Wissenschaftliche Texte schreiben mit LaTeX

Orientierungseinheit 2024

Hendrik Sauer — 19.10.2024

Was ist LaTeX?

.tex → .pdf

- Weiterentwicklung von TeX
- Makrobasiert
- Freie Software

Warum ist LaTeX toll?

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- Trennung von Form und Inhalt

- Automatisches Layout

- Mathematische Formeln

- Programmatisch und erweiterbar

- Bessere Textqualität

Warum ist LaTeX toll?

Microsoft Word 2008

Call me Ishmael. Some years ago – never mind how long precisely – having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen, and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off – then, I account it high time to get to sea as soon as I can. This is my substitute for pistol and ball. With a philosophical flourish Cato throws himself upon his sword; I quietly take to the ship. There is nothing surprising in this. If they but knew it, almost all men in their degree, some time or other, cherish very nearly the same feelings towards the ocean with me.

Adobe InDesign CS4

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pdf-LaTeX 3.1415926

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http://www.rtznet.nl/zink/latex.php

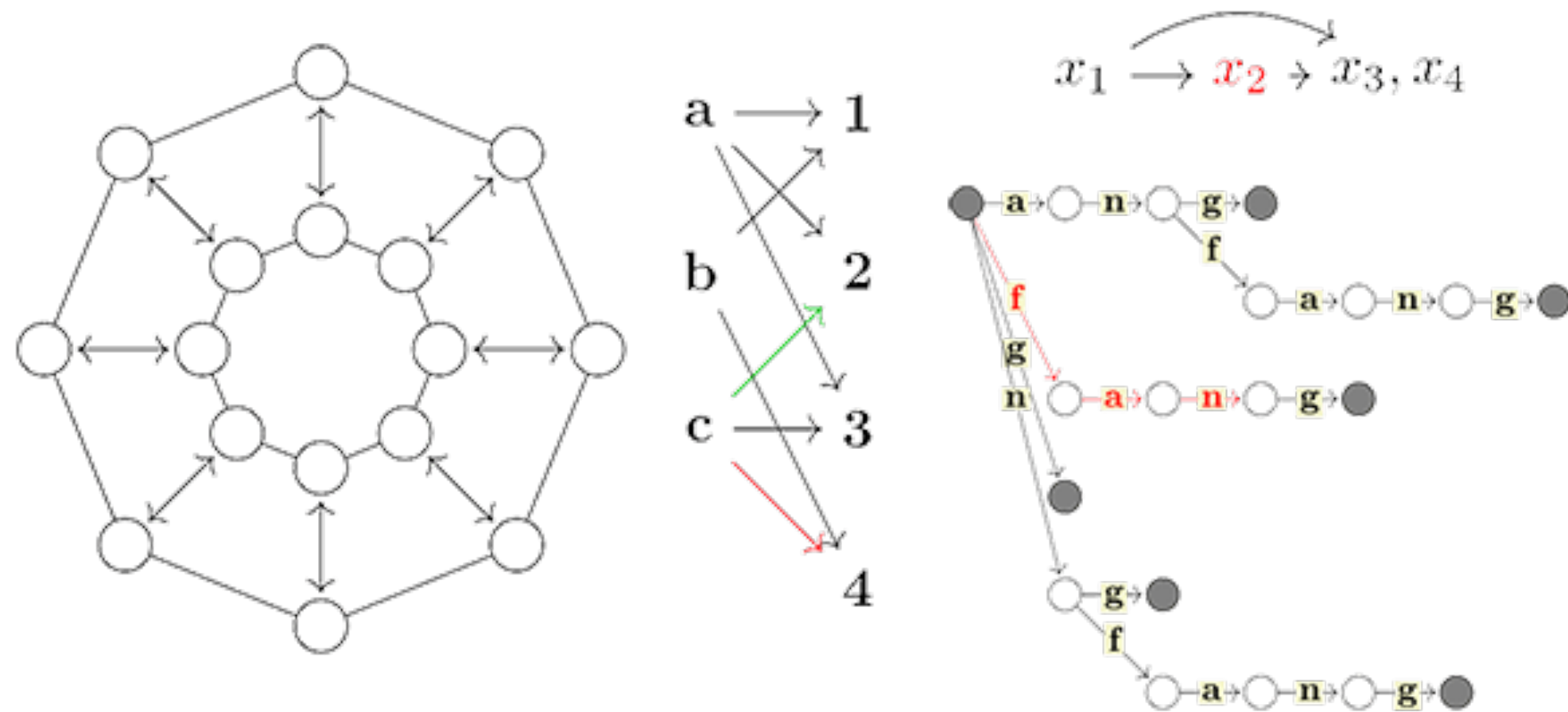# Wie fange ich an?

- Editoren
  - Overleaf (Online Editor)
  - Texworks
  - Visual Studio Code (LaTeX Workshop)
  - Latex Distribution
- Informationen
  - Overleaf (Dokumentation)
  - CTAN
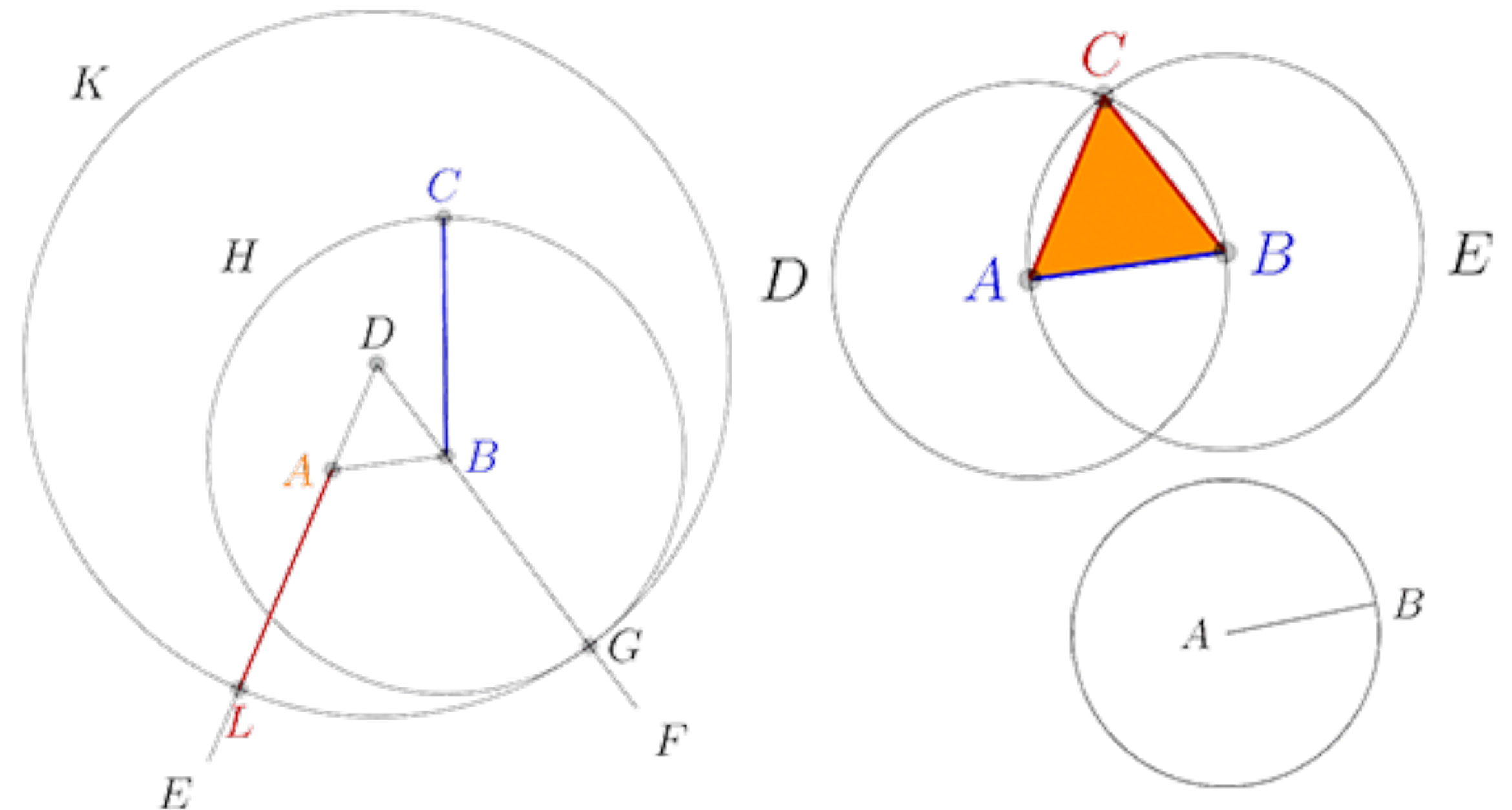
Let's fetz

Wie gehts weiter?

TikZ
Erstellung von Grafiken und Diagrammen

https://tikz.dev/toc-banners/tikz-graphs.png

Dokumentation:

- https://tikz.dev

- https://www.overleaf.com

- https://ctan.org/pkg/pgf

https://tikz.dev/toc-banners/tutorial-Euclid.png

BibLaTeX
Automatische Zitate und Literaturverzeichnis

`\cite{latex2e}`

```
@book{texbook,
  author = {Donald E. Knuth},
  year = {1986},
  title = {The {\TeX} Book},
  publisher = {Addison-Wesley Professional}
}

@book{latex2e,
  author = {Leslie Lamport},
  year = {1994},
  title = {{\LaTeX}: a Document Preparation System},
  publisher = {Addison Wesley},
  address = {Massachusetts},
  edition = {2}
}
```

Beispiel-.bib Datei von https://www.overleaf.com/learn/latex/
Bibliography_management_with_bibtex

LaTeX [1] is a set of macros built atop TeX [2].

References — `\printbibliography`

[1] L. Lamport, *LaTeX: a Document Preparation System*, 2nd ed. Massachusetts: Addison Wesley, 1994.

[2] D. E. Knuth, *The TeX Book.* Addison-Wesley Professional, 1986.

https://www.overleaf.com/learn/latex/
Bibliography_management_with_bibtex

Dokumentation:

- https://www.overleaf.com

- https://ctan.org/pkg/biblatex

listing und algorithm2e
Source- und Pseudocode darstellen

1 C Listing

Listing 1: C listing using the default C language and the custom style c/style.

```c
#include <stdio.h>

// main prints "hello world" to standard output.
int main(int argc, char **argv) {
  printf("hello world\n");
  return 0;
}
```

2 Assembly Listing with NASM Syntax

Listing 2: Assembly listing with NASM syntax using the custom language nasm/lang and the custom style nasm/style.

```nasm
extern printf
extern exit
global _start

[section .text]
_start:
        mov     rdi, hello ; arg1: "hello world\n"
        call    printf     ; printf("hello world\n")
        mov     rdi, 0     ; arg1: 0
        call    exit       ; exit(0)

[section .rodata]
hello:
        db      'hello world', 10, 0
```

Algorithm 1: An algorithm with caption

Data: $n \geq 0$
Result: $y = x^n$
$y \leftarrow 1;$
$X \leftarrow x;$
$N \leftarrow n;$
while $N \neq 0$ **do**
  if N *is even* **then**
    $X \leftarrow X \times X;$
    $N \leftarrow \frac{N}{2}$; /* This is a comment */
  else
    if N *is odd* **then**
      $y \leftarrow y \times X;$
      $N \leftarrow N - 1;$
    end
  end
end

https://github.com/mewmew/lstlangs

https://de.overleaf.com/learn/latex/Algorithms