Zigma LaTeX Class

User Manual and Reference Guide

Version 0.9.0

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Zigma LaTeX Class v0.9.0

Repository: https://git.xed.it/exedre/zigma-class

This manual documents version 0.9.0 of the Zigma LaTeX class.

Contents

Preface

Zigma is a modern, flexible LaTeX document class designed for academic journals and scientific publications. Built entirely with LaTeX3's expl3 programming layer, it provides a robust foundation for professional document preparation with extensive customization capabilities.

What Makes Zigma Special?

- **Modern Implementation**: Pure expl3 codebase ensures reliability and maintainability
- **Modular Architecture**: Plugin system supports multiple base classes (article, memoir, KOMA-Script, rho)
- **Smart Features**: Intelligent cross-referencing, automatic ORCID integration, flexible bibliography support
- **User-Friendly**: Simple key-value configuration interface via `\zigmasetup`
- **Production-Ready**: Extensively tested with comprehensive documentation

Who Should Use Zigma?

This class is ideal for:

- Academic researchers writing journal articles
- PhD students preparing dissertations
- Conference organizers needing consistent formatting
- Journal editors seeking a flexible submission system
- Anyone requiring professional academic document preparation

Manual Structure

This manual is organized into the following parts:

Part I: Getting Started Installation, quick start guide, and basic usage

Part II: Core Features Author management, metadata, bibliography

Part III: Advanced Features Cross-referencing, templates, customization

Part IV: Reference Complete key reference, command reference

Part V: Appendices Examples, troubleshooting, development

Conventions Used in This Manual

- `\command` represents a LaTeX command
- `option` represents a class option or key
- ⟨*argument*⟩ represents a placeholder for user input
- Code examples appear in `monospaced gray boxes`

Part I

Getting Started

Chapter 1

Introduction

1.1 Overview

The **Zigma** LaTeX class provides a comprehensive framework for creating professional academic documents. Version 0.9.0 introduces advanced features including smart cross-referencing with automatic type detection and extensive bibliography support with 15 citation styles.

1.1.1 Key Features

Multi-Author Support Robust system for managing multiple authors with affiliations, ORCID integration, and corresponding author markers

Base Class System Modular plugins for different document types:

- **Article**: Standard LaTeX articles
- **Memoir**: Books, theses, long documents
- **KOMA-Script**: European typography (scrartcl, scrreprt, scrbook)
- **Rho**: Academic journals with full metadata support

Smart Cross-References Intelligent referencing with automatic type detection for 11 label types (sections, figures, tables, equations, etc.)

Bibliography Integration 15 citation styles including IEEE, APA, Chicago, Nature, Harvard, Vancouver, MLA, and more

Template System Pre-configured templates for common publication types (IEEE, APA, Nature, thesis)

Customization Extensive configuration via key-value interface with support for headers, footers, colors, fonts, and layouts

1.1.2 System Requirements

- **LaTeX Engine**: LuaLaTeX (recommended), XeLaTeX, or pdfLaTeX
- **TeX Distribution**: TeX Live 2022 or later, MiKTeX 2022 or later
- **Required Packages**: expl3, xparse, hyperref, xcolor
- **Optional Packages**: biblatex (for bibliography), academicons (for ORCID icons)

1.2 Installation

1.2.1 Quick Installation

The simplest way to use **Zigma** is to clone the repository and reference it directly:

```
git clone https://git.xed.it/exedre/zigma-class.git
cd zigma-class
```

Then in your document:

```
\documentclass{zigma-class/zigma}
```

1.2.2 Manual Installation

For system-wide installation:

1. Download the latest release from the repository
2. Copy `zigma-class/` directory to your local texmf tree:
   - Linux/Mac: `~/texmf/tex/latex/`
   - Windows: `C:\Users\⟨username⟩\texmf\tex\latex\`
3. Run `texhash` or `mktexlsr` to update the filename database

1.2.3 Verifying Installation

Create a minimal test file:

```
\documentclass{zigma-class/zigma}
\zigmasetup{title = {Test Document}}
\begin{document}
\maketitle
Hello, Zigma!
\end{document}
```

Compile with:

```
lualatex test.tex
```

If compilation succeeds, **Zigma** is correctly installed.

Chapter 2

Quick Start Guide

2.1 Your First Document

Let's create a simple academic article:

```
\documentclass{zigma-class/zigma}

\zigmasetup{
  title = {Introduction to Quantum Computing},
  subtitle = {A Beginner's Guide},

  affiliations.0 = {MIT - Department of Computer Science},

  authors.0.name = {Alice Johnson},
  authors.0.email = {alice@mit.edu},
  authors.0.orcid = {0000-0001-2345-6789},
  authors.0.affiliation = {0},
  authors.0.corresponding = {true},

  abstract = {This paper provides an accessible introduction
              to quantum computing for beginners...},
  keywords = {quantum computing, qubits, algorithms},
}

\begin{document}

\maketitle

\section{Introduction}
\label{sec:intro}

Quantum computing represents a paradigm shift...

\section{Quantum Bits}
\label{sec:qubits}

As discussed in \zigmaref{sec:intro}, quantum bits differ...

\end{document}
```

2.2 Compilation

Compile your document with LuaLaTeX:

```
lualatex mydocument.tex
```

For documents with cross-references, compile twice:

```
lualatex mydocument.tex
lualatex mydocument.tex
```

For documents with bibliography, use:

```
lualatex mydocument.tex
biber mydocument
lualatex mydocument.tex
lualatex mydocument.tex
```

Or simply use `latexmk`:

```
latexmk -lualatex -interaction=nonstopmode mydocument.tex
```

2.3 Understanding the Output

Your compiled PDF will include:

- Title (full-width in two-column mode)
- Subtitle (if specified)
- Author name with ORCID icon (clickable)
- Author email (clickable mailto: link)
- Affiliation with superscript marker
- Abstract (full-width, bold label)
- Keywords (formatted inline list)
- Corresponding author footer (automatic)
- Your document content

Part II

Core Features

Chapter 3

Document Configuration

3.1 The \zigmasetup Command

All document configuration in **Zigma** is done via the \zigmasetup command with key-value pairs:

```
\zigmasetup{
  key1 = {value1},
  key2 = {value2},
  nested.key = {value},
}
```

3.1.1 Configuration Timing

Note

\zigmasetup can be called multiple times and in different locations:

- In the preamble (before \begin{document})
- After \begin{document}
- Multiple times to override previous settings

3.2 Basic Metadata

3.2.1 Title and Subtitle

```
\zigmasetup{
  title = {The Main Title of Your Document},
  subtitle = {An Optional Subtitle},
}
```

3.2.2 Date

```
\zigmasetup{
  date = {\today},          % Default: today's date
  date.show = {true},       % Show/hide date (default: true)
}
```

3.2.3 Abstract and Keywords

```
\zigmasetup{
  abstract = {This paper investigates...},
  keywords = {keyword1, keyword2, keyword3},
}
```

3.3 Clickable Titles and URLs

Make your title a clickable hyperlink:

```
\zigmasetup{
  title = {My Research Paper},
  title.url = {https://doi.org/10.1234/paper},
  title.url.show = {true},  % Optional: show URL in footer
}
```

Chapter 4

Author Management

4.1 Single Author

For a document with one author:

```
\zigmasetup{
  affiliations.0 = {University of Example},

  authors.0.name = {John Doe},
  authors.0.email = {john.doe@example.edu},
  authors.0.orcid = {0000-0001-2345-6789},
  authors.0.affiliation = {0},
  authors.0.corresponding = {true},
}
```

4.2 Multiple Authors

For documents with multiple authors:

```
\zigmasetup{
  % Define affiliations first
  affiliations.0 = {MIT},
  affiliations.1 = {Stanford University},
  affiliations.2 = {CERN},

  % First author
  authors.0.name = {Alice Smith},
  authors.0.email = {alice@mit.edu},
  authors.0.orcid = {0000-0001-1111-1111},
  authors.0.affiliation = {0,2},  % Multiple affiliations
  authors.0.corresponding = {true},

  % Second author
  authors.1.name = {Bob Jones},
  authors.1.affiliation = {1},

  % Third author
```

```
  authors.2.name = {Carol White},
  authors.2.email = {carol@cern.ch},
  authors.2.affiliation = {2},
}
```

4.3 Author Properties

authors.N.name (Required) Author's full name

authors.N.email Email address (creates clickable link)

authors.N.orcid ORCID identifier (displays icon with link)

authors.N.affiliation Comma-separated affiliation IDs

authors.N.corresponding `true` or `false` (default: false)

4.3.1 ORCID Integration

When an ORCID is provided, **Zigma** automatically:

- Displays the ORCID icon (from academicons package)
- Makes it clickable to `https://orcid.org/`⟨*id*⟩
- Positions it as superscript after the author name

4.3.2 Corresponding Author Markers

Corresponding authors are indicated with configurable symbols:

```
\zigmasetup{
  corresponding.marker = {envelope},  % envelope, star, or asterisk
  corresponding.show-footer = {true}, % Show email footer

  authors.0.corresponding = {true},
}
```

Available marker symbols:

- `envelope`: (default, from marvosym package)
- `star`: (mathematical star)
- `asterisk`: * (simple asterisk)

The footer automatically lists all corresponding authors' emails:

> Corresponding author: alice@mit.edu

Or for multiple corresponding authors:

> Corresponding authors: alice@mit.edu, bob@stanford.edu

Chapter 5

Metadata and DOI

5.1 Publication Metadata

Add metadata footer with DOI, dates, and license:

```
\zigmasetup{
  metadata.doi = {10.1234/journal.2024.001},
  metadata.url = {https://example.org/paper},
  metadata.url.show = {true},

  metadata.received = {2024-01-15},
  metadata.revised = {2024-03-10},
  metadata.accepted = {2024-05-20},
  metadata.published = {2024-06-01},

  metadata.license = {CC BY 4.0},
}
```

This generates a professional metadata footer:

DOI: 10.1234/journal.2024.001 | Received: 2024-01-15 | Accepted: 2024-05-20

Published: 2024-06-01

License: CC BY 4.0

5.2 Journal Information

For journal publications:

```
\zigmasetup{
  journal.name = {Nature Physics},
  journal.url = {https://nature.com/nphys},
  journal.url.show = {true},
}
```

Chapter 6

Bibliography

6.1 Basic Bibliography Setup

Enable bibliography support with class options:

```
\documentclass[bib,bibfile=references.bib]{zigma-class/zigma}

\zigmasetup{
  bib.style = {ieee},  % or apa, chicago, nature, etc.
}
```

6.2 Citation Styles

Zigma supports 15 citation styles:

1. ieee
2. apa
3. chicago
4. nature
5. numeric
6. authoryear
7. harvard
8. vancouver
9. mla
10. alphabetic
11. verbose
12. trad-abbrv
13. acm
14. authoryear-comp
15. philosophy

6.2.1 Quick Style Selection

```
% Option 1: Class option
\documentclass[bibpreset=harvard]{zigma-class/zigma}

% Option 2: zigmasetup
\zigmasetup{bib.style = {harvard}}
```

6.3 Citation Commands

\cite{⟨*key*⟩} Standard citation

\textcite{⟨*key*⟩} In-text citation (author-year styles)

\parencite{⟨*key*⟩} Parenthetical citation

\footcite{⟨*key*⟩} Footnote citation (verbose styles)

6.4 Multiple Bibliography Files

Support for multiple .bib files:

```
\documentclass[bibfile={refs1.bib,refs2.bib,refs3.bib}]{zigma-class/zigma}
```

6.5 Advanced Features

6.5.1 Per-Chapter Bibliographies

For books and theses:

```
\begin{refsection}
  \chapter{Introduction}
  Content with \cite{ref1}...
  \printbibliography[heading=subbibliography]
\end{refsection}

\begin{refsection}
  \chapter{Methods}
  Content with \cite{ref2}...
  \printbibliography[heading=subbibliography]
\end{refsection}
```

6.5.2 Split Bibliographies

Separate primary and secondary sources:

```
% In .bib file, add keywords:
@article{source1,
  author = {...},
  keywords = {primary},
}

% In document:
\printbibliography[keyword=primary,title={Primary Sources}]
```

```
\printbibliography[keyword=secondary,title={Secondary Literature}]
```

Part III

Advanced Features

Chapter 7

Smart Cross-References

7.1 Introduction

Version 0.9.0 introduces intelligent cross-referencing with automatic type detection. No need to remember if you're referencing a section, figure, or table—**Zigma** detects it from the label prefix.

7.2 Basic Usage

7.2.1 Standard References

```
\section{Introduction}
\label{sec:intro}

\begin{figure}
  \caption{Results}
  \label{fig:results}
\end{figure}

\begin{table}
  \caption{Data}
  \label{tab:data}
\end{table}

% Smart references (auto-detect type)
See \zigmaref{sec:intro} for background.
The \zigmaref{fig:results} shows the findings.
Values in \zigmaref{tab:data} confirm this.
```

Output:

See Section 1 for background.
The Figure 1 shows the findings.
Values in Table 1 confirm this.

7.2.2 Multiple References

```
% Oxford comma formatting
See \zigmarefs{sec:intro,sec:methods,sec:results}.
Figures \zigmarefs{fig:a,fig:b,fig:c} illustrate this.
```

Output:

See Sections 1, 2, and 3.
Figures 1, 2, and 3 illustrate this.

7.3 Reference Commands

\zigmaref{⟨*label*⟩} Smart reference with prefix
Example: `\zigmaref{sec:intro}` "Section 1"

\Zigmaref{⟨*label*⟩} Uppercase variant
Example: `\Zigmaref{fig:plot}` "FIGURE 2"

\zigmaref*{⟨*label*⟩} Number only (no prefix)
Example: `\zigmaref*{sec:intro}` "1"

\zigmarefs{⟨*lab1,lab2,...*⟩} Multiple references
Example: `\zigmarefs{sec:a,sec:b}` "Sections 1 and 2"

\zigmapageref{⟨*label*⟩} Page reference
Example: `\zigmapageref{sec:intro}` "on page 5"

\zigmafullref{⟨*label*⟩} Full reference
Example: `\zigmafullref{fig:plot}` "Figure 2 on page 12"

7.4 Supported Label Types

Zigma auto-detects 11 label types:

Prefix	Type
`sec:`	Section
`ch:`	Chapter
`fig:`	Figure
`tab:`	Table
`eq:`	Equation
`lst:`	Listing
`alg:`	Algorithm
`thm:`	Theorem
`lem:`	Lemma
`def:`	Definition
`app:`	Appendix

7.5 Multilingual Support

Customize labels for any language:

```
% Italian
\zigmasetup{
  labels.section = {Sezione},
  labels.sections = {Sezioni},
  labels.figure = {Figura},
  labels.figures = {Figure},
  labels.table = {Tabella},
  labels.tables = {Tabelle},
}
```

Now `\zigmaref{sec:intro}` outputs "Sezione 1" instead of "Section 1".

7.5.1 Available Label Keys

All labels come in singular and plural forms:

- `labels.section / sections`
- `labels.chapter / chapters`
- `labels.figure / figures`
- `labels.table / tables`
- `labels.equation / equations`
- `labels.listing / listings`
- `labels.algorithm / algorithms`
- `labels.theorem / theorems`
- `labels.lemma / lemmas`
- `labels.definition / definitions`
- `labels.appendix / appendices`
- `labels.page / pages`

Chapter 8

Base Class System

8.1 Overview

Zigma's base class system allows you to choose the underlying LaTeX class while maintaining consistent features. Four base classes are available:

1. **Article**: Standard LaTeX article class (default for most)
2. **Memoir**: For books, theses, and long documents
3. **KOMA-Script**: European typography standards (scrartcl, scrreprt, scrbook)
4. **Rho**: Academic journal style with full metadata support (default)

8.2 Selecting a Base Class

```
% Use article base class
\documentclass[base=article]{zigma-class/zigma}

% Use memoir for a thesis
\documentclass[base=memoir]{zigma-class/zigma}

% Use KOMA-Script for European style
\documentclass[base=scrartcl]{zigma-class/zigma}

% Use rho for journal articles (default)
\documentclass{zigma-class/zigma}  % or base=rho
```

8.3 Base Class Comparison

Feature	Article	Memoir	KOMA
Two-column	Yes	No	Yes
Chapters	No	Yes	Yes*
Typography	American	Book	European
Font style	Serif	Serif	Sans (titles)
Use case	Papers	Theses	Papers
Margins	Standard	Book	Configurable

*scrreprt and scrbook only

8.4 Base Class Features

8.4.1 Article Base Class

- Standard LaTeX article class
- Two-column support
- Compact layout
- Full-width title, abstract, keywords
- Best for: Journal papers, conference proceedings

8.4.2 Memoir Base Class

- Memoir class for long documents
- Single column default
- Chapter support
- Larger fonts and spacing
- Book-style typography
- Best for: PhD theses, technical books, monographs

8.4.3 KOMA-Script Base Classes

- Three classes: scrartcl, scrreprt, scrbook
- European typography standards
- Sans-serif titles
- Small fonts for abstract/keywords
- Highly configurable via `\KOMAoptions`
- Best for: European academic publications

8.4.4 Rho Base Class

- Academic journal style
- Full metadata support (DOI, dates, license)
- Customizable headers and footers
- Two-column layout
- Professional journal appearance
- Best for: Journal submissions, online publications

Chapter 9

Templates

9.1 Template System

Templates provide pre-configured settings for common publication types. They set base class, colors, fonts, bibliography style, and layout automatically.

9.2 Available Templates

9.2.1 IEEE Template

```
\documentclass[template=ieee,bibfile=refs.bib]{zigma-class/zigma}
```

Features:

- Two-column article format
- IEEE bibliography style
- 0.75-inch margins
- Standard IEEE conference paper appearance

9.2.2 APA Template

```
\documentclass[template=apa,bibfile=refs.bib]{zigma-class/zigma}
```

Features:

- APA 6th edition style
- Author-year citations
- Standard margins
- Psychology/social sciences formatting

9.2.3 Nature Template

```
\documentclass[template=nature,bibfile=refs.bib]{zigma-class/zigma}
```

Features:

- Nature journal style
- Numeric citations
- Compact formatting
- Science publication standards

9.2.4 Thesis Template

```
\documentclass[template=thesis]{zigma-class/zigma}
```

Features:

- Memoir base class
- Chapter support
- Larger fonts (12pt)
- Book-style layout
- Per-chapter bibliographies

9.2.5 Il Cibernetico Template

```
\documentclass[template=ilcibernetico,bibfile=refs.bib]{zigma-class/zigma}
```

Features:

- Green color scheme (#009966)
- Rho base class
- IEEE bibliography
- Custom headers with lead author
- Journal-specific formatting

9.3 Overriding Templates

You can override template settings:

```
\documentclass[template=ieee]{zigma-class/zigma}

\zigmasetup{
  % Override template defaults
  bib.style = {apa},           % Change from IEEE to APA
  color.main = {0000ff},       % Change color scheme
}
```

Warning

Template overrides generate warnings to alert you of conflicts. User settings always take precedence.

Chapter 10

Customization

10.1 Colors

10.1.1 Main Color Scheme

```
\zigmasetup{
  color.main = {008080},      % Teal (default)
}
```

For rho base class:

```
\zigmasetup{
  rhocolor = {009966},        % Green for rho
}
```

10.2 Headers and Footers

10.2.1 Custom Headers

```
\zigmasetup{
  header.left = {My Custom Header},
  header.center = {\thepage},
  header.right = {Right Header},
}
```

10.2.2 Custom Footers

```
\zigmasetup{
  footer.left = {Footer Left},
  footer.center = {Footer Center},
  footer.right = {Footer Right},
}
```

Note

Header/footer customization is fully supported in the rho base class. Other base classes use their native header/footer systems.

10.3 Layout Options

Layout must be configured via class options (not `\zigmasetup`):

```
\documentclass[
  base=rho,
  marginleft=3cm,
  marginright=3cm,
  margintop=2.5cm,
  marginbottom=2.5cm,
  columnsep=25pt
]{zigma-class/zigma}
```

Available layout options:

- `marginleft` (default: 1.25cm for rho)
- `marginright` (default: 1.25cm for rho)
- `margintop` (default: 2cm for rho)
- `marginbottom` (default: 2cm for rho)
- `columnsep` (default: 15pt for rho)

10.4 Page Numbering

```
\zigmasetup{
  page.start = {101},         % Start at page 101
}
```

Useful for journal articles in compiled volumes.

Part IV

Reference

Chapter 11

Complete Key Reference

11.1 Document Metadata

`title` Document title (required)

`subtitle` Optional subtitle

`date` Publication date (default: `\today`)

`date.show` Boolean: show/hide date (default: true)

`abstract` Abstract text

`keywords` Comma-separated keywords

11.2 Title URLs

`title.url` URL for clickable title

`title.url.show` Boolean: show URL (default: false)

11.3 Journal Information

`journal.name` Journal name

`journal.url` Journal website URL

`journal.url.show` Boolean: show URL (default: false)

11.4 Authors and Affiliations

`affiliations.N` Affiliation N (N = 0, 1, 2, ...)

`authors.N.name` Author N name (required)

`authors.N.email` Author N email

`authors.N.orcid` Author N ORCID identifier

authors.N.affiliation Comma-separated affiliation IDs

authors.N.corresponding Boolean: corresponding author

11.5 Corresponding Author Settings

corresponding.marker Symbol: envelope, star, asterisk (default: envelope)

corresponding.show-footer Boolean: show footer (default: true)

11.6 Metadata Footer

metadata.doi DOI identifier

metadata.url Custom URL

metadata.url.show Boolean: show URL (default: false)

metadata.received Received date (YYYY-MM-DD)

metadata.revised Revised date

metadata.accepted Accepted date

metadata.published Published date

metadata.license License text (e.g., "CC BY 4.0")

11.7 Bibliography Settings

bib.style Citation style: ieee, apa, chicago, nature, harvard, vancouver, mla, alphabetic, verbose, etc. (15 total)

bib.backend Backend: biblatex or natbib (default: biblatex)

bib.sorting Boolean: enable sorting (default: true)

11.8 Cross-Reference Labels

All labels support singular and plural forms:

labels.section / sections Section labels

labels.chapter / chapters Chapter labels

labels.figure / figures Figure labels

labels.table / tables Table labels

labels.equation / equations Equation labels

labels.listing / listings Listing labels

labels.algorithm / algorithms Algorithm labels

labels.theorem / theorems Theorem labels

labels.lemma / lemmas Lemma labels

labels.definition / definitions Definition labels

labels.appendix / appendices Appendix labels

labels.page / pages Page labels

11.9 Header and Footer

header.left Left header content

header.center Center header content

header.right Right header content

footer.left Left footer content

footer.center Center footer content

footer.right Right footer content

11.10 Colors

color.main Main color (hex, e.g., 008080)

rhocolor Rho base class color (hex)

11.11 Page Settings

page.start Starting page number (integer)

11.12 Debug Mode

debug Boolean: enable debug output (default: false)

Chapter 12

Command Reference

12.1 Setup Commands

\zigmasetup{⟨*keys*⟩} Configure document settings

\maketitle Generate title, authors, abstract, keywords

12.2 Cross-Reference Commands

\zigmaref{⟨*label*⟩} Smart reference with auto-prefix

\Zigmaref{⟨*label*⟩} Uppercase variant

\zigmaref*{⟨*label*⟩} Number only (no prefix)

\zigmarefs{⟨*labels*⟩} Multiple references

\zigmapageref{⟨*label*⟩} Page reference

\zigmafullref{⟨*label*⟩} Full reference (number + page)

12.3 Citation Commands

Standard biblatex/natbib commands work transparently:

\cite{⟨*key*⟩} Basic citation

\textcite{⟨*key*⟩} In-text citation (biblatex)

\parencite{⟨*key*⟩} Parenthetical citation (biblatex)

\footcite{⟨*key*⟩} Footnote citation (biblatex)

\citep{⟨*key*⟩} Parenthetical (natbib)

\citet{⟨*key*⟩} Textual (natbib)

12.4 Bibliography Printing

`\printbibliography` Print complete bibliography

`\printbibliography[keyword=⟨kw⟩]` Filter by keyword

`\printbibliography[title=⟨title⟩]` Custom heading

Chapter 13

Class Options Reference

13.1 Base Class Selection

base=⟨*name*⟩ Select base class: article, memoir, scrartcl, scrreprt, scrbook, rho (default: rho)

13.2 Bibliography Options

bib Enable bibliography support

bibfile={⟨*file(s)*⟩} Specify .bib file(s) (comma-separated)

bibpreset=⟨*style*⟩ Citation style preset

bibbackend=⟨*backend*⟩ biblatex or natbib

13.3 Template Options

template=⟨*name*⟩ Load template: ieee, apa, nature, thesis, ilcibernetico

13.4 Layout Options

marginleft=⟨*dim*⟩ Left margin (e.g., 3cm)

marginright=⟨*dim*⟩ Right margin

margintop=⟨*dim*⟩ Top margin

marginbottom=⟨*dim*⟩ Bottom margin

columnsep=⟨*dim*⟩ Column separation (e.g., 25pt)

Note

Layout options must be specified as class options, not in `\zigmasetup`, because geometry package requires early configuration.

Part V

Appendices

Appendix A

Complete Examples

A.1 Minimal Article

```
\documentclass{zigma-class/zigma}

\zigmasetup{
  title = {A Short Note on Quantum Computing},

  affiliations.0 = {MIT},

  authors.0.name = {Alice Johnson},
  authors.0.email = {alice@mit.edu},
  authors.0.affiliation = {0},
}

\begin{document}
\maketitle

\section{Introduction}

Your content here.

\end{document}
```

A.2 Multi-Author Paper with Bibliography

```
\documentclass[bib,bibfile=refs.bib]{zigma-class/zigma}

\zigmasetup{
  title = {Machine Learning in Genomics},
  subtitle = {A Survey},
  abstract = {This paper surveys recent advances...},
  keywords = {machine learning, genomics, bioinformatics},

  affiliations.0 = {Stanford University},
```

```
  affiliations.1 = {Harvard Medical School},

  authors.0.name = {John Smith},
  authors.0.email = {john@stanford.edu},
  authors.0.orcid = {0000-0001-1111-1111},
  authors.0.affiliation = {0},
  authors.0.corresponding = {true},

  authors.1.name = {Jane Doe},
  authors.1.affiliation = {1},

  bib.style = {nature},

  metadata.doi = {10.1234/journal.2024.001},
  metadata.received = {2024-01-15},
  metadata.accepted = {2024-05-20},
}

\begin{document}
\maketitle

\section{Introduction}
\label{sec:intro}

Recent advances in machine learning \cite{smith2023} have...

\section{Methods}
\label{sec:methods}

As discussed in \zigmaref{sec:intro}, we apply...

\printbibliography

\end{document}
```

A.3 PhD Thesis

```
\documentclass[base=memoir,template=thesis]{zigma-class/zigma}

\zigmasetup{
  title = {Advanced Topics in Quantum Field Theory},
  subtitle = {A Dissertation},

  affiliations.0 = {Department of Physics, MIT},

  authors.0.name = {Robert Brown},
  authors.0.affiliation = {0},
}

\begin{document}

```

```
\frontmatter
\maketitle
\tableofcontents

\mainmatter

\begin{refsection}
  \chapter{Introduction}
  \label{ch:intro}

  Content with citations \cite{ref1}...

  \printbibliography[heading=subbibliography]
\end{refsection}

\begin{refsection}
  \chapter{Quantum Electrodynamics}
  \label{ch:qed}

  Building on \zigmaref{ch:intro}, we now...

  \printbibliography[heading=subbibliography]
\end{refsection}

\end{document}
```

Appendix B

Troubleshooting

B.1 Common Issues

B.1.1 Cross-References Show ??

Problem: References display as "??" instead of numbers.
Solution: Run LuaLaTeX twice (or use latexmk):

```
lualatex document.tex
lualatex document.tex
```

B.1.2 Bibliography Not Appearing

Problem: Bibliography section is empty.
Solution: Run the complete compilation sequence:

```
lualatex document.tex
biber document        # or bibtex
lualatex document.tex
lualatex document.tex
```

Or use latexmk:

```
latexmk -lualatex document.tex
```

B.1.3 ORCID Icons Not Showing

Problem: ORCID identifiers don't display icons.
Solution: Install the academicons package. On TeX Live:

```
tlmgr install academicons
```

B.1.4 Headers/Footers Not Working

Problem: Custom headers/footers not applied.

Solution: Header/footer customization is fully supported only in rho base class. For other base classes, use their native mechanisms.

B.1.5 Layout Options Ignored

Problem: Margin settings in `\zigmasetup` don't work.

Solution: Layout options must be class options, not `\zigmasetup` keys:

```
% Wrong:
\zigmasetup{marginleft=3cm}  % Doesn't work

% Correct:
\documentclass[marginleft=3cm]{zigma-class/zigma}
```

B.2 Debug Mode

Enable debug output to diagnose issues:

```
\zigmasetup{
  debug = {true},
}
```

This prints diagnostic information to the console:

- Key parsing details
- Author registration
- State dumps
- Module loading

B.3 Getting Help

- **Repository**: https://git.xed.it/exedre/zigma-class
- **Issues**: https://git.xed.it/exedre/zigma-class/issues
- **Email**: emmanuele@exedre.org

Appendix C

Version History

C.1 Version 0.9.0 (November 7, 2025)

Major Release: Smart Cross-Reference System

- Smart cross-reference system with auto-detection
- 11 supported label types
- Multiple reference support with Oxford comma
- Multilingual label support (23 new keys)
- 15 total citation styles
- Complete documentation and test coverage

C.2 Version 0.8.7 (November 7, 2025)

Citation Styles Expansion

- Added 8 new citation styles
- Total: 15 citation styles with complete documentation
- Philosophy citation style

C.3 Version 0.8.6 (November 7, 2025)

Major Refactoring

- Renamed plugins baseclasses
- Templates reorganization
- Test suite rationalization (47 tests)
- Integration guides (Zotero, Mendeley)

C.4 Version 0.8.5 (November 7, 2025)

Bibliography Integration

- Complete bibliography support
- 6 initial citation presets
- Per-chapter bibliographies
- Split bibliographies by keyword
- Multiple .bib file support

C.5 Earlier Versions

v0.8.0 Metadata footer system, clickable titles

v0.7.0 Complete plugin system with 4 plugins

v0.6.x ORCID integration, corresponding markers, memoir plugin, KOMA plugin

v0.5.0 Core system with author management

For complete version history, see `CHANGELOG.md` in the repository.

Appendix D

Future Roadmap

D.1 Version 1.0.0 (Target: Q2 2026)

CTAN Release:

- TDS (TeX Directory Structure) packaging
- Complete PDF manual (this document)
- Polished example collection
- Installation documentation
- CTAN submission

D.2 Beyond v1.0.0

Potential future features:

- Additional base classes (beamer, revtex)
- Enhanced validation system
- Performance optimizations
- Additional templates
- Community contributions

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