universität innsbruck




# Introduction to Scientific Working

**Aart Middeldorp**

# Outline

1. **Organisation**
2. **LaTeX**
3. **Conferences**
4. **Topic Assignment**
5. **TikZ**
6. **Homework**
7. **Announcement**

## Keywords

acknowledgement · awards · beamer · bibliography · CORE ranking · DBLP · conference · editorial board · generative AI · Google Scholar · h−index · impact factor · journal · LaTeX · LIPIcs · LNCS · open access · plagiarism · presentation · program committee · rebuttal · review · submission · TikZ · workshop · ...

## Types of Scientific Works

- seminar report
- bachelor thesis
- master thesis
- PhD thesis
- habilitation thesis
- workshop paper
- conference paper
- journal article
- book chapter
- book

# Outline

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## Exemplary Bachelor Theses

| | | |
|---|---|---|
| ▸ Number Link | Benjamin Rupprechter | 2009 |
| ▸ Kurodoko | Johannes Koch | 2020 |
| ▸ Five Cells | Diana Gründlinger | 2023 |

## Common Ingredients

- appendices
- bibliography
- chapters / sections
- figures
- footnotes
- formulas
- hyper links
- lists
- plots
- program code
- screen shots
- table of contents
- tables

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```
Some useful Tikz libraries:
\begin{itemize}
\item
arrows.meta
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calc
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matrix
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patterns
\item
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trees
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```

src

- enumerate environment for numbered list

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```
\begin{enumerate}
\item
first level
\begin{enumerate}
\item
second level, first item
\item
second level, second item
\begin{enumerate}
\item
third level, first item
\item
third level, second item
\end{enumerate}
\end{enumerate}
\end{enumerate}
```

src

- lists can be nested

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- bullets and numbers can be changed

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- description environment for definition list

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```
\noindent CORE ranking:
\begin{description}
\item[A$^*$]
exceptional (flagship conferences)
\item[A]
excellent
\item[B]
good to very good
\item[C]
sound and satisfactory
\item[--]
national / regional / Australasian
\end{description}
```

src

## Three Writing Modes

1. paragraph mode
2. left–to–right mode
3. math mode

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- `$ .. $`

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2. left–to–right mode
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## Math Environments

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- `\( .. \)`
- `$ .. $`
- `\begin{displaymath} .. \end{displaymath}`
- `\[ .. \]`
- `\begin{equation} .. \end{equation}`
- ...

```
The quadratic equation
\begin{equation}
ax^2 + bx + c = 0
\end{equation}
where $a$, $b$ and $c$ are constants with $a \neq 0$ has two solutions:
\begin{equation}
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where $a$, $b$ and $c$ are constants with $a \neq 0$ has two solutions:

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{2}$$

## Topics

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- subscripts and superscripts

  `{expression}_{subscript}^{superscript}`

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```
\[
2^{2^x} > 0 \qquad \lim_{n \to \infty} \frac{1}{2^n} = 0
\qquad \max\,\{x^2-x \mid 2 \leq x \leq 9\}
\]
```

src

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## Topics

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\sqrt[32]{x} = \sqrt{\sqrt{\sqrt{\sqrt{\sqrt{x}}}}}
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- location
- call for papers
- deadlines
- program committee
- invited speakers
- accepted papers
- rebuttal
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## Federated Logic Conference (FLoC) 2026

- 32nd International Conference on Principles and Practice of Constraint Programming — CP
- 11th International Conference on Formal Structures for Computation and Deduction — FSCD
- 42nd International Conference on Logic Programming — ICLP
- 23rd International Conference on Principles of Knowledge Representation and Reasoning — KR
- 41st Annual Symposium on Logic in Computer Science — LICS
- 29th International Conference on Theory and Applications of Satisfiability Testing — SAT
- 38th International Conference on Computer Aided Verification — CAV
- 39th IEEE Computer Security Foundations Symposium — CSF
- 13th International Joint Conference on Automated Reasoning — IJCAR
- 17th International Conference on Interactive Theorem Proving — ITP

# Submission Process

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- paper bidding by PC members

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## Reviewing Process

- paper bidding by PC members
- reviews by PC members and subreviewers

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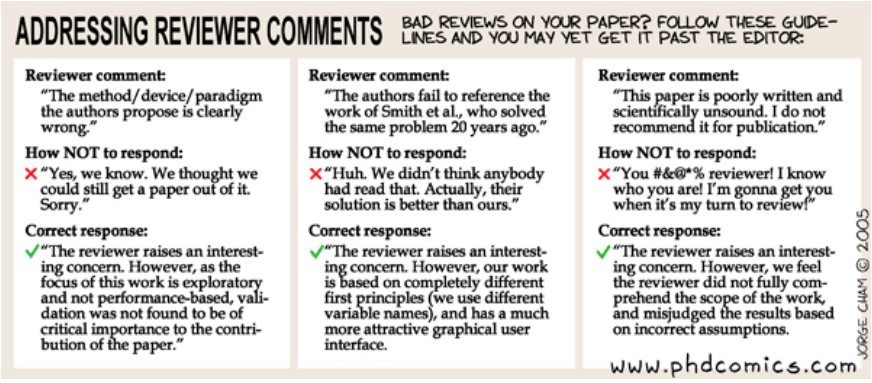

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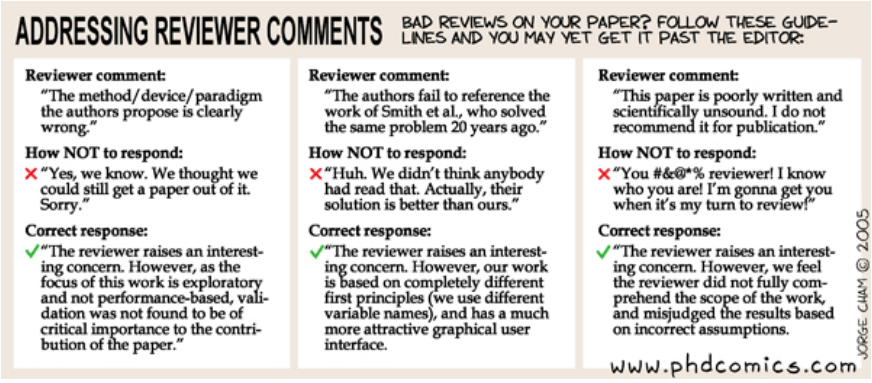


- Rebutting Rebuttals (Dershowitz and Verma, CACM 2023)
- Rebuttal How–To: Strategies, Tactics, and the Big Picture in Research (Yao, CACM 2024)


## CORE Ranking


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- descriptions

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## Topics

| | | | | |
|---|---|---|---|---|
| 1 chemmacros | 5 listings | 9 pgf–go | 13 TangramTikz | 17 todonotes |
| 2 chessboard | 6 mathtools | 10 pgfplots | 14 tikzmark | |
| 3 cleveref | 7 microtype | 11 postit | 15 tikzpeople | |
| 4 enumitem | 8 MusiXTeX | 12 qrcodetikz | 16 tkz-berge | |

## Assignment

| | | |
|---|---|---|
| 1 Bacher Martin | 6 Oppermann Linda | 13 Paganini Adriano |
| 2 Weilbacher Jannick | 8 Beier Tom Simon | 14 Hölzl Sebastian |
| 3 Darsel Esma | 8 Küllmar Jan Peter | 15 Krause Jakob Moritz |
| 3 Fitz Julia | 9 Albrecht Odin | 16 Musch Eric Edgar Friedrich |
| 4 Bekhtari Salma | 10 Kerber Thomas Martin | 17 Freiermuth Marie |
| 4 Ristova Kirjana | 11 Ilic Ilija | 17 Leinfelder Matthias Christian |
| 5 Krumholz Maya | 11 Khakhlou Pavel | |
| 5 Sagerer Marie | 12 Ciech Dominique Manuel | |

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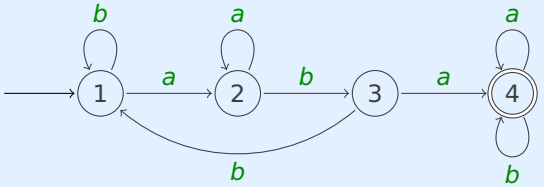
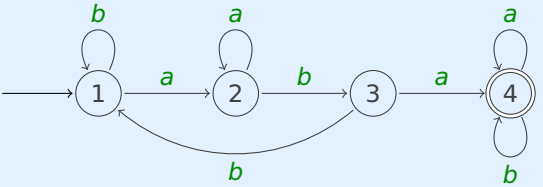
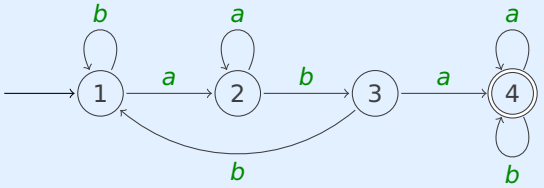
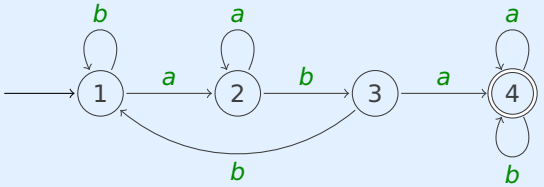

b
a
a
1
a
2
b
3
a
4
b
b



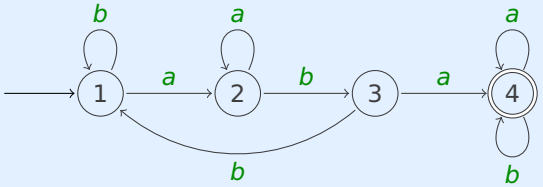

```
\usetikzlibrary{automata,positioning}
\begin{tikzpicture}[auto,node distance=12mm]
\node [state,initial]   (1)              {1};
\node [state]           (2) [right=of 1] {2};
\node [state]           (3) [right=of 2] {3};
\node [state,accepting] (4) [right=of 3] {4};
\path[->,every node/.style={text=green!55!black,font=\sffamily\itshape}]
  (1) edge [out=65,in=115,loop,above] node {b} ()
      edge                            node {a} (2)
```




```
  (2) edge [out=65,in=115,loop,above]   node {a} ()
      edge                              node {b} (3)
  (3) edge                              node {a} (4)
      edge [bend left=40]               node {b} (1)
  (4) edge [out=65,in=115,loop,above]   node {a} ()
      edge [out=-115,in=-65,loop,below] node {b} ();
\end{tikzpicture}
```




```
\tikzset{
 shorten >=1pt, shorten <=1pt,
 every initial by arrow/.style={initial distance=1cm},
 initial text=,
 accepting/.style={double distance=1pt},
 every node/.style={font=\sffamily},
 every state/.style={circle, draw, minimum size=4mm},
}
```

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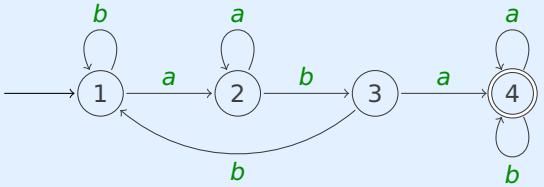
src

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```

src

- quotes library to avoid explicit nodes along edges

## Pie Charts

```
\usepackage{pgf-pie}
\begin{tikzpicture}
\pie[sum=auto]{4/1, 16/2, 30/3, 34/4, 36/5}
\end{tikzpicture}
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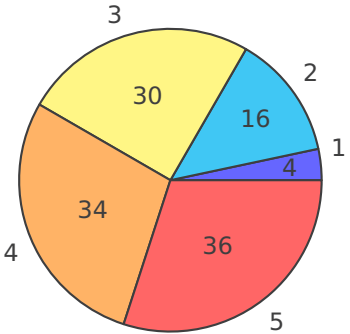

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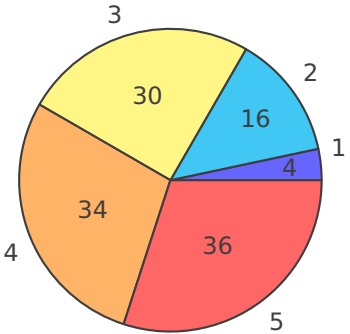

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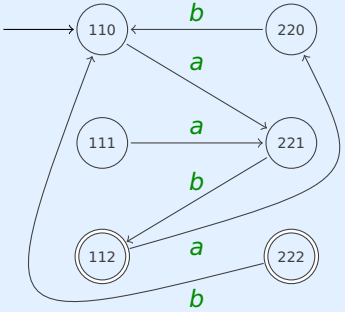
## Homework Exercises for April 16

① Read the "Advice on use of the CORE conference rankings." 1

② Determine the CORE ranking of the conferences that are part of FLoC 2026. 1

③ Use TikZ to typeset the following automaton: 2




④ Summarize the main points of the "Rebuttal How–To" paper. 1

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## Announcement

Informationsveranstaltung: Missbräuchliche Verwendung von Künstlicher Intelligenz, Plagiate und andere Verletzungen der guten wissenschaftlichen Praxis

*Missbräuchliche Verwendung von KI, Plagiate, Autor:innenschaftskonflikte, Datenmanipulationen und Datenfälschungen gehören zu den Verletzungen der guten wissenschaftlichen Praxis. Im Universitätsgesetz 2002 und im Hochschul-Qualitätssicherungsgesetz finden sich zahlreiche Bestimmungen zur guten wissenschaftlichen Praxis (wie zum Beispiel die Definition des Plagiatsbegriffs). In dieser Informationsveranstaltung, die sich gleichermaßen an Forschende, Lehrende, Betreuerinnen und Betreuer wissenschaftlicher Arbeiten sowie an Studierende wendet, werden die gesetzlichen Bestimmungen zur guten wissenschaftlichen Praxis sowie auch die Richtlinien der Universität Innsbruck zur Sicherung der guten wissenschaftlichen Praxis vorgestellt.*

Vortragender: Dr. Robert Rebitsch, Büro für wissenschaftliche Integrität

Zeit/Ort: 13. April 2026, 13.00 – 14.30 Uhr, Hörsaal $5\frac{3}{4}$, Innrain 52

Anmeldung: keine Anmeldung nötig