\lefteqn{formula}` is used in the `eqnarray` environment to break a long `formula` across lines.
- `\leftharpoonup` is  $\leftharpoonup$  (math mode).
- `\leftharpoondown` is  $\leftharpoondown$  (math mode).
- `\leftmargin`, in `list` environment, horizontal distance between left margin of enclosing environment and left margin of list. Settable for nesting levels 1 through 6, as `\leftmargini` through `\leftmarginvi`.
- `\leftrightarrow` is  $\leftrightarrow$ . `\Leftrightarrow` is  $\Leftrightarrow$  (math mode).
- `\leq` is  $\leq$  (math mode).
- `\lfloor` is  $\lfloor$  (math mode).
- `\lg` is  $\lg$  (math mode).
- `\lhd` is  $\triangleleft$  (math mode).
- `\lim` is  $\lim$  (math mode).
- `\liminf` is  $\liminf$  (math mode).
- `\limsup` is  $\limsup$  (math mode).
- `\line(x,y){len}` in `picture` environment, in `\put` command, draws line from `\put` argument with length `len` and slope `(x,y)`.
- `\linebreak[n]` forces a line to break exactly at this point, and adjusts line just terminated (cf. `\newline`). `n` is optional: 0 is an optional break, 4 is a mandatory break, 1, 2 and 3 are intermediate levels of insistence.
- `\linethickness{dimen}` sets the thickness for all lines in a `picture`.
- `\linewidth` is the width of the current line in a paragraph.
- `\listoffigures` begins a list of figures with heading.
- `\listoftables` begins a list of tables with heading.
- `\listparindent` — extra indentation added to first line of every paragraph of an item after the first, in `list` environment.
- `\ll` is  $\ll$  (math mode).
- `\ln` is  $\ln$  (math mode).
- `\lnot` is  $\neg$  (math mode).
- `\log` is  $\log$  (math mode).
- `\longleftarrow` is  $\longleftarrow$ . `\Longleftarrow` is  $\Longleftarrow$  (math mode).
- `\longlefttrightarrow` is  $\longleftrightarrow$ . `\Longlefttrightarrow` is  $\longleftrightarrow$  (math mode).
- `\longmapsto` is  $\longmapsto$  (math mode).
- `\longrightarrow` is  $\longrightarrow$ . `\Longrightarrow` is  $\longrightarrow$  (math mode).
- `\lor` is  $\vee$  (math mode).
- `\lq` is a left-quote: ‘.
- `\makebox[size][pos]{text}` creates a box of dimension `size` containing `text` at optional `pos`. `\makebox(width,height)[pos]{text}` puts `text` in a box; dimensions of box are `width` and `height`; `text` is positioned at optional `pos` (see `positions` on page 8).
- `\makeglossary` enables writing of `\glossaryentry` commands to a `.glo` file.

- `\makeindex` enables writing of `\indexentry` commands to a `.idx` file.
- `\maketitle` produces a title with `\title`, `\author`, and, optionally, `\date`.
- `\mapsto` is  $\mapsto$  (math mode).
- `\marginpar{text}` puts `text` in the margin as a note.
- `\marginparpush` — minimum amount of vertical space between two marginal notes.
- `\marginparsep` — horizontal space between margin and marginal note.
- `\marginparwidth` — width of a marginal note.
- `\markboth{lhs}{rhs}` defines the left-hand heading `lhs` and the right-hand heading `rhs` for the `headings` and `myheadings` page styles.
- `\markright{rhs}` defines the right-hand heading `rhs` for the `headings` and `myheadings` page styles.
- `\max` is  $\max$  (math mode).
- `\mbox{text}` places `text` into a horizontal box.
- `\medskip` — standard “medium” vertical skip.
- `\medskipamount` — default length for `\medskip`.
- `\mho` is  $\text{\O}$  (math mode).
- `\mid` is  $|$  (math mode).
- `\min` is  $\min$  (math mode).
- `\mit` is “math italic” as in  $\mathit{II}$  (math mode).
- `\models` is  $\models$  (math mode).
- `\month` — current month of the year.
- `\mp` is  $\mp$  (math mode).
- `\mu` is  $\mu$  (math mode).
- `\multicolumn{noc}{fmt}{text}` in `tabular` environment puts `text` across `noc` columns using positioning format `fmt` (`c`, `r`, `l`, and/or `l`).
- `\multiput(x,y)(\Delta x,\Delta y){n}{obj}` is  
`\put(x,y){obj}`  
`\put(x + \Delta x,y + \Delta y){obj}`  
`...`  
`\put(x + (n - 1)\Delta x,y + (n - 1)\Delta y){obj}`.
- `\nabla` is  $\nabla$  (math mode).
- `\natural` is  $\natural$  (math mode).
- `\ne` is  $\neq$  (math mode).
- `\nearrow` is  $\nearrow$  (math mode).
- `\neg` is  $\neg$  (math mode).
- `\neq` is  $\neq$  (math mode).
- `\newcommand{cs}[narg]{def}` defines a new control sequence `cs` with definition `def`.  
 Optionally, `narg` is the number of arguments, indicated in `def` as `#1`, `#2`, etc.
- `\newcounter{counter}[name]` defines a `counter` optionally to be zeroed whenever the `name` counter is incremented.
- `\newenvironment{envname}[narg]{def1}{def2}` defines a new environment, optionally with some number of arguments `narg`. `def1` is executed when the environment is entered and `def2` is executed when it is exited.
- `\newfont{cs}{name}` defines a control sequence `cs` that chooses the font `name`.
- `\newlength{nl}` sets up `nl` as a length of 0in. See also `\setlength`, `\addtolength`, `\settowidth`.
- `\newline` breaks a line right where it is, with no stretching of terminated line (cf. `\linebreak`).
- `\newpage` ends a page where it appears. (cf. `\clearpage`).
- `\newsavebox{binname}` declares a new bin to hold a `\savebox`.
- `\newtheorem{env}[env2]{label}[sectyp]` defines a new theorem environment `env` (optionally with the same numbering scheme as environment `env2`) with labels `label`.  
 Optionally, theorem numbers can be related to document section `sectyp`.
- `\ni` is  $\ni$  (math mode).
- `\nofiles` suppresses writing of auxiliary files `.idx`, `.toc`, etc.
- `\noindent` suppresses indentation of first line of paragraph.
- `\nolinebreak[n]` prevents a line break at that point (cf. `\linebreak` on page 6).
- `\nonumber` is used in an `eqnarray` environment to suppress equation numbering.
- `\nopagebreak[n]` prevents a page break at that point (cf. `\linebreak` on page 6).
- `\normalmarginpar` is default declaration for placement of marginal notes (cf. `\reversemarginpar`).
- `\normalsize` is the default type size for the document.
- `\not` puts a slash through a relational operator:  
`\not=` is  $\neq$  (math mode).
- `\notin` is  $\notin$  (math mode).
- `\nu` is  $\nu$  (math mode).
- `\nwarrow` is  $\nwarrow$  (math mode).
- `\o` is  $\emptyset$ . `\O` is  $\emptyset$ .
- `\obeycr` makes embedded carriage returns act like line terminators.

- `\oddsidemargin` — distance between left side of page and text’s normal left margin.
- `\odot` is  $\odot$  (math mode).
- `\oe` is  $\text{œ}$ . `\OE` is  $\text{Œ}$ .
- `\oint` is  $\oint$  (math mode).
- `\omega` is  $\omega$ . `\Omega` is  $\Omega$  (math mode).
- `\ominus` is  $\ominus$  (math mode).
- `\onecolumn` sets text in single column (default) (cf. `\twocolumn`).
- `\opening{text}` declares an opening for letter document style.
- `\oplus` is  $\oplus$  (math mode).
- `\oslash` is  $\oslash$  (math mode).
- `\otimes` is  $\otimes$  (math mode).
- `\oval(x,y)` as an argument to `\put` draws an oval  $x$  units wide and  $y$  units high.
- `\overbrace{text}` gives  $\overbrace{\text{text}}$  (math mode).
- `\overline{text}` gives  $\overline{\text{text}}$  (math mode).
- `\owns` is  $\ni$  (math mode).
- `\P` is  $\P$ .
- `\pagebreak[n]` forces a page break at that point (cf. `\linebreak` on page 6).
- `\pagenumbering{style}` determines page number style; `style` may be `arabic` (3), `roman` (iii), `Roman` (III), `alph` (c), `Alph` (C).
- `\pageref{text}` is the page number on which `\label{text}` occurs.
- `\pagestyle{sty}` determines characteristics of a page’s head and foot. `sty` may be `plain` (page number only), `empty` (no page number), `headings` (running headings on each page), `myheadings` (user headings).
- `\paragraph[toctitle]{text}` begins a new paragraph, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.
- `\paragraph*{text}` begins a paragraph and prints a title, but doesn’t include a number or make a table of contents entry.
- `\parallel` is  $\parallel$  (math mode).
- `\parbox[pos]{size}{text}` is a box created in paragraph mode. `text` is positioned optionally at `pos` (see `positions` on page 8). Width is `size`.
- `\parindent` — horizontal indentation added at beginning of paragraph.
- `\parsep` — extra vertical space between paragraphs within a list item.
- `\parskip` — extra vertical space between paragraphs, normally.
- `\part[toctitle]{text}` begins a new part, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.
- `\part*{text}` begins a part and prints a title, but doesn’t include a number or make a table of contents entry.
- `\partial` is  $\partial$  (math mode).
- `\partopsep` — extra vertical space added before first list item if environment starts a new paragraph.
- `\perp` is  $\perp$  (math mode).
- `\phi` is  $\phi$ . `\Phi` is  $\Phi$  (math mode).
- `\pi` is  $\pi$ . `\Pi` is  $\Pi$  (math mode).
- `\pm` is  $\pm$  (math mode).
- `\pmod{modulus}` is “parenthesized” modulo expression  $u \pmod{2^{e_j} - 1}$  (math mode).
- `\poptabs` undoes the previous `\pushtabs` command (restore prior tab settings).
- `positions`, for boxing commands: `t=top`, `b=bottom`, `h=here`, `l=left`, `c=center`, `r=right`, `p=new page` (`figure` environment), `p=parbox` (`tabular` environment).
- `\pounds` is  $\pounds$ .
- `\Pr` is  $\Pr$  (math mode).
- `\prec` is  $\prec$  (math mode).
- `\preceq` is  $\preceq$  (math mode).
- `\prime` is  $\prime$  (math mode).
- `\prod` is  $\prod$  (math mode).
- `\propto` is  $\propto$  (math mode).
- `\protect` permits the use of “dangerous” commands in  $\text{\@}$ -expressions, or in sectioning command and `\caption` arguments.
- `\ps` in letter document style permits additional text after `\closing`.
- `\psi` is  $\psi$ . `\Psi` is  $\Psi$  (math mode).
- `\pushtabs` in `tabbing` environment lets you stack tab stop definitions. Undo with `\poptabs`.
- `\put(x,y){stuff}` is the basic picture-drawing command.  $(x,y)$  is the *reference point*, whose meaning varies for different `stuff`. `stuff` may be anything that goes in an `\mbox`.
- `\raggedbottom` causes pages to assume natural height.
- `\raggedleft` declares all text that follows is to be flush against the right margin (cf. `\begin{flushright}`).

`\raggedright` declares all text that follows is to be flush against the left margin (cf. `\begin{flushleft}`).

`\raisebox{dim}[d2][d3]{text}` moves `text` up by `dim` (which may be negative). Optional `d2` makes system think that `text` extends `d2` above the baseline (and optionally `d3` below it).

`\rangle` is  $\rangle$  (math mode).

`\rbrace` is  $\}$  (math mode).

`\rbrack` is  $\}$  (math mode).

`\rceil` is  $\lceil$  (math mode).

`\Re` is  $\Re$  (math mode).

`\ref{text}` is the section number in which `\label{text}` occurs.

`\renewcommand{\cs}[narg]{def}` redefines an existing control sequence `\cs` with definition `def`. Optionally, `narg` is the number of arguments, indicated in `def` as `#1`, `#2`, etc.

`\renewenvironment{envname}[narg]{def1}{def2}` redefines an existing environment. See `\newenvironment`.

`\restorecr` undoes the `\obeycr` command (makes carriage return a space-producing character).

`\reversemarginpar` causes opposite margin to be used for marginal notes (e.g., left margin on odd-numbered pages).

`\rfloor` is  $\lfloor$  (math mode).

`\rhd` is  $\triangleright$  (math mode).

`\rho` is  $\rho$  (math mode).

`\right*` (where `*` is a delimiter) must be paired with `\left*` (not necessarily using the same delimiter). ‘.’ acts as a null delimiter (math mode).

`\rightarrow` is  $\rightarrow$ . `\Rightarrow` is  $\Rightarrow$  (math mode).

`\rightharpoondown` is  $\searrow$  (math mode).

`\rightharpoonup` is  $\nearrow$  (math mode).

`\rightleftharpoons` is  $\Leftrightarrow$  (math mode).

`\rightmargin` — in `list` environment, horizontal distance between right margin of enclosing environment and right margin of list. Default 0in.

`\rm` switches to Roman type.

`\roman{counter}` prints `counter` in lower-case roman numerals. `\Roman{counter}` prints upper-case roman numerals.

`\rq` is a right-quote: ‘.

`\rule[height]{length}{width}` makes a rectangular blob of ink `length` long, `width` wide, with optional `height` above baseline.

`\S` is §.

`\savebox{\binname}[width][pos]{text}` is exactly like `\makebox` (q.v.), but saves box definition in bin `\binname`. Access with `\usebox{\binname}`.

`\sbox{\binname}{text}` saves `text` in box `\binname` (see `\savebox`, above).

`\sc` switches to caps and small caps font.

`\scriptsize` switches subscript size type.

`\scriptstyle` switches to sub- or superscript-sized typesetting.

`\scriptscriptstyle` switches to second-level (very small) sub- or superscript-sized typesetting (math mode).

`\searrow` is  $\searrow$  (math mode).

`\sec` is sec (math mode).

`\section[toctitle]{text}` begins a new section, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.

`\section*{text}` begins a section, prints a title, but doesn’t include a number or make a table of contents entry.

`\setcounter{counter}{value}` resets the value of `counter`.

`\setlength{\nl}{length}` sets value of length command `\nl` to `length`. See also `\addtolength`, `\newlength`, `\settowidth`.

`\setminus` is  $\setminus$  (math mode).

`\settowidth{\nl}{text}` sets value of length command `\nl` to the width of `text`. See also `\setlength`, `\newlength`, `\addtolength`.

`\sf` switches to sans serif font.

`\sharp` is  $\sharp$  (math mode).

`\shortstack[pos]{x\yy\zzz}` yields  $\begin{array}{c} x \\ yy \\ zzz \end{array}$ , a one-column tabular arrangement of its arguments. Optional `pos` can be `l` or `r` for text position.

`\sigma` is  $\sigma$ . `\Sigma` is  $\Sigma$  (math mode).

`\signature{text}` declares a signature for `letter` document style.

`\sim` is  $\sim$  (math mode).

`\simeq` is  $\simeq$  (math mode).

`\sin` is  $\sin$  (math mode).

`\sinh` is  $\sinh$  (math mode).

- `\sl` switches to *slanted* typeface.
- `\sloppy` relaxes the line-breaking algorithm to allow more or less distance between words. Default is `\fussy`.
- `\small` switches to smaller than `normalsize` typeface.
- `\smallint` is  $\int$  (math mode).
- `\smallskip` — standard “small” vertical skip.
- `\smallskipamount` — default length for `\smallskip`.
- `\smile` is  $\smile$  (math mode).
- `\spadesuit` is  $\spadesuit$  (math mode).
- `\sqcap` is  $\sqcap$  (math mode).
- `\sqcup` is  $\sqcup$  (math mode).
- `\sqrt[3]{arg}` is  $\sqrt[3]{arg}$ . 3 (root) is optional.
- `\sqsubset` is  $\sqsubset$  (math mode).
- `\sqsubseteq` is  $\sqsubseteq$  (math mode).
- `\sqsupset` is  $\sqsupset$  (math mode).
- `\sqsupseteq` is  $\sqsupseteq$  (math mode).
- `\ss` is  $\beta$ .
- `\stackrel{stuff}{delim}` puts `stuff` above the delimiter; `\stackrel{f}{\longrightarrow}` yields  $\xrightarrow{f}$  (math mode).
- `\star` is  $\star$  (math mode).
- `\stop` — type this if T<sub>E</sub>X stops with a \* and no error message.
- `\subparagraph[toctitle]{text}` begins a subparagraph, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.
- `\subparagraph*{text}` begins a subparagraph and prints a title, but doesn’t include a number or make a table of contents entry.
- `\subsection[toctitle]{text}`,  
`\subsubsection[toctitle]{text}` begin new subsections, automatically headed and numbered. Optional `toctitle` contains entry for the table of contents if different from `text`.
- `\subsection*{text}`, `\subsubsection*{text}` begin subsections, but suppress section number and table of contents entry.
- `\subset` is  $\subset$  (math mode).
- `\subseteq` is  $\subseteq$  (math mode).
- `\succ` is  $\succ$  (math mode).
- `\succeq` is  $\succeq$  (math mode).
- `\sum` is  $\sum$  (math mode).
- `\sup` is  $\sup$  (math mode).
- `\supset` is  $\supset$  (math mode).
- `\supseteq` is  $\supseteq$  (math mode).
- `\surd` is  $\surd$  (math mode).
- `\swarrow` is  $\swarrow$  (math mode).
- `\symbol{cc}` produces the symbol (glyph) character code `cc` in the current font.
- `\t` prints a “tie-after” accent, as  $\circ\circ$ .
- `\tabbingsep` — distance to left of a tab stop moved by `\’`.
- `\tabcolsep` — half the width of the space between columns in `tabular` environment.
- `\tableofcontents` produces a table of contents. A `.toc` file must have been generated during a previous L<sup>A</sup>T<sub>E</sub>X run.
- `\tan` is  $\tan$  (math mode).
- `\tanh` is  $\tanh$  (math mode).
- `\tau` is  $\tau$  (math mode).
- `\TeX` produces the T<sub>E</sub>X logo.
- `\textfloatsep` — distance between floats at the top or bottom of a single-column page and the text on that page.
- `\textfraction` — minimum fraction of a text page that must contain text.
- `\textheight` is the normal vertical dimension of the body of the page.
- `\textstyle` switches to `math` environment typesetting (math mode).
- `\textwidth` is the normal horizontal dimension of the body of the page.
- `\thanks{footnote}` adds an acknowledgement footnote to an author’s name used in a `\maketitle` command.
- `\theta` is  $\theta$ . `\Theta` is  $\Theta$  (math mode).
- `\thicklines` is an alternate line thickness for lines in a `picture` environment. See also `linethickness`.
- `\thinlines` is the default declaration for line thicknesses in a `picture` environment. See `\thicklines`.
- `\thinspace` is the proper space between single and double quotes, as in `’ ’`.
- `\thispagestyle{sty}` determines characteristics of head and foot for the current page only. Used to override `\pagestyle` (q.v.) temporarily.
- `\tilde` makes a tilde, as:  $\tilde{a}$  (math mode).
- `\times` is  $\times$  (math mode).
- `\tiny` switches to a very small typeface.
- `\title{text}` declares a document title for the `\maketitle` command.
- `\to` is  $\rightarrow$  (math mode).

- `\today` generates today's date.
- `\top` is  $\top$  (math mode).
- `\topfraction` — maximum fraction at the top of a single-column page that may be occupied by floats.
- `\topmargin` — space between top of  $\TeX$  page (1 inch from top of paper) and top of header.
- `\topsep` — extra vertical space added before first list item and after last list item.
- `\topskip` — minimum distance between top of page body to bottom of first line of text.
- `\triangle` is  $\triangle$  (math mode).
- `\triangleleft` is  $\triangleleft$  (math mode).
- `\triangleright` is  $\triangleright$  (math mode).
- `\tt` switches to typewriter type.
- `\twocolumn[text]` declares a two-column page, with optional full-page width heading *text*.
- `\typein[cs]{text}` displays *text* on the screen and waits for you to enter stuff which will be put in the document at that point. Optional control sequence *cs* can be assigned the value of your input, to be used later.
- `\typeout{text}` displays *text* on the screen and writes it to the `.lis` file.
- `\u` prints a breve accent, as  $\ddot{o}$ .
- `\unboldmath` unboldens math italics and math symbols. Should be used *outside* of math mode.
- `\underbrace{text}` gives  $\underbrace{\textit{text}}$  (math mode).
- `\underline{text}` gives  $\underline{\textit{text}}$  (math mode or not).
- `\unitlength` — length of coordinate units for `picture` environment.
- `\unlhd` is  $\triangleleft$  (math mode).
- `\unrhd` is  $\triangleright$  (math mode).
- `\uparrow` is  $\uparrow$ . `\Uparrow` is  $\Uparrow$  (math mode).
- `\updownarrow` is  $\updownarrow$ . `\Updownarrow` is  $\Updownarrow$  (math mode).
- `\uplus` is  $\uplus$  (math mode).
- `\upsilon` is  $\upsilon$ . `\Upsilon` is  $\Upsilon$  (math mode).
- `\usebox{binname}` recalls box definition saved in box `\binname`.
- `\usecounter{counter}` is used in a `list` environment to cause *counter* to be used to number the items.
- `\v` prints a háček, as  $\v{a}$ .
- `\value{counter}` produces the numeric value of *counter*.
- `\varepsilon` is  $\varepsilon$  (math mode).
- `\varphi` is  $\varphi$  (math mode).
- `\varpi` is  $\varpi$  (math mode).
- `\varrho` is  $\varrho$  (math mode).
- `\varsigma` is  $\varsigma$  (math mode).
- `\vartheta` is  $\vartheta$  (math mode).
- `\vdash` is  $\vdash$  (math mode).
- `\vdots` is  $\vdots$  (math mode).
- `\vec` puts a vector over a letter:  $\vec{a}$  (math mode).
- `\vector(x,y){len}` in `picture` environment, in `\put` command, draws vector from `\put` argument with length *len* and slope  $(x,y)$ , with arrowhead.
- `\vee` is  $\vee$  (math mode).
- `\verb/text/` creates a local `verbatim` environment for *text*, printed in `typewriter` font. Note that *text* is *not* in curly braces; it is between two identical delimiters, neither of which appears in *text*.
- `\verb*/text/` is like `\verb/text/`, but spaces print out as `\_`.
- `\vert` is  $|$ . `\Vert` is  $\|$  (math mode).
- `\vfill` is `\vspace{\fill}` (cf. `\fill`).
- `\vspace{len}` leaves a vertical space of dimension *len*.
- `\vspace*{len}` is like `\vspace{len}` but space is not removed at the beginning or end of a page.
- `\wedge` is  $\wedge$  (math mode).
- `\widehat{arg}` is  $\widehat{arg}$  (math mode).
- `\widetilde{arg}` is  $\widetilde{arg}$  (math mode).
- `\wp` is  $\wp$  (math mode).
- `\wr` is  $\wr$  (math mode).
- `\xi` is  $\xi$ . `\Xi` is  $\Xi$  (math mode).
- `\year` — current year (A.D.).
- `\zeta` is  $\zeta$  (math mode).



L<sup>A</sup>T<sub>E</sub>X typefaces

<code>\rm</code>	Roman
<code>\it</code>	<i>Italic</i>
<code>\bf</code>	<b>Boldface</b>
<code>\sl</code>	<i>Slanted</i>
<code>\sf</code>	Sans serif
<code>\sc</code>	SMALL CAPS
<code>\tt</code>	Typewriter

## Miscellaneous symbols

†	<code>\dag</code>	§	<code>\S</code>	©	<code>\copyright</code>
‡	<code>\ddag</code>	¶	<code>\P</code>	£	<code>\pounds</code>

## Dimensions or lengths

pt	point (72.27 pt/in)
pc	pica (12 pt/pc)
in	inch
bp	big point (72 bp/in)
cm	centimeter (2.54 cm/in)
mm	millimeter (10 mm/cm)
dd	didot point (1157 dd = 1238 pt)
cc	cicero (12 dd/cc)
sp	scaled point (65536 sp/pt)
em	font-dependent; “quad” width
ex	font-dependent; “x”-height

## Math-mode accents

$\hat{a}$	<code>\hat{a}</code>	$\dot{a}$	<code>\dot{a}</code>
$\check{a}$	<code>\check{a}</code>	$\ddot{a}$	<code>\ddot{a}</code>
$\tilde{a}$	<code>\tilde{a}</code>	$\breve{a}$	<code>\breve{a}</code>
$\acute{a}$	<code>\acute{a}</code>	$\bar{a}$	<code>\bar{a}</code>
$\grave{a}$	<code>\grave{a}</code>	$\vec{a}$	<code>\vec{a}</code>

L<sup>A</sup>T<sub>E</sub>X environments

abstract	figure	quote
array	flushleft	tabbing
center	flushright	table
description	itemize	tabular
displaymath	list	theorem
enumerate	math	titlepage
eqnarray	minipage	verbatim
equation	picture	verse
	quotation	

## Greek letters (math mode)

$\alpha$	<code>\alpha</code>	$\nu$	<code>\nu</code>
$\beta$	<code>\beta</code>	$\xi$	<code>\xi</code>
$\gamma$	<code>\gamma</code>	$\omicron$	<code>o</code>
$\delta$	<code>\delta</code>	$\pi$	<code>\pi</code>
$\epsilon$	<code>\epsilon</code>	$\rho$	<code>\rho</code>
$\zeta$	<code>\zeta</code>	$\sigma$	<code>\sigma</code>
$\eta$	<code>\eta</code>	$\tau$	<code>\tau</code>
$\theta$	<code>\theta</code>	$\upsilon$	<code>\upsilon</code>
$\iota$	<code>\iota</code>	$\phi$	<code>\phi</code>
$\kappa$	<code>\kappa</code>	$\chi$	<code>\chi</code>
$\lambda$	<code>\lambda</code>	$\psi$	<code>\psi</code>
$\mu$	<code>\mu</code>	$\omega$	<code>\omega</code>

## Text-mode accents

$\grave{o}$	<code>\`{o}</code>	$\bar{o}$	<code>\={o}</code>	$\text{\textcircled{o}}$	<code>\t{oo}</code>
$\acute{o}$	<code>\' {o}</code>	$\dot{o}$	<code>\. {o}</code>	$\text{\textcircled{o}}$	<code>\c{o}</code>
$\hat{o}$	<code>\^ {o}</code>	$\breve{o}$	<code>\u{o}</code>	$\text{\textcircled{o}}$	<code>\d{o}</code>
$\ddot{o}$	<code>\" {o}</code>	$\grave{o}$	<code>\v{o}</code>	$\text{\textcircled{o}}$	<code>\b{o}</code>
$\tilde{o}$	<code>\~ {o}</code>	$\text{\textcircled{o}}$	<code>\H{o}</code>		

$\varepsilon$	<code>\varepsilon</code>	$\varsigma$	<code>\varsigma</code>
$\vartheta$	<code>\vartheta</code>	$\varphi$	<code>\varphi</code>
$\varrho$	<code>\varrho</code>		

## National symbols

$\text{\textcircled{e}}$	<code>\oe</code>	$\text{\textcircled{a}}$	<code>\aa</code>	$\text{\textcircled{t}}$	<code>\l</code>
$\text{\textcircled{E}}$	<code>\OE</code>	$\text{\textcircled{A}}$	<code>\AA</code>	$\text{\textcircled{L}}$	<code>\L</code>
$\text{\textcircled{x}}$	<code>\ae</code>	$\text{\textcircled{o}}$	<code>\o</code>	$\text{\textcircled{\beta}}$	<code>\ss</code>
$\text{\textcircled{Æ}}$	<code>\AE</code>	$\text{\textcircled{O}}$	<code>\O</code>		

$\Gamma$	<code>\Gamma</code>	$\Sigma$	<code>\Sigma</code>
$\Delta$	<code>\Delta</code>	$\Upsilon$	<code>\Upsilon</code>
$\Theta$	<code>\Theta</code>	$\Phi$	<code>\Phi</code>
$\Lambda$	<code>\Lambda</code>	$\Psi$	<code>\Psi</code>
$\Xi$	<code>\Xi</code>	$\Omega$	<code>\Omega</code>
$\Pi$	<code>\Pi</code>		

## Binary operations (math mode)

$\pm$	<code>\pm</code>	$\cap$	<code>\cap</code>
$\mp$	<code>\mp</code>	$\cup$	<code>\cup</code>
$\setminus$	<code>\setminus</code>	$\uplus$	<code>\uplus</code>
$\cdot$	<code>\cdot</code>	$\sqcap$	<code>\sqcap</code>
$\times$	<code>\times</code>	$\sqcup$	<code>\sqcup</code>
$*$	<code>\ast</code>	$\triangleleft$	<code>\triangleleft</code>
$\star$	<code>\star</code>	$\triangleright$	<code>\triangleright</code>
$\diamond$	<code>\diamond</code>	$\wr$	<code>\wr</code>
$\circ$	<code>\circ</code>	$\bigcirc$	<code>\bigcirc</code>
$\bullet$	<code>\bullet</code>	$\bigtriangleup$	<code>\bigtriangleup</code>
$\div$	<code>\div</code>	$\bigtriangledown$	<code>\bigtriangledown</code>
$\triangleleft$	<code>\lhd</code>	$\triangleright$	<code>\rhd</code>
$\vee$	<code>\vee</code>	$\odot$	<code>\odot</code>
$\wedge$	<code>\wedge</code>	$\dagger$	<code>\dagger</code>
$\oplus$	<code>\oplus</code>	$\ddagger$	<code>\ddagger</code>
$\ominus$	<code>\ominus</code>	$\amalg$	<code>\amalg</code>
$\otimes$	<code>\otimes</code>	$\unlhd$	<code>\unlhd</code>
$\oslash$	<code>\oslash</code>	$\unrhd$	<code>\unrhd</code>

## Relations (math mode)

$\leq$	<code>\leq</code>	$\geq$	<code>\geq</code>
$\prec$	<code>\prec</code>	$\succ$	<code>\succ</code>
$\preceq$	<code>\preceq</code>	$\succeq$	<code>\succeq</code>
$\ll$	<code>\ll</code>	$\gg$	<code>\gg</code>
$\subset$	<code>\subset</code>	$\supset$	<code>\supset</code>
$\subseteq$	<code>\subseteq</code>	$\supseteq$	<code>\supseteq</code>
$\sqsubset$	<code>\sqsubset</code>	$\sqsupset$	<code>\sqsupset</code>
$\sqsubseteq$	<code>\sqsubseteq</code>	$\sqsupseteq$	<code>\sqsupseteq</code>
$\in$	<code>\in</code>	$\ni$	<code>\ni</code>
$\vdash$	<code>\vdash</code>	$\dashv$	<code>\dashv</code>
$($	<code>\smile</code>	$ $	<code>\mid</code>
$)$	<code>\frown</code>	$\parallel$	<code>\parallel</code>
$\neq$	<code>\neq</code>	$\perp$	<code>\perp</code>
$\equiv$	<code>\equiv</code>	$\cong$	<code>\cong</code>
$\sim$	<code>\sim</code>	$\bowtie$	<code>\bowtie</code>
$\simeq$	<code>\simeq</code>	$\propto$	<code>\propto</code>
$\asymp$	<code>\asymp</code>	$\models$	<code>\models</code>
$\approx$	<code>\approx</code>	$\doteq$	<code>\doteq</code>
		$\Join$	<code>\Join</code>

## Variable-sized symbols (math mode)

$\Sigma$	$\sum$	<code>\sum</code>	$\bigcap$	<code>\bigcap</code>
$\Pi$	$\prod$	<code>\prod</code>	$\bigcup$	<code>\bigcup</code>
$\coprod$	$\coprod$	<code>\coprod</code>	$\bigsqcup$	<code>\bigsqcup</code>
$\int$	$\int$	<code>\int</code>	$\bigvee$	<code>\bigvee</code>
$\oint$	$\oint$	<code>\oint</code>	$\bigwedge$	<code>\bigwedge</code>
$\odot$	$\odot$	<code>\bigodot</code>	$\otimes$	<code>\bigotimes</code>
$\oplus$	$\oplus$	<code>\bigoplus</code>	$\uplus$	<code>\biguplus</code>

## Delimiters (math mode)

$($	<code>(</code>	$)$	<code>)</code>
$[$	<code>[</code>	$]$	<code>]</code>
$\{$	<code>\{</code>	$\}$	<code>\}</code>
$\lfloor$	<code>\lfloor</code>	$\rfloor$	<code>\rfloor</code>
$\lceil$	<code>\lceil</code>	$\rceil$	<code>\rceil</code>
$\langle$	<code>\langle</code>	$\rangle$	<code>\rangle</code>
$/$	<code>/</code>	$\backslash$	<code>\backslash</code>
$ $	<code>\vert</code>	$\ $	<code>\Vert</code>
$\uparrow$	<code>\uparrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\downarrow$	<code>\downarrow</code>	$\Downarrow$	<code>\Downarrow</code>
$\updownarrow$	<code>\updownarrow</code>	$\Updownarrow$	<code>\Updownarrow</code>

## “Log-like” functions (math mode)

<code>\arccos</code>	<code>\csc</code>	<code>\ker</code>	<code>\min</code>
<code>\arcsin</code>	<code>\deg</code>	<code>\lg</code>	<code>\Pr</code>
<code>\arctan</code>	<code>\det</code>	<code>\lim</code>	<code>\sec</code>
<code>\arg</code>	<code>\dim</code>	<code>\liminf</code>	<code>\sin</code>
<code>\cos</code>	<code>\exp</code>	<code>\limsup</code>	<code>\sinh</code>
<code>\cosh</code>	<code>\gcd</code>	<code>\ln</code>	<code>\sup</code>
<code>\cot</code>	<code>\hom</code>	<code>\log</code>	<code>\tan</code>
<code>\coth</code>	<code>\inf</code>	<code>\max</code>	<code>\tanh</code>

## Arrows (math mode)

$\leftarrow$	<code>\leftarrow</code>	$\longleftarrow$	<code>\longleftarrow</code>
$\Lleftarrow$	<code>\Lleftarrow</code>	$\Longleftarrow$	<code>\Longleftarrow</code>
$\rightarrow$	<code>\rightarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>
$\Rightarrow$	<code>\Rightarrow</code>	$\Longrightarrow$	<code>\Longrightarrow</code>
$\leftrightarrow$	<code>\leftrightarrow</code>	$\longleftrightarrow$	<code>\longleftrightarrow</code>
$\Leftrightarrow$	<code>\Leftrightarrow</code>	$\Longleftrightarrow$	<code>\Longleftrightarrow</code>
$\mapsto$	<code>\mapsto</code>	$\longmapsto$	<code>\longmapsto</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\hookleftarrow$	<code>\hookleftarrow</code>
$\lhookrightarrow$	<code>\lhookrightarrow</code>	$\rhookrightarrow$	<code>\rhookrightarrow</code>
$\leftharpoonup$	<code>\leftharpoonup</code>	$\rightharpoonup$	<code>\rightharpoonup</code>
$\leftharpoondown$	<code>\leftharpoondown</code>	$\rightharpoondown$	<code>\rightharpoondown</code>
$\rightleftharpoons$	<code>\rightleftharpoons</code>	$\leadsto$	<code>\leadsto</code>
$\Uparrow$	<code>\Uparrow</code>	$\Downarrow$	<code>\Downarrow</code>
$\uparrow$	<code>\uparrow</code>	$\nearrow$	<code>\nearrow</code>
$\Uparrow$	<code>\Uparrow</code>	$\searrow$	<code>\searrow</code>
$\downarrow$	<code>\downarrow</code>	$\swarrow$	<code>\swarrow</code>
$\Downarrow$	<code>\Downarrow</code>	$\nwarrow$	<code>\nwarrow</code>
$\updownarrow$	<code>\updownarrow</code>		

## Miscellaneous symbols (math mode)

$\aleph$	<code>\aleph</code>	$\prime$	<code>\prime</code>
$\hbar$	<code>\hbar</code>	$\emptyset$	<code>\emptyset</code>
$\imath$	<code>\imath</code>	$\nabla$	<code>\nabla</code>
$\jmath$	<code>\jmath</code>	$\surd$	<code>\surd</code>
$\ell$	<code>\ell</code>	$\top$	<code>\top</code>
$\wp$	<code>\wp</code>	$\perp$	<code>\bot</code>
$\Re$	<code>\Re</code>	$\parallel$	<code>\parallel</code>
$\Im$	<code>\Im</code>	$\sphericalangle$	<code>\angle</code>
$\partial$	<code>\partial</code>	$\triangle$	<code>\triangle</code>
$\infty$	<code>\infty</code>	$\backslash$	<code>\backslash</code>
$\square$	<code>\Box</code>	$\diamond$	<code>\Diamond</code>
$\forall$	<code>\forall</code>	$\sharp$	<code>\sharp</code>
$\exists$	<code>\exists</code>	$\clubsuit$	<code>\clubsuit</code>
$\neg$	<code>\neg</code>	$\diamondsuit$	<code>\diamondsuit</code>
$\flat$	<code>\flat</code>	$\heartsuit$	<code>\heartsuit</code>
$\natural$	<code>\natural</code>	$\spadesuit$	<code>\spadesuit</code>
$\mho$	<code>\mho</code>		

# CURRICULUM VITAE

## Personal data

XXX: XXX  
XXX: XXX  
XXX: XXX  
XXX: XXX

## Education

XXXX-XXXX XXX  
XXXX-XXXX XXX  
XXXX-XXXX XXX

## Employment

XXXX-XXXX XXX  
XXXX-XXXX XXX  
XXXX-XXXX XXX

## Scientific work

Main fields of interest:

- XXX
- XXX
- XXX

# ELULOOKIRJELDUS

## Isikuandmed

XXX: XXX  
XXX: XXX  
XXX: XXX  
XXX: XXX

## Haridus

XXXX-XXXX XXX  
XXXX-XXXX XXX  
XXXX-XXXX XXX

## Teenistuskäik

XXXX-XXXX XXX  
XXXX-XXXX XXX  
XXXX-XXXX XXX

## Teadustegevus

Peamised uurimisvaldkonnad:

- XXX
- XXX
- XXX