

L^AT_EX document class for *Les Cahiers du GERAD* series

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Abstract

The `geradwp` document class was designed to allow researchers who are **GERAD**  members to write their working papers, preprints and technical reports in line with the presentation standards of *Les Cahiers du GERAD* working paper series. This class and the associated files replace the template that GERAD 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 [TeXstudio](#) editor were used.

If you are using TeXLive or [MacTeX](#) 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](#) can also use this class by downloading the necessary files from the [GERAD website](#).

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`.

<code>gdweb</code>	The Web version of a paper that is to be posted on the GERAD website. The <code>oneside</code> option is passed on to the <code>article</code> class.
<code>gdpaper</code>	The paper version of an article that is to be printed and placed in the GERAD documentation centre. The <code>twoside</code> option is passed on to the article class.
<code>gdplain</code>	The unformatted version of a paper, similar to a basic L ^A T _E X article, that is to be distributed by the author. The <code>oneside</code> option is passed on to the article class.
<code>gdrevised</code>	When a paper is revised by the authors, this option is used to display the revision date on the paper's cover page.
<code>gdfinal</code>	During the drafting and revision process, a 5 pt <code>overfullrule</code> 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 <code>overfullrule</code> .
<code>gdsmallhead</code>	Some packages have fun at our expense by modifying the paper's header. The <code>gdsmallhead</code> option corrects this by resetting the proper header.
<code>gdpostpub</code>	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 <code>gdpostpub</code> option swaps out the <i>Cahier's</i> citation for the publisher's official one and the article URL for the <i>Cahier's</i>

`gdmintabs` Authors sometimes create tables so large that they extend beyond the margins. To solve this issue, the `gdneedsminintabs` 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.

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		✓	
algorithm2e		✓	
hyperref		✓	colorlinks citecolor={blue} urlcolor={blue} breaklinks={true}

Table 1: List of the class’ preloaded packages along with their location and 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, algorithm2e

[algorithm](#) and [algorithm2e](#) are two different packages, each of which has its fans among the *Cahiers du GERAD* authors. Both are accepted and loaded in the preamble of the template. Simply comment out the one that will not be used.

The two packages are mutually exclusive and cannot both be loaded at once without causing bugs.

2.2.3 float

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

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](#)).

2.3 Commands

The handful of public commands that were created for this class have two purposes: formatting 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.

<code>\GDtitre</code>	Title of the working paper. The title is on both the cover and title pages.
<code>\GDauteursCourts</code>	List of authors, formatted as <i>[First initial]. [Last name]</i> (e.g.: B. Hamel, K. Hébert). The contents of this command will be found on the title page, under the title.
<code>\GDauteursCopyright</code>	List of the authors' last names for the authors' copyright notice at the bottom of the title page.
<code>\GDmois</code>	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.

<code>\GDannee</code>	The year the paper was published, formatted as YYYY.
<code>\GDnumero</code>	Number assigned to the working paper by the GERAD team.
<code>\GDrevised</code>	When a working paper is revised by its authors, this command is used to display the revision date on the cover page.
<code>\GDpostpubcitation</code>	When the working paper is officially published, the GERAD team will replace the <i>Cahier</i> '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 Formatting

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.

<code>\GDpageCouverture</code>	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 <code>GDpagetitre</code> environment described in subsection 2.4 .
<code>\GDabstracts</code>	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 <code>GDabstract</code> environment described in subsection 2.4 .
<code>\GDarticlestart</code>	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

<code>GDpagetitre</code>	The entire title page is generated via this environment. To create the page, authors only need to type their personal information in the <code>GDauthlist</code> , <code>GDaffillist</code> , and <code>GDemaillist</code> environments described below.
<code>GDauthlist</code>	The <code>GDauthlist</code> environment is a customized list in which the authors enter
<code>\GDauthitem</code>	
<code>\GDrefsep</code>	

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\ref{affil:gerad}\GDrefsep\ref{affil:hec}}
4 \end{GDauthlist}
```

`GDaffillist` 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` 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 `\GDemailitem` 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 104-117)

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 118-132)

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 133-141)

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 143-155)

This section is divided in two: the first is at the end of the preamble, and the second in the `GDpagetitre` 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 156)

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>
2 \RequirePackage{ifthen}
3
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@isRevised}
12 \newboolean{GD@needsminitabs}
13
14 \setboolean{GD@isWebVersion}{false}
15 \setboolean{GD@isPaperVersion}{true}
16 \setboolean{GD@isPlainVersion}{false}
17 \setboolean{GD@needsSmallHeadSep}{false}
18 \setboolean{GD@isFinalImpression}{false}
19 \setboolean{GD@isPostPublication}{false}
20 \setboolean{GD@isRevised}{false}
21 \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.

```
22
23 % Class Options %
24 \DeclareOption{gdweb}{%
25 \setboolean{GD@isWebVersion}{true}
26 \setboolean{GD@isPaperVersion}{false}
27 \setboolean{GD@isPlainVersion}{false}
28 \PassOptionsToClass{oneside}{article}
29 }
30 \DeclareOption{gdpaper}{%
31 \setboolean{GD@isWebVersion}{false}
32 \setboolean{GD@isPaperVersion}{true}
33 \setboolean{GD@isPlainVersion}{false}
34 \PassOptionsToClass{twoside}{article}
35 }
36 \DeclareOption{gdplain}{%
37 \setboolean{GD@isWebVersion}{false}
38 \setboolean{GD@isPaperVersion}{false}
39 \setboolean{GD@isPlainVersion}{true}
40 \PassOptionsToClass{oneside}{article}
41 }
42 \DeclareOption{gdsmallhead}{%
43 \setboolean{GD@needsSmallHeadSep}{true}
44 }
45 \DeclareOption{gdfinal}{%
46 \setboolean{GD@isFinalImpression}{true}
47 }
48 \DeclareOption{gdpostpub}{%
49 \setboolean{GD@isPostPublication}{true}
50 }
51 \DeclareOption{gdrevised}{%
52 \setboolean{GD@isRevised}{true}
53 }
54 \DeclareOption{gdminitabs}{%
55 \setboolean{GD@needsminitabs}{true}
56 }
```

A.3 Loading the class

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

```
57
58 % Standard Class Loading %
59 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{article}}
```

```

60 \ProcessOptions\relax
61 \LoadClass[letterpaper,10pt]{article}

```

A.4 Default 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.

```

62
63 % Required Packages %
64 \RequirePackage{amssymb}
65 \RequirePackage{amsmath}
66 \RequirePackage{amsthm}
67 \RequirePackage{amsfonts}
68 \RequirePackage{latexsym}
69 \RequirePackage{graphicx}
70 \RequirePackage{mathrsfs}
71 \RequirePackage{geometry}
72 \RequirePackage{fancyhdr}
73 \RequirePackage{booktabs}
74 \RequirePackage{multirow}
75 \RequirePackage{array}
76 \RequirePackage[font={footnotesize,bf,sf}]{caption}
77 \RequirePackage{color}
78 \RequirePackage{enumitem}
79 \ifthenelse{\boolean{GD@needsminitabs}}{%
80 \RequirePackage{float}
81 }{}
82
83 % Required Packages Setup %
84 \definecolor{gris}{rgb}{0.44,0.44,0.44} % color pkg setup
85 \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.

```

86
87 % Lengths %
88 \newlength{\GD@authitemsep}
89 \newlength{\GD@authtopsep}
90 \newlength{\GD@affilitemsep}
91 \newlength{\GD@affiltopsep}
92 \newlength{\GD@titleminipage@hspace}
93 \ifthenelse{\boolean{GD@isPlainVersion}}{%

```

```

94 \setlength{\GD@authitemsep}{0pt}
95 \setlength{\GD@authtopsep}{12pt}
96 \setlength{\GD@affilitemsep}{0pt}
97 \setlength{\GD@affiltopsep}{9pt}
98 }{%
99 \setlength{\GD@authitemsep}{8pt}
100 \setlength{\GD@authtopsep}{24pt}
101 \setlength{\GD@affilitemsep}{6pt}
102 \setlength{\GD@affiltopsep}{9pt}
103 }
104 \ifthenelse{\boolean{GD@isPaperVersion}}{%
105 \setlength{\GD@titleminipage@hspace}{240pt}
106 }{}
107 \ifthenelse{\boolean{GD@isWebVersion}}{%
108 \setlength{\GD@titleminipage@hspace}{227pt}
109 }{}

```

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

```

110
111 % Geometry %
112 \ifthenelse{\boolean{GD@isWebVersion}}{%
113 \geometry{tmargin=1.5cm,%
114 bmargin=2cm,%
115 lmargin=3cm,%
116 rmargin=3cm,%
117 nofoot,%
118 headsep=30pt,%
119 includehead}
120 }{}
121 \ifthenelse{\boolean{GD@isPlainVersion}}{%
122 \geometry{tmargin=1.5cm,%
123 bmargin=2cm,%
124 lmargin=3cm,%
125 rmargin=3cm,%
126 nofoot,%
127 headsep=30pt,%
128 includehead}
129 }{}
130 \ifthenelse{\boolean{GD@isPaperVersion}}{%
131 \geometry{tmargin=1.5cm,%
132 bmargin=2cm,%
133 lmargin=3cm,%
134 rmargin=2cm,%
135 nofoot,%
136 headsep=30pt,%
137 includehead}
138 }{}
139 \ifthenelse{\boolean{GD@needsSmallHeadSep}}{%

```

```

140 \headsep=15pt
141 }{}
142 \parindent=15pt
143 \parskip=7pt plus 1pt minus 1pt
144 \g@addto@macro{\floatboxreset}{centering}
145 \widowpenalty=10000
146 \clubpenalty=10000
147 \raggedbottom
148 \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.

```

149
150 % Section headings %
151 \renewcommand{\section}{\@startsection {section}{1}{\z@}%
152 {-2ex \@plus -1ex \@minus -.2ex}%
153 {1ex \@plus .2ex}%
154 {\normalfont\Large\sffamily\bfseries}}
155 \renewcommand{\subsection}{\@startsection{subsection}{2}{\z@}%
156 {-1.25ex \@plus -1ex \@minus -.2ex}%
157 {.75ex \@plus .2ex}%
158 {\normalfont\large\sffamily\bfseries}}
159 \renewcommand{\subsubsection}{\@startsection{subsubsection}{3}%
160 {\z@}%
161 {-1.25ex \@plus -1ex \@minus -.2ex}%
162 {.75ex \@plus .2ex}%
163 {\normalfont\normalsize\sffamily\bfseries}}
164 \renewcommand{\paragraph}{\@startsection{paragraph}{4}{\z@}%
165 {-1.25ex \@plus 1ex \@minus -.2ex}%
166 {-.5em \@plus -.1em}%
167 {\normalfont\normalsize\sffamily\bfseries}}
168 \setlength{\partopsep}{.5ex \@plus .1ex} %% to reduce spaces
169 \def\@listI{\leftmargin\leftmarginI %% above, between and under
170 \parsep .25ex \@plus .1ex %% lists - itemize
171 \topsep .25ex \@plus .1ex %% description - enumerate
172 \itemsep \parsep}
173 \let\@listi\@listI
174 \@listi

```

We resize oversized tables that extend past the margins.

```

175
176 % Resizing of huge tables %
177 \ifthenelse{\boolean{GD@needsminitabs}}{%
178 \floatstyle{plaintop}
179 \restylefloat{table}
180 \let\oldtabular\tabular
181 \renewcommand{\tabular}{\footnotesize\oldtabular}

```

```

182 \let\oldtable\table
183 {}{}

```

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

```

184
185 % Theorems and proof layout %
186 \newtheoremstyle{gerad}%
187 {3pt}% Space above
188 {3pt}% Space below
189 {}{}%
190 {\sffamily\bfseries}% head font
191 {.}% Punctuation
192 {.5em}% Space after theorem head
193 {}
194 \theoremstyle{gerad}
195
196 \renewenvironment{proof}[1][\proofname]{\par
197 \pushQED{\qed}%
198 \normalfont \topsep6\p@\plus6\p@\relax
199 \trivlist
200 \item\relax
201 {\bfseries\sffamily
202 #1\@addpunct{.}}\hspace\labelsep\ignorespaces
203 }{}%
204 \popQED\endtrivlist\@endpefalse
205 }

```

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.

```

206
207 % Class Private Commands %
208 % Metadata %
209 \newcommand{\gd@annee}{}
210 \newcommand{\gd@mois}{}
211 \newcommand{\gd@month}{}
212 \newcommand{\gd@numero}{}

```

```

213 \newcommand{\gd@titre}{}
214 \newcommand{\gd@auteurs@short}{}
215 \newcommand{\gd@auteurs@copyright}{}
216 \newcommand{\gd@postpubcitation}{}
217 \newcommand{\gd@postpubcitation@url}{}
218 \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.

```

219
220 % Cover page
221 \newcommand{\GD@cover}{%
222 \ifthenelse{\boolean{GD@isFinalImpression}}{}{%
223 \overfullrule=5pt
224 }
225
226 \pagestyle{empty}
227 \begin{titlepage}
228 \sffamily
229 \ifthenelse{\boolean{GD@needsSmallHeadSep}}{}{%
230 \vspace*{35pt}
231 }{}
232
233 {\noindent{\large\bfseries Les Cahiers du GERAD}\hfill ISSN:\quad
234 0711--2440}
235 \ifthenelse{\boolean{GD@isWebVersion}}{}{%
236
237 \vspace*{54pt}
238 {\noindent\Large\bfseries \gd@titre\par} %Title
239
240 \vspace*{18pt}
241 {\noindent\Large\gd@auteurs@short\par}
242 }{}
243
244 \vfill
245 \hspace*{\GD@titleminipage@hspace}
246 \begin{minipage}[c][5.4cm][c]{7cm}
247 {\ifthenelse{\boolean{GD@isWebVersion}}{}%
248 {\GDcover@minipagetable@web}%
249 {\GDcover@minipagetable@paper}%

```



```

250 }
251 \end{minipage}
252
253 \vfill
254
255 \ifthenelse{\boolean{GD@isPostPublication}}{%
256 \GDcover@bottom@postpub
257 }{%
258 \GDcover@bottom@regular
259 }
260 \end{titlepage}
261 }
262
263 % Cover page minipage table (web version)
264 \newcommand{\GDcover@minipagetable@web}{%
265 \begin{tabular}{p{.5cm}|p{5.5cm}}
266 & \normalsize G--\gd@annee--\gd@numero
267 \ifthenelse{\boolean{GD@needsminitabs}}{%
268 {\*\*[10pt]}%
269 {\*\*[8pt]}
270 & \normalsize\gd@month\ \gd@annee
271 \ifthenelse{\boolean{GD@isRevised}}{%
272 \\\
273 & \normalsize Revised: \gd@revised
274 }{}
275 \end{tabular}
276 }
277
278 % Cover page minipage table (paper version)
279 \newcommand{\GDcover@minipagetable@paper}{%
280 \begin{tabular}{p{.5cm}|p{5.5cm}}
281 \multicolumn{2}{p{6.5cm}}{\normalsize\bfseries \gd@titre
282 \ifthenelse{\boolean{GD@needsminitabs}}{%
283 {\vspace*{12.5pt}}%
284 {\vspace*{10pt}}}\\\
285 & \normalsize\gd@auteurs@short \\\ %Initials. Name
286 & \ifthenelse{\boolean{GD@needsminitabs}}{%
287 {\*\*[15pt]}%
288 {\*\*[12pt]}
289 & \normalsize G--\gd@annee--\gd@numero
290 \ifthenelse{\boolean{GD@needsminitabs}}{%
291 {\*\*[10pt]}%
292 {\*\*[8pt]}
293 & \normalsize\gd@month\ \gd@annee
294 \ifthenelse{\boolean{GD@isRevised}}{%
295 \\\
296 & \normalsize Revised: \gd@revised
297 }{}
298 \end{tabular}
299 }

```

300
301 % Regular cover page bottom
302 \newcommand{\GDcover@bottom@regular}{%
303 \hrule
304 \smallskip
305
306 \noindent\begin{minipage}[t][l]{7.5cm}
307 \scriptsize
308 La collection \textit{Les Cahiers du GERAD} est constitu\''e des
309 travaux de recherche men\''es par nos membres. La plupart de ces
310 documents de travail a \''et\''e soumis \''a des revues avec
311 comit\''e de r\''evision. Lorsqu'un document est accept\''e et
312 publi\''e, le pdf original est retir\''e si c'est n\''ecessaire et
313 un lien vers l'article publi\''e est ajout\''e.\\
314
315 \medskip
316 \scriptsize
317 \textbf{Citation sugg\''er\''e :} \gd@auteurs@short~(\gd@mois\
318 \gd@annee). \gd@titre, Rapport technique, Les Cahiers du GERAD G--
319 \gd@annee--\gd@numero, GERAD, HEC Montr\''eal, Canada.\\
320
321 \textbf{Avant de citer ce rapport technique,} veuillez visiter notre
322 site Web (\url{https://www.gerad.ca/fr/papers/G-\gd@annee-\gd@numero})
323 afin de mettre \''a jour vos donn\''ees de r\''ef\''erence, s'il a \''et\''e
324 publi\''e dans une revue scientifique.\par
325 \end{minipage}
326 \hfill
327 \begin{minipage}[t][l]{7.5cm}
328 \scriptsize
329 The series \textit{Les Cahiers du GERAD} consists of working papers
330 carried out by our members. Most of these pre-prints have been submitted
331 to peer-reviewed journals. When accepted and published, if necessary,
332 the original pdf is removed and a link to the published article is
333 added.\ \
334
335 \scriptsize
336 \textbf{Suggested citation:} \gd@auteurs@short~(\gd@month\
337 \gd@titre, Technical report, Les Cahiers du GERAD G--\gd@annee--\gd@numero,
338 GERAD, HEC Montr\''eal, Canada.\\
339
340 \textbf{Before citing this technical report,} please visit our website
341 (\url{https://www.gerad.ca/en/papers/G-\gd@annee-\gd@numero}) to update
342 your reference data, if it has been published in a scientific journal.
343 \par
344 \end{minipage}
345
346 \bigskip
347 \hrule
348 \smallskip
349

350 \noindent\begin{minipage}[t][2.1cm][l]{7.5cm}
351 \scriptsize
352 La publication de ces rapports de recherche est rendue possible gr~ace
353 au soutien de HEC Montr\'eal, Polytechnique Montr\'eal, Universit\'e
354 McGill, Universit\'e du Qu\'ebec \`a Montr\'eal, ainsi que du Fonds de
355 recherche du Qu\'ebec -- Nature et technologies.
356
357 \medskip
358 D\'ep~ot l\'egal -- Biblioth\'eque et Archives nationales du Qu\'ebec,
359 \gd@annee\\
360 -- Biblioth\'eque et Archives Canada, \gd@annee
361 \par
362 \end{minipage}
363 \hfill
364 \begin{minipage}[t][2.1cm][l]{7.5cm}
365 \scriptsize
366 The publication of these research reports is made possible
367 thanks to the support of HEC Montr\'eal, Polytechnique Montr\'eal,
368 McGill University, Universit\'e du Qu\'ebec \`a Montr\'eal, as well as
369 the Fonds de recherche du Qu\'ebec -- Nature et technologies.
370
371 \medskip
372 Legal deposit -- Biblioth\'eque et Archives nationales du Qu\'ebec,
373 \gd@annee\\
374 -- Library and Archives Canada, \gd@annee\par
375 \end{minipage}
376
377 \hrule
378 \smallskip
379
380 \noindent
381 \begin{minipage}[t][1cm][l]{7.5cm}
382 \begin{scriptsize}\raggedleft
383 \textbf{GERAD} HEC Montr\'eal
384
385 3000, chemin de la C~ote-Sainte-Catherine
386
387 Montr\'eal (Qu\'ebec) Canada H3T 2A7\par
388 \end{scriptsize}
389 \end{minipage}
390 \hspace*{.35cm}\vrule\hfill
391 \begin{minipage}[t][1cm][l]{7.5cm}
392 \begin{scriptsize}
393 \textbf{T\'el.},: 514 340-6053
394
395 T\'el\'ec.},: 514 340-5665
396
397 info@gerad.ca
398
399 www.gerad.ca\par

```

400 \end{scriptsize}
401 \end{minipage}
402
403 \bigskip
404 \hrule
405 }
406
407 % Post-publication cover page bottom
408 \newcommand{\GDcover@bottom@postpub}{%
409 \hrule
410 \smallskip
411
412 \noindent
413 \begin{minipage}[t][l]{7.5cm}
414 \scriptsize
415 La collection \textit{Les Cahiers du GERAD} est constitu\`e des
416 travaux de recherche men\`es par nos membres. La plupart de ces
417 documents de travail a \`et\`e soumis \`a des revues avec comit\`e
418 de r\`evision. Lorsqu'un document est accept\`e et publi\`, le
419 pdf original est retir\`e si c'est n\`ecessaire et un lien vers
420 l'article publi\`e est ajout\`e.\par
421 \end{minipage}
422 \hfill
423 \begin{minipage}[t][l]{7.5cm}
424 \scriptsize
425 The series \textit{Les Cahiers du GERAD} consists of working papers
426 carried out by our members. Most of these pre-prints have been submitted
427 to peer-reviewed journals. When accepted and published, if necessary,
428 the original pdf is removed and a link to the published article is
429 added.\par
430 \end{minipage}
431
432 \noindent
433 \begin{minipage}[t][l]{\textwidth}
434 \footnotesize
435 \textbf{CITATION ORIGINALE / ORIGINAL CITATION}
436 \smallskip
437
438 \gd@postpubcitation\ \url{\gd@postpubcitation@url}.
439 \end{minipage}
440
441 \bigskip
442
443 \hrule
444 \smallskip
445
446 \noindent
447 \begin{minipage}[t][l]{7.5cm}
448 \scriptsize
449 \medskip

```

450 La publication de ces rapports de recherche est rendue possible gr\^ace
 451 au soutien de HEC Montr\'eal, Polytechnique Montr\'eal, Universit\'e
 452 McGill, Universit\'e du Qu\'ebec \'a Montr\'eal, ainsi que du Fonds de
 453 recherche du Qu\'ebec -- Nature et technologies.
 454
 455 \medskip
 456 D\'ep\^ot l\'egal -- Biblioth\^eque et Archives nationales du Qu\'ebec,
 457 2020\\
 458 -- Biblioth\^eque et Archives Canada, 2020\par
 459 \end{minipage}
 460 \hfill
 461 \begin{minipage}[t][2.1cm][l]{7.5cm}
 462 \scriptsize
 463 \medskip
 464 The publication of these research reports is made possible
 465 thanks to the support of HEC Montr\'eal, Polytechnique Montr\'eal,
 466 McGill University, Universit\'e du Qu\'ebec \'a Montr\'eal, as well as
 467 the Fonds de recherche du Qu\'ebec -- Nature et technologies.
 468
 469 \medskip
 470 Legal deposit -- Biblioth\^eque et Archives nationales du Qu\'ebec,
 471 2020\\
 472 -- Library and Archives Canada, 2020\par
 473 \end{minipage}
 474
 475 \hrule
 476 \smallskip
 477
 478 \noindent
 479 \begin{minipage}[t][1cm][l]{7.5cm}
 480 \begin{scriptsize}\raggedleft
 481 \textbf{GERAD} HEC Montr\'eal
 482
 483 3000, chemin de la C\^ote-Sainte-Catherine
 484
 485 Montr\'eal (Qu\'ebec) Canada H3T 2A7\par
 486 \end{scriptsize}
 487 \end{minipage}
 488 \hspace*{.35cm}\vrule\hfill
 489 \begin{minipage}[t][1cm][l]{7.5cm}
 490 \begin{scriptsize}
 491 \textbf{T\'el.},: 514 340-6053
 492
 493 T\'el\'ec.},: 514 340-5665
 494
 495 info@gerad.ca
 496
 497 www.gerad.ca\par
 498 \end{scriptsize}
 499 \end{minipage}

```

500
501 \bigskip
502 \hrule
503 }

```

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

```

504
505 % Regular title page
506 \newcommand{\GD@titlepage@begin}{%
507 \ifthenelse{\boolean{GD@isWebVersion}}{%
508 \newpage\clearpage
509 }{%
510 \ifthenelse{\boolean{GD@isPaperVersion}}{%
511 \newpage\cleardoublepage
512 }{}
513 }
514 \parindent=0pt
515 \sffamily
516 {\LARGE\bfseries \gd@titre\par} %Title
517 \begin{minipage}[t][10cm][l]{7.5cm}
518 \vspace*{55pt}
519 }
520
521 \newcommand{\GD@titlepage@end}{%
522 \vfill
523 \end{minipage}
524 \vfill
525 {\bfseries \gd@month\ \gd@annee}\\*
526 \ifthenelse{\boolean{GD@isRevised}}{%
527 {\ \gd@revised \}}%
528 {}
529 {\bfseries Les Cahiers du GERAD}\\
530 {\bfseries G--\gd@annee--\gd@numero}\\
531 {\footnotesize Copyright \copyright\ \gd@annee\ GERAD,
532 \gd@auteurs\copyright}
533 \vspace*{0.05cm}
534
535 \hrule
536 \smallskip
537
538 \noindent
539 \begin{minipage}[t][ ][l]{7.5cm}
540 \begin{scriptsize}
541 Les textes publi\'es dans la s\'erie des rapports de recherche
542 \textit{Les Cahiers du GERAD} n'engagent que la responsabilit\'e de
543 leurs auteurs. Les auteurs conservent leur droit d'auteur et leurs

```

544 droits moraux sur leurs publications et les utilisateurs s'engagent \a
545 reconnaitre et respecter les exigences l'egales associ'es
546 \a ces droits. Ainsi, les utilisateurs:

547 \begin{itemize}

548 \item Peuvent télécharger et imprimer une copie de toute
549 publication du portail public aux fins d'étude ou de recherche
550 privée;

551 \item Ne peuvent pas distribuer le matériel ou l'utiliser pour une
552 activité \a but lucratif ou pour un gain commercial;

553 \item Peuvent distribuer gratuitement l'URL identifiant la publication.

554 \end{itemize}

555 Si vous pensez que ce document enfreint le droit d'auteur, contactez-
556 nous en fournissant des détails. Nous supprimerons immédiatement
557 l'accès au travail et enquêterons sur votre demande.\par

558 \end{scriptsize}

559 \end{minipage}

560 \hfill

561 \begin{minipage}[t][l]{7.5cm}

562 \begin{scriptsize}

563 The authors are exclusively responsible for the content of their
564 research papers published in the series \textit{Les Cahiers du GERAD}.
565 Copyright and moral rights for the publications are retained by the
566 authors and the users must commit themselves to recognize and abide the
567 legal requirements associated with these rights. Thus, users:

568 \begin{itemize}

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570 portal for the purpose of private study or research;

571 \item May not further distribute the material or use it for any
572 profit-making activity or commercial gain;

573 \item May freely distribute the URL identifying the publication.

574 \end{itemize}

575 If you believe that this document breaches copyright please contact us
576 providing details, and we will remove access to the work immediately and
577 investigate your claim.\par

578 \end{scriptsize}

579 \end{minipage}

580

581 \thispagestyle{empty}

582 \parindent=15pt

583 \newpage

584 }

585

586 % Plain title page

587 \newcommand{\GD@plain@titlepage@begin}{%

588 \thispagestyle{empty}

589 \sffamily

590 {\sffamily\LARGE\bfseries\noindent\gd@titre\par}

591 }

592

593 \newcommand{\GD@plain@pagetitle@end}{%

```

594 \vspace*{12pt}
595 {\noindent\gd@mois\ \gd@annee}
596 \vspace*{30pt}
597 }

```

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 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 [subsection A.6.1](#)).

```

598
599 % Metadata public commands
600 \newcommand{\GDannee}[1]{%
601 \renewcommand{\gd@annee}{#1}
602 }
603 \newcommand{\GDmois}[2]{%
604 \renewcommand{\gd@mois}{#1}
605 \renewcommand{\gd@month}{#2}
606 }
607 \newcommand{\GDnumero}[1]{%
608 \renewcommand{\gd@numero}{#1}
609 }
610 \newcommand{\GDtitre}[1]{%
611 \renewcommand{\gd@titre}{#1}
612 }
613 \newcommand{\GDauteursCourts}[1]{%
614 \renewcommand{\gd@auteurs@short}{#1}
615 }
616 \newcommand{\GDauteursCopyright}[1]{%
617 \renewcommand{\gd@auteurs@copyright}{#1}
618 }
619 \newcommand{\GDpostpubcitation}[2]{%
620 \renewcommand{\gd@postpubcitation}{#1}
621 \renewcommand{\gd@postpubcitation@url}{#2}
622 }
623 \newcommand{\GDrevised}[1]{%
624 \renewcommand{\gd@revised}{#1}
625 }

```


A.7.2 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.

```
626
627 % Cover page
628 \newcommand{\GDpageCouverture}{%
629 \ifthenelse{\boolean{GD@isPlainVersion}}{\GD@cover}
630 }
631
632 % Title page
633 \newenvironment{GDpagetitre}{
634 \ifthenelse{\boolean{GD@isPlainVersion}}{
635 {\GD@plain@titlepage@begin}%
636 {\GD@titlepage@begin}
637 }{
638 \ifthenelse{\boolean{GD@isPlainVersion}}{
639 {\GD@plain@pagetitle@end}%
640 {\GD@titlepage@end}
641 }
642
643 % Title page lists and list items
644 \newlist{GDauthlist}{itemize}{1}
645 \setlist[GDauthlist]{label={},%
646 left=0pt .. 0pt,%
647 itemsep=\GD@authitemsep,%
648 topsep=\GD@authtopsep}
649 \newlist{GDaffillist}{enumerate}{1}
650 \setlist[GDaffillist]{label=\textsuperscript{\emph{\alph*}},%
651 ref=\textsuperscript{\emph{\alph*}},%
652 wide,%
653 left=0pt .. 1em,%
654 itemsep=\GD@affilitemsep,%
655 topsep=\GD@affiltopsep}
656 \newlist{GDemaillist}{itemize}{1}
657 \setlist[GDemaillist]{label={},%
658 left=0pt .. 0pt,%
659 itemsep=0pt,%
660 parsep=0pt}
661 \newcommand{\GDrefsep}{\textsuperscript{,\,}}
662 \newcommand{\GDauthitem}[1]{%
663 \ifthenelse{\boolean{GD@isPlainVersion}}{
664 \item {\sffamily\large\bfseries #1}
665 }{
666 \item {\Large\bfseries #1}
667 }
```

```

668 }
669 \newcommand{\GDaffilitem}[2]{\item \label{#1}{\itshape #2}}
670 \newcommand{\GDemailitem}[1]{\item {\small\ttfamily #1}}
671
672 % Abstracts section
673 \newcommand{\GDabstracts}{%
674 \ifthenelse{\boolean{GD@isPlainVersion}}{}{%
675 \setcounter{page}{2}
676 \renewcommand{\thepage}{\roman{page}}
677 \pagestyle{fancy}
678 \lhead[
679 \textcolor{gris}{\sffamily{\,}\thepage}\hfill
680 \textcolor{gris}{\sffamily G--\gd@annee--\gd@numero}\hfill %
681 \ifthenelse{\boolean{GD@isRevised}}}%
682 {{ -- \itshape Revised}}}%
683 {}
684 \textcolor{gris}{\sffamily Les Cahiers du GERAD}
685 {\large\strut}\color{gris}{\hrule}
686 ]
687 {
688 \textcolor{gris}{\sffamily{\,} Les Cahiers du GERAD}\hfill
689 \textcolor{gris}{\sffamily G--\gd@annee--\gd@numero}\hfill %
690 \ifthenelse{\boolean{GD@isRevised}}}%
691 {{ -- \itshape Revised}}}%
692 {}
693 \textcolor{gris}{\sffamily\thepage}
694 {\large\strut}\color{gris}{\hrule}
695 }
696 \chead[]{}
697 \rhead[]{}
698 \lfoot[]{}
699 \cfoot[]{}
700 \rfoot[]{}
701 \renewcommand{\headrulewidth}{0pt}
702 \renewcommand{\footrulewidth}{0pt}
703 \rmfamily
704 \vspace*{5pt}
705 }
706 }
707
708 % Custom abstract environment
709 \newenvironment{GDabstract}[1]{%
710 \paragraph{#1 : }
711 }{%
712 \ifthenelse{\boolean{GD@isPlainVersion}}{}{\vspace*{2cm}}
713 }
714
715 % Acknowledgements section
716 \newenvironment{GDacknowledgements}{%
717 \ifthenelse{\boolean{GD@isPlainVersion}}{%

```

```

718 \paragraph{Acknowledgements: }
719 }{%
720 \vfill
721 \hrule
722 \smallskip
723 \paragraph{Acknowledgements: }
724 }
725 {}
726
727 % Article section
728 \newcommand{\GDarticlestart}{%
729 \ifthenelse{\boolean{GD@isPlainVersion}}{\}{%
730 \newpage
731 \setcounter{page}{1}
732 \renewcommand{\thepage}{\arabic{page}}
733 \baselineskip=12.5pt
734 \rmfamily
735 }
736 }
737 \end{class}

```

Change History

1.0

General: Initial release 1