LATEX document class for Les Cahiers du GERAD series

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Contents

1	Installing the class							
	1.1	Prerequisites	3					
	1.2	Installation	3					
2	Usi	ng the class	4					
	2.1	Options	4					
	2.2	Using packages	5					
		2.2.1 babel	5					
		2.2.2 algorithm, algorithmic, algorithm2e	5					
		2.2.3 float	6					
		2.2.4 cleveref	7					
	2.3	Commands	7					
		2.3.1 Metadata	7					
		2.3.2 Document Layout	8					
	2.4	Environments	8					
		2.4.1 Title page	8					
		2.4.2 Abstracts section	9					

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3	The geradwp.tex template						
	3.1	Default packages (lines 92-106)	10				
	3.2	Default options (lines 107-136)	10				
	3.3	Author commands (lines $137-145$)	10				
	3.4	Metadata (lines 147-183)	10				
	3.5	Abstracts, keywords, acknowledgements, article (starting at line 185)	10				
\mathbf{A}	Clas	ss source code	10				
	A.1	Tests and boolean values	11				
	A.2	Class options	11				
	A.3	Loading the class					
	A.4	Defaut packages and their options					
	A.5	Formatting					
A.6 Private class commands		Private class commands	16				
		A.6.1 Metadata	16				
		A.6.2 Cover and title pages	17				
	A.7	Public class commands and environments	25				
		A.7.1 Document layout	25				
		A.7.2 Metadata	25				
		A.7.3 Document subdivisions	26				
Cl	nange	e History	29				

Abstract

The <code>geradwp</code> document class was designed to allow researchers who are <code>GERAD</code> \checkmark members to write their working papers, preprints and technical reports in line with the presentation standards of <code>Les Cahiers du GERAD</code> working paper series. This class and the associated files replace the template that <code>GERAD</code> initially distributed.

1 Installing the class

1.1 Prerequisites

Using this class assumes you've already installed a TEX distribution with an integrated code editor. In designing geradwp, the TeX Live 2020 distribution and the TeX studio distribution were used.

If you are using TeXLive or MacTeX \checkmark and your document compilation is buggy, begin by making sure your installation is up to date before investigating any further.

If you are using the MikTeX distribution, make sure you install the latest versions of the packages indicated in Table 1 before using the geradwp class.

Users of Overleaf \square can also use this class by downloading the necessary files from the GERAD website \square .

• geradwp utilise maintenant la version 4 de fancyhdr

Starting at geradwp version 1.1, version 4 of the fancyhdr \checkmark is used. This version introduces new commands that are not backwards compatible with version 3. It is available with the 2021 editions of Tex Live and MacTeX, as well as on Overleaf if you use the 2021 version of TeX Live.

If you are using another TeX distribution, please make sure that you have the right version of fancyhdr.

1.2 Installation

The .zip archive you downloaded contains these files:

- 1. **geradwp.ins**: class installation file;
- 2. **geradwp.dtx**: documented source code for the class;
- 3. **geradwp.pdf**: the english version of the class' documentation;
- 4. **geradwp-fr.pdf**: the french version of the class' documentation;
- 5. **README.md**: file needed to display the class description on the **CTAN** website.

Follow these steps to install the class on your workstation.

1. Create a working directory;

- 2. unzip the .zip archive in your working directory;
- 3. open a command line terminal from the directory;
- 4. enter the following command:

latex geradwp.ins

This command will create the geradwp.cls class file and the geradwp.tex template from which you can draft your working paper.

2 Using the class

The geradwp class is derived from the basic article class. You can therefore use all of that class' functionalities. However, a few of the article class options are defined by default in the geradwp class and cannot be modified:

- The font size is 10pt;
- the paper size is letterpaper;
- printing is one-sided only (oneside) for the gdweb and gdplain versions of the template;
- printing is two-sided (twoside) for the gdpaper version of the template.

Since these options are defined in the class file, there is no risk of you deleting them from the template's documentclass command. Just make sure not to enter any options that might conflict with the above-mentioned options.

2.1 Options

In addition to the options available via the article class, there are a few options available for geradwp.

gdweb

The Web version of a paper that is to be posted on the GERAD website. The oneside option is passed on to the article class.

gdpaper

The paper version of an article that is to be printed and placed in the GERAD documentation centre. The twoside option is passed on to the article class.

gdplain

The unformatted version of a paper, similar to a basic LATEX article, that is to be distributed by the author. The oneside option is passed on to the article class.

gdrevised

When a paper is revised by the authors, this option is used to display the revision date on the paper's cover page.

gdfinal

During the drafting and revision process, a 5 pt overfullrule is printed in the right-hand margin to indicate any parts of the paper that go outside the margin. Once these two processes are done, this option is used to remove the document's overfullrule.

gdsmallhead

Some packages have fun at our expense by modifying the paper's header. The gdsmallhead option corrects this by resetting the proper header.

gdpostpub

Once a paper's content is published by a publisher, the paper must be updated to show the new publication's information on the cover page. The gdpostpub option swaps out the *Cahier*'s citation for the publisher's official one and the article URL for the *Cahier*'s

gdsupplement

When authors want to add extra research data or an important "appendix" to their working paper without including it in the main document, they can write that extra material in a blank geradwp template with the gdsupplement included. Combined with the \GDsupplementname command (see subsubsection 2.3.1), this option will clearly show the supplement name on the title pages and page headers.

gdminitabs

Authors sometimes create tables so large that they extend beyond the margins. To solve this issue, the gdminitabs option can be used to set the tables in the document to footnotesize.

2.2 Using packages

Since the goal of this class is to make sure that working papers use a consistent layout, very few packages are preloaded. Table 1 lists those that are preloaded, along with the files where you will find them (and their options, where applicable). Researchers can choose to use whichever packages they will need, taking into account their features (see below). Care should be taken not to reload any of them or to change any of the default options.

2.2.1 babel

The person maintaining the original template advised the author of this document class that using babel with the template causes a number of problems, so **please** do not use the babel package with this new template, until these issues have been fixed. A future release of the class may allow you to use it.

2.2.2 algorithm, algorithmic, algorithm2e

algorithm, algorithmic and algorithm2e are three different packages, each of which has its fans among the Cahiers du GERAD authors. All are accepted

Package	Class file	Template	Options
amssymb	✓		
amsmath	✓		
amsfonts	✓		
latexsym	✓		
graphicx	✓		graphicspath = Figures
mathrsfs	✓		
geometry	✓		
fancyhdr	✓		
booktabs	✓		
multirow	✓		
array	✓		
caption	✓		$font = \{footnotesize, bf, sf\}$
color	✓		
enumitem	✓		
float	✓		
algorithm		~	
algorithmic		~	
algorithm2e		~	
hyperref		~	colorlinks
			$citecolor = \{blue\}$
			$urlcolor = \{blue\}$
			$breaklinks = \{true\}$

Table 1: List of the class' preloaded packages along with their location and options

and loaded in the preamble of the template. Simply comment out those that will not be used. **Bear in mind that algorithm and algorithmic must be loaded together** as they don't work independently. **algorithm2e**, on the other hand, il self-sufficient.

algorithm and algorithm2e are mutually exclusive and cannot be both loaded at once without causing bugs.

Finally, when using the algorithm and algorithmic duo, please put your algorithms' \caption in \footnotesize.

2.2.3 float

The float package is loaded with the class only when the gdminitabs option is enabled. When loaded, it resizes the tables in footnotesize. If you need this package even if your tables are reasonably small, you can load it in the preamble of the document.

If you are using the algorithm package, please note that it loads float, so there is no need to load it in the preamble.

2.2.4 cleveref

The template already includes the amsthm package to allow referencing of theorems. However, in order for them to appear when using the cleveref package, \newtheorem definitions must be placed after the cleveref package is loaded (as specified in Section 14.1 of the cleveref package documentation \square .)

2.3 Commands

The handful of public commands that were created for this class have two purposes: document layout and filling in metadata for the working paper.

2.3.1 Metadata

All located in the preamble, the metadata commands allow authors and the GERAD team to insert the bibliographical data that will be found on the cover and title pages of the paper.

\GDtitle

Title of the working paper. The title is on both the cover and title pages.

\GDauthorsShort

List of authors, formatted as [First initial]. [Last name] (e.g.: B. Hamel, K. Hébert). The contents of this command will be found on the title page, under the title.

\GDauthorsCopyright

List of the authors' last names for the authors' copyright notice at the bottom of the title page.

\GDmonth

Publication month of the working paper in both French and English. The month for the French version is in the first set of curly brackets and the English one in the second.

\GDyear

The year the paper was published, formatted as YYYY.

\GDnumber

Number assigned to the working paper by the GERAD team.

\GDrevised

When a working paper is revised by its authors, this command is used to display the revision date on the cover page.

\GDsupplementname

If you write extra research data or an appendix using the geradwp template and the gdsupplement option (see subsection 2.1), the \GDsupplementname command will serve as place holder for the supplement's name and the class will output it on the title pages and on page headers.

\GDpostpubcitation

When the working paper is officially published, the GERAD team will replace the *Cahier*'s citation with the official journal citation and replace the link to the GERAD website with the URL from the publisher. The citation must be placed in the first set of curly brackets and the URL in the second.

2.3.2 Document Layout

To keep the template from getting cluttered and to keep authors from deleting critical formatting commands, commands were created to mark each subdivision of the document.

\GDcoverpage

The entire cover page is generated with this command. It is largely formatted with the formatting commands listed in subsubsection 2.3.1. The title page that follows the cover is generated by the GDtitlepage environment described in subsection 2.4.

\GDabstracts

This command marks the beginning of the "content" section, beginning with the English and French abstracts. It configures the page headers and footers, which are used throughout the paper, including the metadata described in subsubsection 2.3.1. The abstracts are written in the GDabstract environment described in subsection 2.4.

\GDarticlestart

The working paper begins with this command. It handles some final fine-tuning of the formatting settings.

2.4 Environments

A few environments were created to quickly format the title page and the abstracts section.

2.4.1 Title page

GDtitlepage

The entire title page is generated via this environment. To create the page, authors only need to type their personal information in the GDauthlist, GDaffillist, and GDemaillist environments described below.

GDauthlist \GDauthitem \GDrefsep The GDauthlist environment is a customized list in which the authors enter their full name using the \GDauthitem command (NB: one author per line). The authors can link their affiliations with the \ref{} command, as demonstrated in Source Code 1. In the event that an author has more than one affiliation, they must use one \ref{} command per affiliation, separating each one with a \GDrefsep command.

Source Code 1: Authors list example

```
1 \begin{GDauthlist}
2 \GDauthitem{Benoit Hamel\ref{affil:hec}}
3 \GDauthitem{Karine H\'ebert\ref{affil:gerad}\GDrefsep\ref{affil:hec}}
4 \end{GDauthlist}
```

GDaffillist \GDaffilitem The GDaffillist environment is a customized list of all the authors' affiliations, in no predefined order of importance. Each affiliation is written with a

\GDaffilitem command with the label of the affiliation entered between the first set of curly brackets, and the affiliation itself in the second, as shown in Source Code 2.

Source Code 2: Affiliations list example

```
5 \begin{GDaffillist}
6 \GDaffilitem{affil:hec}{HEC Montr\'eal}
7 \GDaffilitem{affil:gerad}{GERAD}
8 \end{GDauthlist}
```

GDemaillist \GDemailitem

The final customized list created for the title page of a *Cahier* is the GDemaillist environment, where the authors' email addresses are listed, with one email address per \GDemaillitem command.

Source Code 3: Email list example

```
9 \begin{GDemaillist}
10 \GDemailitem{benoit.2.hamel@hec.ca}
11 \GDemailitem{karine.hebert@gerad.ca}
12 \end{GDauthlist}
```

2.4.2 Abstracts section

GDabstract

In a GERAD working paper, the French and English abstracts are written in a single paragraph. Even though it would have been simpler to write only one \paragraph command per abstract in the template, the authors of the class chose to use the "environment" format in order to add formatting and remain consistent with the behaviour of the abstract environment.

GDacknowledgements

In a GERAD working paper, the acknowledgements are in a distinct block of text that does not match what the **\thanks** command yields in terms of formatting. The authors therefore must write all their acknowledgements in the GDacknowledgements environment, and the **geradwp** class will handle the layout according to the chosen version.

3 The geradwp.tex template

The geradwp.tex template was designed to be as simple as possible and is divided in a way that makes the source code of each paper uniform. Here is a brief presentation of the different sections.

3.1 Default packages (lines 92-106)

All the packages that are not loaded by default in the class (see Table 1) are loaded in this section. It's in this section that the choice between the algorithm and algorithm2e packages is made. Also, this is where you should load the packages that tend to malfunction if they are loaded after the hyperref package.

3.2 Default options (lines 107-136)

If the name of your folder containing your paper's figures is named differently than the default name, or if there are multiple folders with figures in them, this is where you can enter that information.

If you want to add hypersetup options without modifying or removing the default ones, you can do that here.

In all other cases, this section should remain unchanged.

3.3 Author commands (lines 137-145)

This section belongs entirely to the author. This is where all the packages needed for the paper can be loaded, as well as their options.

This is also where customized commands, environments, and theorems can be entered.

3.4 Metadata (lines 147-183)

This section is divided in two: the first is at the end of the preamble, and the second in the GDtitlepage environment located at the beginning of the document. This is where all the bibliographical metadata for the paper should be.

3.5 Abstracts, keywords, acknowledgements, article (starting at line 185)

These last two sections are, of course, where the body of the article will be.

A Class source code

In this appendix, you will find the source code for the geradwp class. If you're interested to see how it's programmed, or help with debugging or improving the class, this section is for you.

A.1 Tests and boolean values

To do conditional tests, the class uses the ifthen package. The boolean variables identify which version of the paper to generate, how far in the publication process the paper is and it configures some parts of the formatting. Once the variables have been created, default values are set.

```
1 (*class)
4 % Booleans %
5 \newboolean{GD@isWebVersion}
6 \newboolean{GD@isPaperVersion}
7 \newboolean{GD@isPlainVersion}
8 \newboolean{GD@needsSmallHeadSep}
9 \newboolean{GD@isFinalImpression}
10 \newboolean{GD@isPostPublication}
11 \newboolean{GD@isSupplement}
12 \newboolean{GD@isRevised}
13 \newboolean{GD@needsminitabs}
15 \setboolean{GD@isWebVersion}{false}
16 \setboolean{GD@isPaperVersion}{true}
17 \setboolean{GD@isPlainVersion}{false}
18 \setboolean{GD@needsSmallHeadSep}{false}
19 \setboolean{GD@isFinalImpression}{false}
20 \setboolean{GD@isPostPublication}{false}
21 \setboolean{GD@isSupplement}{false}
22 \setboolean{GD@isRevised}{false}
23 \setboolean{GD@needsminitabs}{false}
```

A.2 Class options

The few class options are declared here. They essentially change some boolean values and pass some options to the article class.

```
24
25 % Class Options %
26 \DeclareOption{gdweb}{%
27 \setboolean{GD@isWebVersion}{true}
28 \setboolean{GD@isPaperVersion}{false}
29 \setboolean{GD@isPlainVersion}{false}
30 \PassOptionsToClass{oneside}{article}
31 }
32 \DeclareOption{gdpaper}{%
33 \setboolean{GD@isWebVersion}{false}
34 \setboolean{GD@isPaperVersion}{true}
35 \setboolean{GD@isPlainVersion}{false}
```

```
36 \PassOptionsToClass{twoside}{article}
37 }
38 \DeclareOption{gdplain}{%}
39 \setboolean{GD@isWebVersion}{false}
40 \setboolean{GD@isPaperVersion}{false}
41 \setboolean{GD@isPlainVersion}{true}
42 \PassOptionsToClass{oneside}{article}
44 \DeclareOption{gdsmallhead}{%
45 \setboolean{GD@needsSmallHeadSep}{true}
46 }
47 \DeclareOption{gdfinal}{%
48 \setboolean{GD@isFinalImpression}{true}
50 \DeclareOption{gdpostpub}{%
51 \setboolean{GD@isPostPublication}{true}
52 }
53 \DeclareOption{gdsupplement}{%
54 \setboolean{GD@isSupplement}{true}
56 \DeclareOption{gdrevised}{%
57 \setboolean{GD@isRevised}{true}
59 \DeclareOption{gdminitabs}{%
60 \setboolean{GD@needsminitabs}{true}
61 }
```

A.3 Loading the class

The class is loaded in the document with all the user-defined or default values.

```
62
63 % Standard Class Loading %
64 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{article}}
65 \ProcessOptions\relax
66 \LoadClass[letterpaper,10pt]{article}
```

A.4 Defaut packages and their options

Very few packages are loaded with the class in order to allow the user to write with the greatest possible flexibility. The packages that are loaded, however, ensure that all the papers in the collection have consistent formatting.

```
67
68 % Required Packages %
69 \RequirePackage{amssymb}
70 \RequirePackage{amsmath}
```

```
71 \RequirePackage{amsthm}
72 \RequirePackage{amsfonts}
73 \RequirePackage{latexsym}
74 \RequirePackage{graphicx}
75 \RequirePackage{mathrsfs}
76 \RequirePackage{geometry}
77 \RequirePackage{fancyhdr}
78 \RequirePackage{booktabs}
79 \RequirePackage{multirow}
80 \RequirePackage{array}
81 \RequirePackage[font={footnotesize,bf,sf}]{caption}
82 \RequirePackage{color}
83 \RequirePackage{enumitem}
84 \ifthenelse{\boolean{GD@needsminitabs}}{%
85 \RequirePackage{float}
86 }{}
87
88\;\% Required Packages Setup \%
89 \definecolor{gris}{rgb}\{0.44,0.44,0.44\} % color pkg setup
90 \captionsetup[table]{skip=5pt} % caption pkg setup
```

A.5 Formatting

We begin by defining the lengths of the document. These can change from one version of the paper to another.

```
92 % Lengths %
 93 \newlength{\GD@authitemsep}
 94 \newlength{\GD@authtopsep}
 95 \newlength{\GD@affilitemsep}
 96 \newlength{\GD@affiltopsep}
 97 \newlength{\GD@titleminipage@hspace}
 98 \newlength{\GD@coverpage@vspace}
 99 \ifthenelse{\boolean{GD@isPlainVersion}}{%
100 \setlength{\GD@authitemsep}{Opt}
101 \setlength{\GD@authtopsep}{12pt}
102 \setlength{\GD@affilitemsep}{Opt}
103 \setlength{\GD@affiltopsep}{9pt}
104 }{%
105 \setlength{\GD@authitemsep}{8pt}
106 \setlength{\GD@authtopsep}{24pt}
107 \setlength{\GD@affilitemsep}{6pt}
108 \setlength{\GD@affiltopsep}{9pt}
109 }
110 \ifthenelse{\boolean{GD@isPaperVersion}}{%
111 \setlength{\GD@titleminipage@hspace}{240pt}
112 }{}
```

```
113 \ifthenelse{\boolean{GD@isWebVersion}}{%
114 \setlength{\GD@titleminipage@hspace}{227pt}
115 }{}
```

We then set up the geometry of the document, which varies from one version to another.

```
116
117 % Geometry %
118 \ifthenelse{\boolean{GD@isWebVersion}}{%
119 \geometry{tmargin=1.5cm,%
120 bmargin=2cm,%
121 lmargin=3cm,%
122 rmargin=3cm,%
123 nofoot,%
124 headsep=30pt,%
125 includehead}
126 }{}
127 \ifthenelse{\boolean{GD@isPlainVersion}}{%
128 \geometry{tmargin=1.5cm,%
129 bmargin=2cm,%
130 lmargin=3cm,%
131 rmargin=3cm,%
132 nofoot,%
133 headsep=30pt,%
134 includehead}
136 \ifthenelse{\boolean{GD@isPaperVersion}}{%
137 \geometry{tmargin=1.5cm,%
138 bmargin=2cm,%
139 lmargin=3cm,%
140 rmargin=2cm,%
141 nofoot,%
142 headsep=30pt,%
143 includehead}
144 }{}
145 \ifthenelse{\boolean{GD@needsSmallHeadSep}}{\%}
146 \headsep=15pt
147 }{}
148 \parindent=15pt
149 \parskip=7pt plus 1pt minus 1pt
150 \g@addto@macro\@floatboxreset\centering
151 \widowpenalty=10000
152 \clubpenalty=10000
153 \raggedbottom
154 \allowdisplaybreaks
```

We add a touch of consistency by modifying the section headers, going down the hierarchy all the way down to \paragraph. Among other changes, we assign the font \sffamily to the headers, theorems, and proof.

```
155
156 % Section headings %
157 \renewcommand{\section}{\Qstartsection {section}{1}{\zQ}%
158 {-2ex \@plus -1ex \@minus -.2ex}%
159 {1ex \@plus.2ex}%
160 {\normalfont\Large\sffamily\bfseries}}
161 \renewcommand{\subsection}{\Qstartsection{subsection}{2}{\z0}%
162 {-1.25ex\@plus -1ex \@minus -.2ex}%
163 {.75ex \@plus .2ex}%
164 {\normalfont\large\sffamily\bfseries}}
165 \renewcommand{\subsubsection}{\@startsection{subsubsection}{3}\%
166 {\z@}%
167 {-1.25ex\@plus -1ex \@minus -.2ex}%
168 { .75ex \Oplus .2ex}%
169 {\normalfont\normalsize\sffamily\bfseries}}
170 \renewcommand{\paragraph}{\Qstartsection{paragraph}{4}{\z0}%
171 {-1.25ex \@plus 1ex \@minus -.2ex}%
172 {-.5em \@plus -.1em}%
173 {\normalfont\normalsize\sffamily\bfseries}}
174 \setlength{\partopsep}{.5ex \@plus .1ex} \% to reduce spaces
175 \def\@listI{\leftmargin\leftmargini
                                          %% above, between and under
176 \parsep .25ex \@plus .1ex \% lists - itemize
177 \topsep .25ex \@plus .1ex %% description - enumerate
178 \itemsep \parsep}
179 \let\@listi\@listI
180 \@listi
```

We resize oversized tables that extend past the margins.

```
181
182 % Resizing of huge tables %
183 \ifthenelse{\boolean{GD@needsminitabs}}{%
184 \floatstyle{plaintop}
185 \restylefloat{table}
186 \let\oldtabular\tabular
187 \renewcommand{\tabular}{\footnotesize\oldtabular}
188 \let\oldtable\table
189 }{}
```

Finally, we adjust the formatting of the theorems and of the proof environment so they are consistent with everything else.

```
190
191 % Theorems and proof layout %
192 \newtheoremstyle{gerad}%
193 {3pt}% Space above
194 {3pt}% Space below
195 {}{}%
```

```
196 {\sffamily\bfseries}% head font
197 {.}% Punctuation
198 {.5em}% Space after theorem head
199 {}
200 \theoremstyle{gerad}
201
202 \renewenvironment{proof}[1][\proofname]{\par
203 \pushQED{\qed}%
204 \normalfont \topsep6\p@\@plus6\p@\relax
205 \trivlist
206 \item\relax
207 {\bfseries\sffamily
208 #1\@addpunct{.}}\hspace\labelsep\ignorespaces
209 }{%
210 \popQED\endtrivlist\@endpefalse
211 }
```

A.6 Private class commands

Private commands play two separate roles: 1) storing and reusing the document's metadata; 2) isolate large blocks of code to prevent code duplication.

A.6.1 Metadata

The following commands store the metadata in the associated public commands and populate different parts of the paper such as the headers, cover page and title page.

```
212
213 % Class Private Commands %
214 % Metadata %
215 \newcommand{\gd@year}{}
216 \newcommand{\gd@month@fr}{}
217 \newcommand{\gd@month@en}{}
218 \newcommand{\gd@number}{}
219 \newcommand{\gd@title}{}
220 \newcommand{\gd@authors@short}{}
221 \newcommand{\gd@authors@copyright}{}
222 \newcommand{\gd@postpubcitation}{}
223 \newcommand{\gd@postpubcitation@url}{}
224 \newcommand{\gd@supplementname}{}
225 \newcommand{\gd@revised}{}
```

A.6.2 Cover and title pages

The cover page and the title page change according to the version of the paper being generated and its publication stage. Rather than duplicating code, the cover and title pages have been separated into sections that are called up with the criteria mentioned above.

The cover page displays in every version of the paper except gdplain. The following commands define its appearance. The bottom part of the page is different if the gdpostpub option is used.

```
226
227 % Cover page
228 \newcommand{\GD@cover}{%
229 \ifthenelse{\boolean{GD@isFinalImpression}}{}{}
230 \overfullrule=5pt
231 }
232
233 \pagestyle{empty}
234 \begin{titlepage}
235 \sffamily
236 \ifthenelse{\boolean{GD@needsSmallHeadSep}}{%
237 \vspace*{35pt}
238 }{}
240 {\noindent{\large\bfseries Les Cahiers du GERAD}\hfill ISSN:\quad
241 0711--2440}
242 \ifthenelse{\boolean{GD@isWebVersion}}{%
243
244 \vspace*{54pt}
245 {\noindent\LARGE\bfseries \gd@title\par} %Title
246 \ifthenelse{\boolean{GD@isSupplement}}%
247 {{\noindent\LARGE\textsc{\gd@supplementname}\par}}{}
248 \vspace*{18pt}
249 {\noindent\Large\gd@authors@short\par}
250
251 \vfill
252 }{}
254 \ifthenelse{\boolean{GD@isPaperVersion}}{%
255 \vspace*{\GD@coverpage@vspace}
256 }{}
257 \hspace*{\GD@titleminipage@hspace}
258 \begin{minipage}[c][5.4cm][c]{7cm}
259 {\ifthenelse{\boolean{GD@isWebVersion}}%
260 {\GDcover@minipagetable@web}%
261 {\GDcover@minipagetable@paper}%
262 }
263 \end{minipage}
```

```
264
265 \vfill
266
267 \land \texttt{GD@isPostPublication}\} \end{array} \label{fig:postPublication} % \end{array} \en
268 \GDcover@bottom@postpub
270 \GDcover@bottom@regular
271 }
272 \end{titlepage}
273 }
274
275 % Cover page minipage table (web version)
276 \newcommand{\GDcover@minipagetable@web}{%
277 \ensuremath{\mbox{begin{tabular}{p.5cm}|p{5.5cm}}}
278 & \normalsize G--\gd@year--\gd@number
279 \ifthenelse{\boolean{GD@needsminitabs}}%
280 {\ \ \ }\%
281 {\\*[8pt]}
282 & \normalsize\gd@month@en\ \gd@year
283 \ifthenelse{\boolean{GD@isRevised}}{%
285 &\normalsize Revised: \gd@revised
286 }{}
287 \end{tabular}
288 }
289
290 % Cover page minipage table (paper version)
291 \newcommand{\GDcover@minipagetable@paper}{%
292 \left[ p{5.5cm} \right]
293 \multicolumn{2}{p{6.5cm}}{\normalsize\bfseries \gd@title
294 \ifthenelse{\boolean{GD@needsminitabs}}%
295 {\vspace*{12.5pt}}%
296 {\vspace*{10pt}}}\\
297 \ifthenelse{\boolean{GD@isSupplement}}%
298 {& \textsc{\gd@supplementname}\\*[10pt]}{}
299 & \normalsize\gd@authors@short \\ %Initials. Name
300 & \ifthenelse{\boolean{GD@needsminitabs}}%
301 {\\*[15pt]}%
302 {\\*[12pt]}
303 & \normalsize G--\gd@year--\gd@number
304 \ifthenelse{\boolean{GD@needsminitabs}}%
305 {\\*[10pt]}%
306 {\\*[8pt]}
307 & \normalsize\gd@month@en\ \gd@year
308 \ifthenelse{\boolean{GD@isRevised}}{%
310 &\normalsize Revised: \gd@revised
311 }{}
312 \end{tabular}
313 }
```

```
314
315 % Regular cover page bottom
316 \newcommand{\GDcover@bottom@regular}{%
317 \hrule
318 \smallskip
319
320 \noindent\begin{minipage}[t][][1]{7.5cm}
321 \scriptsize
322 La collection \textit{Les Cahiers du GERAD} est constitu\'{e}e des
323 travaux de recherche men\',{e}s par nos membres. La plupart de ces
324 documents de travail a \'{e}t\'{e} soumis \'{a} des revues avec
325 comit\'{e} de r\'{e}vision. Lorsqu'un document est accept\'{e} et
326 publi\'{e}, le pdf original est retir\'{e} si c'est n\'{e}cessaire et
327 un lien vers l'article publi\'{e} est ajout\'{e}.\\
328
329 \medskip
330 \scriptsize
331 \textbf{Citation sugg} \textbf{?{e}r} \textbf{?{e}e :} \textbf{Qd@authors@short} \textbf{(Qd@month@fr})
332 \gd@year). \gd@title, Rapport technique, Les Cahiers du GERAD G--
333 \gd@year--\gd@number, GERAD, HEC Montr\'{e}al, Canada.\\
335 \textbf{Avant de citer ce rapport technique,} veuillez visiter notre
336 site Web (\url{https://www.gerad.ca/fr/papers/G-\gd@year-\gd@number})
337 afin de mettre \'a jour vos donn\'ees de r\'ef\'erence, s'il a \'et\'e
338 publi\'e dans une revue scientifique.\par
339 \end{minipage}
340 \hfill
341 \begin{minipage}[t][][1]{7.5cm}
342 \scriptsize
343 The series \textit{Les Cahiers du GERAD} consists of working papers
344 \; \mbox{carried} out by our members. Most of these pre-prints have been submitted
345 to peer-reviewed journals. When accepted and published, if necessary,
346 the original pdf is removed and a link to the published article is
348
349 \scriptsize
351\ \gd@title, Technical report, Les Cahiers du GERAD G--\gd@year--\gd@number,
352 GERAD, HEC Montr\'{e}al, Canada.\\
354 \textbf{Before citing this technical report,} please visit our website
355 (\url{https://www.gerad.ca/en/papers/G-\gd@year-\gd@number}) to update
356 your reference data, if it has been published in a scientific journal.
357 \par
358 \end{minipage}
359
360 \bigskip
361 \hrule
362 \smallskip
363
```

```
364 \rightarrow [1]{7.5cm}
365 \scriptsize
366 La publication de ces rapports de recherche est rendue possible gr\^ace
367 au soutien de HEC Montr\'eal, Polytechnique Montr\'eal, Universit\'e
368 McGill, Universit\'e du Qu\'ebec \'a Montr\'eal, ainsi que du Fonds de
369 recherche du Qu\'ebec -- Nature et technologies.
370
371 \medskip
372 D\'ep\^ot l\'egal -- Biblioth\'eque et Archives nationales du Qu\'ebec,
373 \gd@year\\
374 \phantom{Depot legal} -- Biblioth\'eque et Archives Canada, \gd@year
375 \par
376 \end{minipage}
377 \hfill
378 \begin{minipage}[t][2.1cm][1]{7.5cm}
379 \scriptsize
380 The publication of these research reports is made possible
381 thanks to the support of HEC Montr\'eal, Polytechnique Montr\'eal,
382 McGill University, Universit\'e du Qu\'ebec \'a Montr\'eal, as well as
383 the Fonds de recherche du Qu\'ebec -- Nature et technologies.
385 \medskip
386 Legal deposit -- Biblioth\'eque et Archives nationales du Qu\'ebec,
387 \gd@year\\
388 \phantom{Legal deposit} -- Library and Archives Canada, \gd@year\par
389 \end{minipage}
390
391 \hrule
392 \smallskip
393
394 \setminus noindent
395 \begin{minipage}[t][1cm][1]{7.5cm}
396 \begin{scriptsize}\raggedleft
397 \textbf{GERAD} HEC Montr\'eal
398
399 3000, chemin de la C\^ote-Sainte-Catherine
401 Montr\'eal (Qu\'ebec) Canada H3T 2A7\par
402 \end{scriptsize}
403 \end{minipage}
404 \hspace*{.35cm}\vrule\hfill
405 \verb|\begin{minipage}[t][1cm][1]{7.5cm}|
406 \begin{scriptsize}
407 \text{ } \text{textbf{T}'el.},: 514 340-6053}
409 T\'el\'ec.\,: 514 340-5665
410
411 info@gerad.ca
412
413 www.gerad.ca\par
```

```
414 \end{scriptsize}
415 \end{minipage}
416
417 \bigskip
418 \hrule
419 }
420
421 % Post-publication cover page bottom
422 \newcommand{\GDcover@bottom@postpub}{%
423 \hrule
424 \smallskip
425
426 \noindent
427 \begin{minipage}[t][][1]{7.5cm}
428 \scriptsize
429 La collection \textit{Les Cahiers du GERAD} est constitu\''{e}e des
430 travaux de recherche men\'{e}s par nos membres. La plupart de ces
431 documents de travail a \'{e}t\'{e} soumis \'{a} des revues avec comit\'e
432 de r\'{e}vision. Lorsqu'un document est accept\'{e} et publi\'{e}, le
433 pdf original est retir\'{e} si c'est n\'{e}cessaire et un lien vers
434 l'article publi\'{e} est ajout\'{e}.\par
435 \end{minipage}
436 \hfill
437 \begin{minipage}[t][][1]{7.5cm}
438 \scriptsize
439 The series \textit{Les Cahiers du GERAD} consists of working papers
440 carried out by our members. Most of these pre-prints have been submitted
441 to peer-reviewed journals. When accepted and published, if necessary,
442 \ \mathrm{the} original pdf is removed and a link to the published article is
443 \text{ added.} \text{\gray}
444 \end{minipage}
445
446 \setminus noindent
447 \begin{minipage}[t][][1]{\textwidth}
448 \footnotesize
449 \textbf{CITATION ORIGINALE / ORIGINAL CITATION}
450 \smallskip
452 \gd@postpubcitation\ \url{\gd@postpubcitation@url}.
453 \end{minipage}
454
456
457 \ hrule
458 \smallskip
460 \noindent
461 \geq [t] [2.1cm] [1] \{7.5cm\}
462 \scriptsize
463 \medskip
```

```
464 La publication de ces rapports de recherche est rendue possible gr\^ace
465\;\mathrm{au} soutien de HEC Montr\'eal, Polytechnique Montr\'eal, Universit\'e
466\;\mathrm{McGill},\;\mathrm{Universit}\ du Qu
\'ebec \'a Montr\'eal, ainsi que du Fonds de
467 recherche du Qu\'ebec -- Nature et technologies.
468
469 \medskip
470 D\'ep\^ot l\'egal -- Biblioth\'eque et Archives nationales du Qu\'ebec,
471 2020\\
472 \phantom{Depot legal} -- Biblioth\'eque et Archives Canada, 2020\par
473 \end{minipage}
474 \hfill
475 \geq [t] [2.1cm] [1] \{7.5cm\}
476 \scriptsize
477 \medskip
478\,\mathrm{The} publication of these research reports is made possible
479 thanks to the support of HEC Montr\'eal, Polytechnique Montr\'eal,
480\;\text{McGill} University, Universit\'e du Qu\'ebec \'a Montr\'eal, as well as
481\;\text{the Fonds} de recherche du Qu\'ebec -- Nature et technologies.
483 \medskip
484 Legal deposit -- Biblioth\'eque et Archives nationales du Qu\'ebec,
485 2020\\
486\ \mbox{\local deposit} -- Library and Archives Canada, 2020\par
487 \end{minipage}
488
489 \hrule
490 \smallskip
491
492 \noindent
493 \begin{minipage}[t][1cm][1]{7.5cm}
494 \begin{scriptsize}\raggedleft
495 \textbf{GERAD} HEC Montr\'eal
497 3000, chemin de la C\^ote-Sainte-Catherine
499 Montr\'eal (Qu\'ebec) Canada H3T 2A7\par
500 \end{scriptsize}
501 \end{minipage}
502 \hspace*{.35cm}\vrule\hfill
503 \begin{minipage}[t][1cm][1]{7.5cm}
504 \begin{scriptsize}
505 \textbf{T\'el.\,: 514 340-6053}
507 T\'el\'ec.\,: 514 340-5665
508
509 info@gerad.ca
511 www.gerad.ca\par
512 \end{scriptsize}
513 \end{minipage}
```

```
514
515 \bigskip
516 \hrule
517 }
```

The title page appears in all versions of the paper, but it varies according to the version. Given that it is contained in the GDtitlepage environment, the internal commands for the title page's display are divided into two parts: @begin and @end.

```
518
519 % Regular title page
520 \newcommand{\GD@titlepage@begin}{%
521 \leftarrow GD@isWebVersion}{%
522 \newpage\clearpage
523 }{%
524 \leftarrow GD@isPaperVersion}{%
525 \newpage\cleardoublepage
526 }{}
527 }
528 \neq 0
529 \sffamily
530 {\LARGE\bfseries \gd@title\par} %Title
531 \ifthenelse{\boolean{GD@isSupplement}}%
532 {\vspace{14pt}
533 {\LARGE\textsc{\gd@supplementname}\par}
534 }{}
535 \ensuremath{\mbox{begin{minipage}[t][10cm][1]{7.5cm}}}
536 \vspace*{55pt}
537 }
538
539 \newcommand{\GD@titlepage@end}{%
540 \vfill
541 \end{minipage}
542 \vfill
543 {\bfseries \gd@month@en\ \gd@year}\\*
544 \ifthenelse{\boolean{GD@isRevised}}%
545 {\\ Revised: \gd@revised \\}%
546 {}
547 {\bfseries Les Cahiers du GERAD}\\
548 {oxed{ bfseries G--\gd@year--\gd@number}} \
549 {\footnotesize Copyright \copyright\ \gd@year\ GERAD,
550 \gd@authors@copyright}
551 \vspace*{0.05cm}
552
553 \hrule
554 \smallskip
556 \setminus noindent
557 \begin{minipage}[t][][1]{7.5cm}
```

```
558 \begin{scriptsize}
559 Les textes publi\'es dans la s\'erie des rapports de recherche
560\ \text{textit}\{\text{Les Cahiers du GERAD}\} n'engagent que la responsabilit\'e de
561 \; {\rm leurs} \; {\rm auteurs} \; . Les auteurs conservent leur droit d'auteur et leurs
562 droits moraux sur leurs publications et les utilisateurs s'engagent \'a
563 reconna\^{\i}tre et respecter les exigences l\'{e}gales associ\'{e}es
564 \'{a} ces droits. Ainsi, les utilisateurs:
565 \begin {itemize}
566 \item Peuvent t\'{e}l\'{e}charger et imprimer une copie de toute
567 \text{ publication du portail public aux fins d'\',{e}tude ou de recherche}
568 priv\'{e}e;
569 \item Ne peuvent pas distribuer le mat\'{e}riel ou l'utiliser pour une
570 activit\'{e} \'{a} but lucratif ou pour un gain commercial;
571 \item Peuvent distribuer gratuitement l'URL identifiant la publication.
572 \end{itemize}
573 Si vous pensez que ce document enfreint le droit d'auteur, contactez-
574 nous en fournissant des d\'etails. Nous supprimerons imm\'{e}diatement
575 l'acc\'es au travail et enqu\^{e}terons sur votre demande.\par
576 \end{scriptsize}
577 \end{minipage}
578 \hfill
579 \begin{minipage}[t][][1]{7.5cm}
580 \begin{scriptsize}
581 The authors are exclusively responsible for the content of their
582 research papers published in the series \textit{Les Cahiers du GERAD}.
583 Copyright and moral rights for the publications are retained by the
584 authors and the users must commit themselves to recognize and abide the
585\ \mbox{legal} requirements associated with these rights. Thus, users:
586 \begin{itemize}
587 \item May download and print one copy of any publication from the public
588 portal for the purpose of private study or research;
589 \item May not further distribute the material or use it for any
590 profit-making activity or commercial gain;
591 \item May freely distribute the URL identifying the publication.
592 \end{itemize}
593 If you believe that this document breaches copyright please contact us
594 \text{ providing details}, and we will remove access to the work immediately and
595 investigate your claim.\par
596 \end{scriptsize}
597 \end{minipage}
599 \thispagestyle{empty}
600 \parindent=15pt
601 \newpage
602 }
603
604 % Plain title page
605 \newcommand{\GD@plain@titlepage@begin}{%
606 \thispagestyle{empty}
607 \sffamily
```

```
608 {\sffamily\LARGE\bfseries\noindent\gd@title\par}
609 \ifthenelse{\boolean{GD@isSupplement}}%
610 {{\noindent\LARGE\textsc{\gd@supplementname}\par}}{}
611 }
612
613 \newcommand{\GD@plain@pagetitle@end}{%
614 \vspace*{12pt}
615 {\noindent\gd@month@en\ \gd@year}
616 \vspace*{30pt}
617 }
```

A.7 Public class commands and environments

The public commands are those that can be directly accessed by the user. They are, however, each linked to a specific part of the paper, and thus cannot be reused or moved.

A.7.1 Document layout

The number of a geradwp template's possible versions imply that some internal document layout commands must be easily changed via public commands, available in the template's preamble. This allows more efficient work on the publisher's side and prevents the multiplication of homemade versions of the class¹.

```
618
619 % Layout public commands
620 \newcommand{\GDcoverpagewhitespace}[1]{%
621 \setlength{\GD@coverpage@vspace}{#1}
622 }
```

A.7.2 Metadata

The following commands are those users use to enter their paper's bibliographical data. They modify the values of the corresponding private commands (see subsubsection A.6.1).

```
623
624 % Metadata public commands
625 \newcommand{\GDyear}[1]{%
626 \renewcommand{\gd@year}{#1}
627 }
628 \newcommand{\GDmonth}[2]{%
629 \renewcommand{\gd@month@fr}{#1}
630 \renewcommand{\gd@month@en}{#2}
```

 $^{^1\}mathrm{Any}$ reference to a real-life person is pure coincidence.

```
632 \newcommand{\GDnumber}[1]{%
633 \mbox{ } \mbox{enewcommand{\gd@number}{\#1}}
634 }
635 \newcommand{\GDtitle}[1]{%
636 \renewcommand{\gd@title}{#1}
637 }
638 \newcommand{\GDauthorsShort}[1]{%
639 \renewcommand{\gd@authors@short}{#1}
640 }
641 \newcommand{\GDauthorsCopyright}[1]{%
642 \renewcommand{\gd@authors@copyright}{#1}
643 }
644 \newcommand{\GDpostpubcitation}[2]{%
645 \mbox{ } \mbox{command{\gd@postpubcitation}{\#1}}
646 \ensuremath{\ensuremath{\mbox{Gd@postpubcitation@url}}{\#2}}
647 }
648 \newcommand{\GDsupplementname}[1]{%
649 \renewcommand{\gd@supplementname}{#1}
651 \newcommand{\GDrevised}[1]{%
652 \renewcommand{\gd@revised}{#1}
653 }
```

A.7.3 Document subdivisions

Each part of the paper has specific characteristics in terms of geometry and formatting (headers, footers, etc.). Rather than bloating the template with multiple lines of code, a few commands and environments were created to group them together.

```
654
655 % Cover page
656 \newcommand{\GDcoverpage}{%
657 \ifthenelse{\boolean{GD@isPlainVersion}}{}{\GD@cover}
658 }
659
660 % Title page
661 \newenvironment{GDtitlepage}{
662 \ifthenelse{\boolean{GD@isPlainVersion}}%
663 {\GD@plain@titlepage@begin}%
664 {\GD@titlepage@begin}
665 }{
666 \ifthenelse{\boolean{GD@isPlainVersion}}%
667 {\GD@plain@pagetitle@end}%
668 {\GD@titlepage@end}
669 }
670
```

```
671 % Title page lists and list items
672 \neq GDauthlist{itemize}{1}
673 \setlist[GDauthlist]{label={},%
674 left=Opt .. Opt,%
675 itemsep=\GD@authitemsep,%
676 topsep=\GD@authtopsep}
677 \newlist{GDaffillist}{enumerate}{1}
678 \textbf{ [GDaffillist] {label=} textsuperscript{} \textbf{ alph*}}, \%
679 ref=\textsuperscript{\emph{\alph*}},%
680 wide,%
681 left=Opt .. 1em,%
682 itemsep=\GD@affilitemsep,%
683 topsep=\GD@affiltopsep}
684 \newlist{GDemaillist}{itemize}{1}
685 \setlist[GDemaillist]{label={},%
686\ \texttt{left=Opt} .. \texttt{Opt,\%}
687 itemsep=0pt,%
688 parsep=0pt}
689 \newcommand{\GDrefsep}{\textsuperscript{,\,}}
690 \newcommand{\GDauthitem}[1]{%
691 \ifthenelse{\boolean{GD@isPlainVersion}}{%
692 \item {\sffamily\large\bfseries #1}
694 \item {\Large\bfseries #1}
695 }
696 }
697 \newcommand{\GDaffilitem}[2]{\item \label{#1}{\itshape #2}}
698 \newcommand{\GDemailitem}[1]{\item {\small\ttfamily #1}}
699
700 % Abstracts section
701 \newcommand{\GDabstracts}{%
702 \ifthenelse{\boolean{GD@isPlainVersion}}{}{%
703 \setcounter{page}{2}
704 \renewcommand{\thepage}{\roman{page}}
705 \pagestyle{fancy}
706 \fancyhead [LO] {%
707 \textcolor{gris}{\sffamily{\,} Les Cahiers du GERAD}\hfill
708 \textcolor{gris}{\sffamily G--\gd@year--\gd@number}%
709 \ifthenelse{\boolean{GD@isSupplement}}%
710 {\textcolor{gris}{\sffamily\ -- \itshape \gd@supplementname}}%
711 {} %
712 \ifthenelse{\boolean{GD@isRevised}}%
713 {\textcolor{gris}{\sffamily\ -- \itshape Revised}}%
714 {}\hfill
715 \textcolor{gris}{\sffamily\thepage}
716 {\large\strut}\color{gris}{\hrule}
717 }
718 \fancyhead [LE] {%
719 \textcolor{gris}{\sffamily{\,}\thepage}\hfill
720 \textcolor{gris}{\sffamily G--\gd@year--\gd@number}%
```

```
721 \ifthenelse{\boolean{GD@isSupplement}}%
722 {\textcolor{gris}{\sffamily\ -- \itshape \gd@supplementname}}%
723 {} %
724 \ifthenelse{\boolean{GD@isRevised}}%
725 {\textcolor{gris}{\sffamily\ -- \itshape Revised}}%
726 {}\hfill
727 \textcolor{gris}{\sffamily Les Cahiers du GERAD}
728 {\close{color{gris}{\hrule}}}
729 }
730 \fancyhead[C]{}
731 \fancyhead[R]{}
732 \fancyfoot{}
733 \renewcommand{\headrulewidth}{0pt}
734 \mbox{ } \mbox{command{\hotrulewidth}{0pt}}
735 \rmfamily
736 \vspace*{5pt}
737 }
738 }
739
740 % Custom abstract environment
741 \newenvironment{GDabstract}[1]{%
742 \paragraph{#1 : }
743 }{%
744 \ \texttt{\CD@isPlainVersion}\}{}{\texttt{\Compace} * \{2cm\}}
745 }
746
747 % Acknowledgements section
748 \newenvironment{GDacknowledgements}{%
749 \ifthenelse{\boolean{GD@isPlainVersion}}{%
750 \paragraph{Acknowledgements: }
751 }{%
752 \vfill
753 \hrule
754\smallskip
755 \paragraph{Acknowledgements: }
756 }
757 }{}
758
759 % Article section
760 \newcommand{\GDarticlestart}{%
761 \ifthenelse{\boolean{GD@isPlainVersion}}{}{%
762 \newpage
763 \setcounter{page}{1}
764 \renewcommand{\thepage}{\arabic{page}}
765 \baselineskip=12.5pt
766 \rmfamily
767 }
768 }
769 (/class)
```

Change History

1.0		Added supplement name to title
General: Initial release	1	page 23
1.1		Added supplement name to web
General: Added a warning		version cover page 17
concerning fancyhdr 4	. 3	Added the caption footnotesize
Added internal supplement		note 5
name command	16	Added the fact that algorithm
Added isSupplement boolean		loads float package 6
and default value	11	Added the Revised prefix 23
Added new cover page vspace		Added vfill for web version only 17
length	13	All public commands have been
Added new		translated in English 7
GDcoverpagewhitespace		Changed plain title page's
command to change cover page		month for english
vspace	25	Included algorithmic package in
Added new gdsupplement option	11	documentation 5
Added new vspace length for		Replaced all fancyhdr v3
paper version only	17	commands by v4 commands . 26
Added public		Translated all commands to
GDsupplementname command	25	english 16
Added supplement name in		Updated GERAD URLs in
header	26	abstract 2
Added supplement name in		Updated GERAD URLs in
paper cover page minipage	17	Prerequisites subsection 3