

The pbsheet class*

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1 Introduction

The pbsheet L^AT_EX 2_ε class is designed to simplify the typesetting of problems sheets with Mathematics and Computer Science content. It is intended to simplify teachers work. The author uses it for his French Agrégation teaching activities, cf. <http://www.lsp.ups-tlse.fr/Chafai/agregteam.html>. Also, only the French language is handled in the current version of pbsheet. An example is provided, in French too. Please be patient.

2 Usage

In the future versions of pbsheet, I will put here the description of all the macros and environments provided by pbsheet.cls. However, the example provided is very explicit and will help you a lot.

3 Remark on EPS and PDF graphics

To add a Bounding Box to an EPS file, one can use the epsffit program:

```
epsffit -c llx lly urx ury oldfile.eps newfile.eps
```

The epsffit binary is provided by the Debian package psutils. To convert an EPS file to a PDF file, one can use the epstopdf program:

```
epstopdf file.eps
```

which produces file.pdf. The epstopdf binary is provided by the Debian package tetex-bin.

4 To do for next version

- Translate everything in English, including the Matlab files;
- Add Scilab examples;

*This document corresponds to pbsheet v0.1, dated 2004/02/14, .dtx pbsheet file.

- Check for packages versions (recent listings for Scilab for example);
- Add automatic inclusion of macros via a suitable class option;
- Add multilingual support via Babel;
- Provide more examples;
- Enhance the help file generated via `pbsheet.dtx`. Add documentation for macros and environments;
- Provide scripts for EPS to PDF conversion;
- Modify the `\bibliography` macro to automatically extract the BibTeX `.bib` filename by using the `.tex` filename of the TeX file. This will ensure interoperability with AUCTeX/RefTeX/BibCite.

5 Implementation

```

1 %%
2 \LoadClassWithOptions{article} \ProcessOptions\relax
3 %%
4 \ifx\pdfoutput\undefined
5 \usepackage[latin1]{inputenc}
6 \usepackage[T1]{fontenc}
7 \usepackage{url}
8 \usepackage[dvips]{graphicx}
9 \newcommand{\phantomsection}{\null} %% provided by hyperref.
10 \else
11 \pdfoutput=1\pdfcompresslevel=9\pdfadjustspacing=1
12 \usepackage[pdftex,bookmarks,a4paper,colorlinks]{hyperref}
13 \usepackage{aeguill}
14 \usepackage[pdftex]{graphicx}
15 \hypersetup{bookmarksnumbered,plainpages=false,hypertextnames=false}
16 \hypersetup{pagecolor=blue,linkcolor=blue,citecolor=blue,urlcolor=blue}
17 \hypersetup{pdfcreator=PDFLaTeX with pbsheet class}
18 \fi
19 \RequirePackage{amsmath,amsfonts,amssymb,amsthm,latexsym}
20 \RequirePackage[a4paper,portrait]{geometry}
21 \RequirePackage{rotating}
22 \RequirePackage{moreverb}
23 \RequirePackage[latin1]{inputenc}
24 \RequirePackage{xspace}
25 \RequirePackage[français]{babel}
26 \RequirePackage{color}
27 \RequirePackage{listings}
28 \ifx\pdfoutput\undefined
29 \else %% listings/hyperref compatibility.
30 \makeatletter
31 \providecommand*\toclevel@lstlisting{0}
32 \makeatother
33 \fi
34 %%%
35 %%% Macros et Environments

```

```

36 %%%
37 %%
38 \newcommand{\MFILE}[1]{
39   \begin{lstinputlisting}[language=Matlab]{#1.m}%
40   \label{code:#1}%
41   \end{lstinputlisting}
42 }
43 %%
44 \newcommand{\SCEFILE}[1]{
45   \begin{lstinputlisting}[language=Scilab]{#1.sce}%
46   \label{code:#1}%
47   \end{lstinputlisting}
48 }
49 %%
50 \newcommand{\SCIFILE}[1]{
51   \begin{lstinputlisting}[language=Scilab]{#1.sci}%
52   \label{code:#1}%
53   \end{lstinputlisting}
54 }
55 %%
56 \newcommand{\FFIG}[5]{%% fname cm scale floatparams caption
57 %% here, floatparams is in the set {vflt,rflt,lflt}, cf. floatflt doc.
58   \begin{floatingfigure}[#4]{#2}%
59     \begin{center}%
60       \includegraphics[scale=#3]{#1}%
61       \caption{#5}%
62       \label{fi:#1}%
63     \end{center}%
64   \end{floatingfigure}%
65 }
66 %%
67 \newcommand{\FIG}[4]{%% fname scale floatparams caption
68   \begin{figure}[#3]%
69     \begin{center}%
70       \includegraphics[scale=#2]{#1}%
71       \caption{#4}%
72       \label{fi:#1}%
73     \end{center}%
74   \end{figure}
75 }
76 %%
77 \makeatletter%
78 \newcommand{\@TITRE}{Feuille de Travaux Pratiques}
79 \newcommand{\@AUTEUR}{Anonyme}
80 \newcommand{\@DATE}{\today}
81 \newcommand{\@FORMATION}{Agr\'egation de math\'ematiques%
82 -- Oral de mod\'elisation stochastique}
83 \newcommand{\@ANNEE}{Ann\'ee}
84 \newcommand{\@ETABLISSEMENT}{'Etablissement}
85 \newcommand{\@WEB}{http://www.lsp.ups-tlse.fr/Chafai/agregteam.html}
86 \newcommand{\@MEL}{anonyme@pas.net}
87 \newcommand{\TITRE}[1]{%
88   \renewcommand{\@TITRE}{#1}}
89 \newcommand{\AUTEUR}[1]{%

```

```

90 \renewcommand{\@AUTEUR}{#1}}
91 \newcommand{\DATE}[1]{%
92 \renewcommand{\@DATE}{#1}}
93 \newcommand{\FORMATION}[1]{%
94 \renewcommand{\@FORMATION}{#1}}
95 \newcommand{\ANNEE}[1]{%
96 \renewcommand{\@ANNEE}{#1}}
97 \newcommand{\ETABLISSEMENT}[1]{%
98 \renewcommand{\@ETABLISSEMENT}{#1}}
99 \newcommand{\WEB}[1]{%
100 \renewcommand{\@WEB}{#1}}
101 \newcommand{\MEL}[1]{%
102 \renewcommand{\@MEL}{#1}}
103 \makeatother
104 %%
105 \makeatletter
106 \newcommand{\PREMIEREPAGE}{%
107 \newpage\null%
108 \begin{center}%
109 \hrule height .2pt%
110 \medskip\Large\bfseries\@TITRE\par\medskip%
111 \hrule height .2pt%
112 \end{center}%
113 \bigskip\vfil%
114 }
115 \makeatother
116 %%
117 \theoremstyle{plain}%
118 \newtheorem{thm}{Theor\`eme}[section]%
119 \newtheorem{cor}[thm]{Corollaire}%
120 \newtheorem{prop}[thm]{Proposition}%
121 \newtheorem{lem}[thm]{Lemme}%
122 \theoremstyle{definition}%
123 \newtheorem{defi}[thm]{D\'efinition}%
124 \newtheorem{xpl}[thm]{Exemple}%
125 \newtheorem{exo}[thm]{Exercice}%
126 \newtheorem{hyp}[thm]{Hypoth\`ese}%
127 \newtheorem{eur}[thm]{Heuristique}%
128 \newtheorem{pro}[thm]{Probl\`eme}%
129 \theoremstyle{remark}%
130 \newtheorem{rem}[thm]{Remarque}%
131 %%%
132 %%% Commands to be executed before \begin{document}
133 %%%
134 %%
135 \geometry{left=2.5cm,right=2.5cm}
136 %%
137 \lstset{extendedchars=true,%
138         basicstyle=\small,%
139         commentstyle=\ttfamily\color[rgb]{0,0,0.5},%
140         stringstyle=\color[rgb]{0,0.5,0},%
141         frame=tblr,framround=ttt,%
142         %%labelstyle=\tiny,labelstep=1,labelsep=10pt
143 }

```

```

144 %%
145 \makeatletter
146 \renewcommand{\@evenfoot}
147 {\tiny\normalfont
148 \DATE. Copyright \@AUTEUR\ \@MEL. GNU FDL Copyleft.
149 %% \url{http://www.gnu.org/copyleft/fdl.html}.
150 \hfil \upshape Page n{\thepage}.}
151 \renewcommand{\@evenhead}
152 {\tiny\scshape \@ETABLISSEMENT\ -- \@FORMATION\ --
153 \normalfont\bfseries\@ANNEE.
154 \normalfont\hfil \upshape Page n{\thepage}.}
155 \renewcommand{\@oddfoot}{\@evenfoot}
156 \renewcommand{\@oddhead}{\@evenhead}
157 \makeatother
158 %% smaller sections titles
159 \makeatletter
160 \renewcommand{\section}{\@startsection%
161 {section}% % name
162 {1}% % level
163 {0em}% % indent
164 {\baselineskip}% % before skip
165 {0.5\baselineskip}% % after skip
166 {\normalfont\large\bfseries}}% % style
167 \renewcommand{\subsection}{\@startsection%
168 {subsection}% % name
169 {2}% % level
170 {0em}% % indent
171 {\baselineskip}% % before skip
172 {0.25\baselineskip}% % after skip
173 {\normalfont\bfseries}}% % style
174 }
175 \makeatother
176 %%
177 %% Macros
178 %%
179 \newcommand{\DOI[PDF]}[2]{\ifx\pdfoutput\undefined #2\else#1\fi}
180 %% For nice typesetting of the actual engine name.
181 \newcommand{\EngineName}{\DOI[PDF]{\texttt{pdf}}{\LaTeX}{\LaTeXe}}
182 %% For short rough notes and warnings.
183 \newcommand{\NB}[1]{\{\large\textbf{*** #1 ***}\}}
184 %% To force maths mode.
185 \newcommand{\EM}{\ensuremath}
186 %% Limits
187 \newcommand{\limLeb}[2]
188 {\underset{#1\to+\infty}{\overset{\bL^{#2}}{\longrightarrow}}}
189 \newcommand{\limE}[1]
190 {\underset{#1\to+\infty}{\overset{\text{tr.}}{\longrightarrow}}}
191 \newcommand{\limW}[1]
192 {\underset{#1\to+\infty}{\overset{\text{weak}}{\longrightarrow}}}
193 \newcommand{\limP}[1]
194 {\underset{#1\to+\infty}{\overset{dP}{\longrightarrow}}}
195 \newcommand{\limL}[1]
196 {\underset{#1\to+\infty}{\overset{cL}{\longrightarrow}}}
197 \newcommand{\limn}[1]

```

```

198 {\underset{#1\to+\infty}{\longrightarrow}}
199 \newcommand{\mylim}[2]
200 {\underset{#1\to#2}{\longrightarrow}}
201 \newcommand{\limPS}[1]
202 {\underset{#1\to+\infty}{\overset{\text{p.s.}}{\longrightarrow}}}
203 \newcommand{\limAS}[1]
204 {\underset{#1\to+\infty}{\overset{\text{a.s.}}{\longrightarrow}}}
205 %% Time
206 \makeatletter
207 \providecommand{\timenow}{\@tempcnta\time%
208 \@tempcntb\@tempcnta%
209 \divide\@tempcntb60%
210 \ifnum10>\@tempcntb0\fi\number\@tempcntb%
211 \multiply\@tempcntb60%
212 \advance\@tempcnta-\@tempcntb%
213 :\ifnum10>\@tempcnta0\fi\number\@tempcnta}
214 \makeatother
215 %% Mathmode double capital letters.
216 \newcommand{\dA}{\EM{\mathbb{A}}}
217 \newcommand{\dB}{\EM{\mathbb{B}}}
218 \newcommand{\dC}{\EM{\mathbb{C}}}
219 \newcommand{\dD}{\EM{\mathbb{D}}}
220 \newcommand{\dE}{\EM{\mathbb{E}}}
221 \newcommand{\dF}{\EM{\mathbb{F}}}
222 \newcommand{\dG}{\EM{\mathbb{G}}}
223 \newcommand{\dH}{\EM{\mathbb{H}}}
224 \newcommand{\dI}{\EM{\mathbb{I}}}
225 \newcommand{\dJ}{\EM{\mathbb{J}}}
226 \newcommand{\dK}{\EM{\mathbb{K}}}
227 \newcommand{\dL}{\EM{\mathbb{L}}}
228 \newcommand{\dM}{\EM{\mathbb{M}}}
229 \newcommand{\dN}{\EM{\mathbb{N}}}
230 \newcommand{\dO}{\EM{\mathbb{O}}}
231 \newcommand{\dP}{\EM{\mathbb{P}}}
232 \newcommand{\dQ}{\EM{\mathbb{Q}}}
233 \newcommand{\dR}{\EM{\mathbb{R}}}
234 \newcommand{\dS}{\EM{\mathbb{S}}}
235 \newcommand{\dT}{\EM{\mathbb{T}}}
236 \newcommand{\dU}{\EM{\mathbb{U}}}
237 \newcommand{\dV}{\EM{\mathbb{V}}}
238 \newcommand{\dW}{\EM{\mathbb{W}}}
239 \newcommand{\dX}{\EM{\mathbb{X}}}
240 \newcommand{\dY}{\EM{\mathbb{Y}}}
241 \newcommand{\dZ}{\EM{\mathbb{Z}}}
242 %% Mathmode Roman capital letters.
243 \newcommand{\rA}{\EM{\mathrm{A}}}
244 \newcommand{\rB}{\EM{\mathrm{B}}}
245 \newcommand{\rC}{\EM{\mathrm{C}}}
246 \newcommand{\rD}{\EM{\mathrm{D}}}
247 \newcommand{\rE}{\EM{\mathrm{E}}}
248 \newcommand{\rF}{\EM{\mathrm{F}}}
249 \newcommand{\rG}{\EM{\mathrm{G}}}
250 \newcommand{\rH}{\EM{\mathrm{H}}}
251 \newcommand{\rI}{\EM{\mathrm{I}}}

```

```

252 \newcommand{\rJ}{\EM{\mathrm{J}}}
253 \newcommand{\rK}{\EM{\mathrm{K}}}
254 \newcommand{\rL}{\EM{\mathrm{L}}}
255 \newcommand{\rM}{\EM{\mathrm{M}}}
256 \newcommand{\rN}{\EM{\mathrm{N}}}
257 \newcommand{\rO}{\EM{\mathrm{O}}}
258 \newcommand{\rP}{\EM{\mathrm{P}}}
259 \newcommand{\rQ}{\EM{\mathrm{Q}}}
260 \newcommand{\rR}{\EM{\mathrm{R}}}
261 \newcommand{\rS}{\EM{\mathrm{S}}}
262 \newcommand{\rT}{\EM{\mathrm{T}}}
263 \newcommand{\rU}{\EM{\mathrm{U}}}
264 \newcommand{\rV}{\EM{\mathrm{V}}}
265 \newcommand{\rW}{\EM{\mathrm{W}}}
266 \newcommand{\rX}{\EM{\mathrm{X}}}
267 \newcommand{\rY}{\EM{\mathrm{Y}}}
268 \newcommand{\rZ}{\EM{\mathrm{Z}}}
269 %% Mathmode calligraphic capital letters.
270 \newcommand{\cA}{\EM{\mathcal{A}}}
271 \newcommand{\cB}{\EM{\mathcal{B}}}
272 \newcommand{\cC}{\EM{\mathcal{C}}}
273 \newcommand{\cD}{\EM{\mathcal{D}}}
274 \newcommand{\cE}{\EM{\mathcal{E}}}
275 \newcommand{\cF}{\EM{\mathcal{F}}}
276 \newcommand{\cG}{\EM{\mathcal{G}}}
277 \newcommand{\cH}{\EM{\mathcal{H}}}
278 \newcommand{\cI}{\EM{\mathcal{I}}}
279 \newcommand{\cJ}{\EM{\mathcal{J}}}
280 \newcommand{\cK}{\EM{\mathcal{K}}}
281 \newcommand{\cL}{\EM{\mathcal{L}}}
282 \newcommand{\cM}{\EM{\mathcal{M}}}
283 \newcommand{\cN}{\EM{\mathcal{N}}}
284 \newcommand{\cO}{\EM{\mathcal{O}}}
285 \newcommand{\cP}{\EM{\mathcal{P}}}
286 \newcommand{\cQ}{\EM{\mathcal{Q}}}
287 \newcommand{\cR}{\EM{\mathcal{R}}}
288 \newcommand{\cS}{\EM{\mathcal{S}}}
289 \newcommand{\cT}{\EM{\mathcal{T}}}
290 \newcommand{\cU}{\EM{\mathcal{U}}}
291 \newcommand{\cV}{\EM{\mathcal{V}}}
292 \newcommand{\cW}{\EM{\mathcal{W}}}
293 \newcommand{\cX}{\EM{\mathcal{X}}}
294 \newcommand{\cY}{\EM{\mathcal{Y}}}
295 \newcommand{\cZ}{\EM{\mathcal{Z}}}
296 %% Mathmode bold capital letters.
297 \newcommand{\bA}{\EM{\mathbf{A}}}
298 \newcommand{\bB}{\EM{\mathbf{B}}}
299 \newcommand{\bC}{\EM{\mathbf{C}}}
300 \newcommand{\bD}{\EM{\mathbf{D}}}
301 \newcommand{\bE}{\EM{\mathbf{E}}}
302 \newcommand{\bF}{\EM{\mathbf{F}}}
303 \newcommand{\bG}{\EM{\mathbf{G}}}
304 \newcommand{\bH}{\EM{\mathbf{H}}}
305 \newcommand{\bI}{\EM{\mathbf{I}}}

```

```

306 \newcommand{\bJ}{\EM{\mathbf{J}}}
307 \newcommand{\bK}{\EM{\mathbf{K}}}
308 \newcommand{\bL}{\EM{\mathbf{L}}}
309 \newcommand{\bM}{\EM{\mathbf{M}}}
310 \newcommand{\bN}{\EM{\mathbf{N}}}
311 \newcommand{\bO}{\EM{\mathbf{O}}}
312 \newcommand{\bP}{\EM{\mathbf{P}}}
313 \newcommand{\bQ}{\EM{\mathbf{Q}}}
314 \newcommand{\bR}{\EM{\mathbf{R}}}
315 \newcommand{\bS}{\EM{\mathbf{S}}}
316 \newcommand{\bT}{\EM{\mathbf{T}}}
317 \newcommand{\bU}{\EM{\mathbf{U}}}
318 \newcommand{\bV}{\EM{\mathbf{V}}}
319 \newcommand{\bW}{\EM{\mathbf{W}}}
320 \newcommand{\bX}{\EM{\mathbf{X}}}
321 \newcommand{\bY}{\EM{\mathbf{Y}}}
322 \newcommand{\bZ}{\EM{\mathbf{Z}}}
323 %% Useful shortcuts to some Greek letters and symbols.
324 \newcommand{\al}{\alpha}
325 \newcommand{\be}{\beta}
326 \newcommand{\De}{\Delta}
327 \newcommand{\de}{\delta}
328 \newcommand{\ga}{\gamma}
329 \newcommand{\Ga}{\Gamma}
330 \newcommand{\g}{\gamma}
331 \newcommand{\gn}{\g_n}
332 \newcommand{\gt}[1]{\g^{\otimes #1}}
333 \newcommand{\la}{\lambda}
334 \newcommand{\La}{\Lambda}
335 \newcommand{\lan}{\la_n}
336 \newcommand{\na}{\nabla}
337 \newcommand{\Om}{\Omega}
338 \newcommand{\om}{\omega}
339 \newcommand{\ph}{\Phi}
340 \newcommand{\Si}{\Sigma}
341 \newcommand{\si}{\sigma}
342 \newcommand{\Te}{\Theta}
343 \newcommand{\te}{\theta}
344 \newcommand{\ta}{\tau}
345 \newcommand{\Ups}{\Upsilon}
346 \newcommand{\veps}{\varepsilon}
347 \newcommand{\vphi}{\varphi}
348 \newcommand{\bul}{\EM{\bullet}}
349 %% Functional prototype with dimensioning.
350 \newcommand{\p}[4]{{#3}!\left#1{#4}\right#2}
351 %% Norms and related.
352 \newcommand{\ABS}[1]{\EM{\left| #1 \right|}} % |1|
353 \newcommand{\BRA}[1]{\EM{\left\langle #1 \right\rangle}} % {1}
354 \newcommand{\DP}[1]{\EM{\left<#1\right>}} % <1>
355 \newcommand{\NRM}[1]{\EM{\left\| #1 \right\|}} % ||1||
356 \newcommand{\NI}[1]{\EM{\left\| #1 \right\|_{\infty}}} % infinite norm.
357 \newcommand{\OSC}[1]{\EM{\p(\mathrm{osc}){#1}}} % oscillation.
358 \newcommand{\PAR}[1]{\EM{\left( #1 \right)}} % (1)
359 \newcommand{\BPAR}[1]{\EM{\bigl( #1 \bigr)}} % (1)

```

```

360 \newcommand{\BABS}[1]{\EM{\bigl|#1\biggr|}} % (1)
361 \newcommand{\pd}{\EM{\partial}} % derivee partielle
362 \newcommand{\PD}[2]{\EM{\frac{\partial #1}{\partial #2}}}%part. deriv.
363 \newcommand{\SBRA}[1]{\EM{\left[#1right]}} % [1]
364 \newcommand{\VT}[1]{\EM{\|#1|}_{\text{\scriptsize VT}}} % tot. var.
365 \newcommand{\LIP}[1]{\EM{\|#1|_{\mathrm{Lip}}}} % Lipschitz norm.
366 \newcommand{\WH}[1]{\widehat{#1}}
367 %% Functionals and functions.
368 \newcommand{\sentf}{\bH}
369 \newcommand{\sent}[1]{\p(){\sentf}{#1}}
370 \newcommand{\bentf}[1]{\bH_{#1}}
371 \newcommand{\bent}[2]{\p(){\bentf{#1}}{#2}}
372 \newcommand{\eentf}{\bN}
373 \newcommand{\eent}[1]{\p(){\eentf}{#1}}
374 \newcommand{\entf}[1]{\mathbf{Ent}_{#1}}
375 \newcommand{\ent}[2]{\p(){\entf{#1}}{#2}}
376 \newcommand{\ientf}[1]{\bH^{#1}}
377 \newcommand{\ient}[2]{\p(){\ientf{#1}}{#2}}
378 \newcommand{\rentf}{\mathbf{Ent}}
379 \newcommand{\rent}[2]{\p(){\rentf}{#1},\vert\,#2}}
380 \newcommand{\entr}{\mathbf{Ent}_r}
381 \newcommand{\enef}[1]{\boldsymbol{\mathcal{E}}_{#1}}
382 \newcommand{\ene}[2]{\p(){\enef{#1}}{#2}}
383 \newcommand{\imutf}{\bI}
384 \newcommand{\imut}[1]{\p(){\imutf}{#1}}
385 \newcommand{\fcrf}{\dI}
386 \newcommand{\fcr}[1]{\p(){\fcrf}{#1}}
387 \newcommand{\fishf}{\bJ}
388 \newcommand{\fish}[1]{\p(){\fishf}{#1}}
389 \newcommand{\fishmf}{\dJ}
390 \newcommand{\fishm}[1]{\p(){\fishmf}{#1}}
391 \newcommand{\moyf}[1]{\bE_{#1}}
392 \newcommand{\moy}[2]{\p(){\moyf{#1}}{#2}}
393 \newcommand{\econd}[2]{\p(){\moyf}{#1},\vert\,#2}}
394 \newcommand{\bmoy}[2]{\moyf{#1}\!\bigl(#2\biggr)}
395 \newcommand{\corr}[1]{\mathbf{Cor}_{#1}}
396 \newcommand{\corr}[3]{\p(){\corr{#1}}{#2,#3}}
397 \newcommand{\covf}[1]{\mathbf{Cov}_{#1}}
398 \newcommand{\cov}[3]{\p(){\covf{#1}}{#2,#3}}
399 \newcommand{\bcov}[3]{\covf{#1}\!\bigl(#2,#3\biggr)}
400 \newcommand{\suppf}{\mathrm{supp}}
401 \newcommand{\supp}[1]{\suppf\PAR{#1}}
402 \newcommand{\DIMF}{\mathrm{dim}}
403 \newcommand{\DIM}[1]{\DIMF\PAR{#1}}
404 \newcommand{\RANGEF}{\mathrm{range}}
405 \newcommand{\RANGE}[1]{\RANGEF\PAR{#1}}
406 \newcommand{\varf}[1]{\mathbf{Var}_{#1}}
407 \newcommand{\var}[2]{\p(){\varf{#1}}{#2}}
408 \newcommand{\bvar}[2]{\varf{#1}\!\bigl(#2\biggr)}
409 \newcommand{\Kf}{\bK}
410 \newcommand{\K}[1]{\p(){\Kf}{#1}}
411 \newcommand{\vrs}[1]{\mathbf{L}_{#1}}
412 \newcommand{\lik}[1]{\vrs{#1}}
413 %% Sets, spaces, and functional spaces.

```

```

414 \newcommand{\C}[1]{\p(){\cC}{#1}}
415 \newcommand{\Cb}[1]{\p(){\cC_b}{#1}}
416 \newcommand{\Cc}[1]{\p(){\cC_c}{#1}}
417 \newcommand{\Cn}[2]{\p(){\cC^{#1}}{#2}}
418 \newcommand{\Ci}[1]{\Cn{\infty}{#1}}
419 \newcommand{\Cic}[1]{\p(){\cC_c^{\infty}}{#1}}
420 \newcommand{\Cnc}[2]{\p(){\cC_c^{#1}}{#2}}
421 \newcommand{\Cnb}[2]{\p(){\cC_b^{#1}}{#2}}
422 \newcommand{\Cib}[1]{\p(){\cC_b^{\infty}}{#1}}
423 \newcommand{\leb}[2]{\p(){\bL^{#1}}{#2}}
424 \newcommand{\lebb}[1]{\bL^{#1}}
425 %% Determinant, trace, ...
426 \newcommand{\Tr}{\mathrm{Tr}\,}
427 \newcommand{\Det}[1]{\mathrm{Det}\,}
428 \newcommand{\TR}[1]{\p(){\mathrm{Tr}}{#1}}
429 \newcommand{\DIAG}[1]{\p(){\mathrm{Diag}}{#1}}
430 \newcommand{\DET}[1]{\p(){\mathrm{Det}}{#1}}
431 \newcommand{\SIG}[1]{\p(){\mathrm{Sign}}{#1}}
432 \newcommand{\KER}[1]{\p(){\mathrm{Ker}}{#1}}
433 \newcommand{\RG}[1]{\p(){\mathrm{Range}}{#1}}
434 \newcommand{\DIAM}[1]{\p(){\mathrm{Diam}}{#1}}
435 \newcommand{\ID}{\mathbf{Id}}
436 \newcommand{\Id}{\mathrm{Id}}
437 \newcommand{\Mo}{\mathbf{1}}
438 \newcommand{\Vo}{\mathrm{1}}
439 %% Semi-groups, generators, carre-du-champ, ...
440 \newcommand{\CD}{\mathrm{CD}(\rho, \infty)}
441 \newcommand{\GA}{\boldsymbol{\Gamma}}
442 \newcommand{\GD}{\GA_{\!\!|\!|\mathbf{2}}}
443 \newcommand{\GI}{\bL}
444 \newcommand{\GR}{\nabla}
445 \newcommand{\GIV}{\EM{\overrightarrow{\GI}}}
446 \newcommand{\GIB}{\EM{\overline{\GI}}}
447 \newcommand{\LA}{\boldsymbol{\Delta}}
448 \newcommand{\ROT}{\mathbf{rot}\,}
449 \newcommand{\DIV}{\mathbf{div}\,}
450 \newcommand{\PT}[1][t]{\mathbf{P}_{\!\!|}{#1}}
451 \newcommand{\SGf}[1]{\mathbf{P}_{\!\!|}{#1}}
452 \newcommand{\SG}[2]{\p(){\SGf{\!\!|}{#1}}{#2}}
453 \newcommand{\SGQf}[1]{\mathbf{Q}_{\!\!|}{#1}}
454 \newcommand{\SGQ}[2]{\p(){\SGQf{#1}}{#2}}
455 \newcommand{\isopf}{\mathbf{I}}
456 \newcommand{\isop}[1]{\p(){\isopf}{#1}}
457 \newcommand{\disop}[1]{\p(){\isopf'}{#1}}
458 \newcommand{\ddisop}[1]{\p(){\isopf''}{#1}}
459 \newcommand{\HESS}[1]{\GR^2\!\!|}{#1}}
460 \newcommand{\Hess}[1]{\p(){\mathrm{Hess}}{#1}}
461 \newcommand{\HAM}{\bH}
462 \newcommand{\POT}{\bV}
463 \newcommand{\PF}{\bZ}
464 \newcommand{\DOM}{\EM{\cD_2(\GI)}}
465 \newcommand{\laV}{\EM{\overrightarrow{\la}}}
466 \newcommand{\DOML}{\EM{\cD_2\PAR{\GI}}}
467 \newcommand{\DOMB}{\EM{\cD_2(\GIB)}}

```

```

468 \newcommand{\DOMV}{\EM{\cD_2(\GIV)}}
469 \newcommand{\GAV}{\EM{\overrightarrow{\GA}}}
470 \newcommand{\D}{\mathbf{D}}
471 %% Topology.
472 \newcommand{\inter}[1]{\overset{\circ}{#1}} % interior
473 \newcommand{\adher}[1]{\overline{#1}} % adherence
474 \newcommand{\ADH}[1]{\mathbf{adh}(#1)}
475 \newcommand{\INT}[1]{\mathbf{int}(#1)}
476 %% Miscellany.
477 \newcommand{\DOTIMES}{\otimes\cdots\otimes}
478 \newcommand{\DOPLUS}{\oplus\cdots\oplus}
479 \newcommand{\CARD}{\mathrm{card}}
480 \newcommand{\SSK}[1]{\substack{#1}}
481 \renewcommand{\leq}{\leqslant}
482 \renewcommand{\geq}{\geqslant}
483 \newcommand{\bs}{\EM{\backslash}}
484 \newcommand{\Inf}{\boldsymbol{\inf}}
485 \newcommand{\Sup}{\boldsymbol{\sup}}
486 \newcommand{\ds}[1]{\EM{\displaystyle{#1}}}
487 \newcommand{\eg}{\overset{\Delta}{=}}
488 \newcommand{\fdefeq}{\overset{\text{df.}}{=}}
489 \newcommand{\edefeq}{\overset{\text{def.}}{=}}
490 \newcommand{\defeq}{:=}
491 \newcommand{\equ}{\; \Lefttrightarrow \;}
492 \newcommand{\ex}{\exists \;}
493 \newcommand{\imp}{\Rightarrow \;}
494 \newcommand{\ssi}{\{it ssi}}
495 \newcommand{\tout}{\forall \;}
496 \newcommand{\tq}{\,|\, \;}
497 \newcommand{\st}{\,|\, \;}
498 %\newcommand{\1}{\hbox{1}\!\!\hbox{1}} %Bugs with xy package...
499 \newcommand{\DSFRAC}[2]{\EM{\frac{\ds{#1}}{\ds{#2}}}}
500 \newcommand{\SR}[2]{\EM{\strackrel{#1}{#2}}}
501 %Some Babel extension.
502 \def\Ieme{\up{\lowercase{ime}}\xspace}
503 %% Vectors and matrices.
504 \newcommand{\VECTOR}[1]{\PAR{\begin{array}{c} #1 \end{array}}}
505 \newcommand{\BIMATRIX}[1]{\PAR{\begin{array}{cc} #1 \end{array}}}
506 \newcommand{\Vector}[2]{\PAR{\begin{array}{#1} #2 \end{array}}}
507 \newcommand{\Bimatrix}[2]{\PAR{\begin{array}{#1} #2 \end{array}}}
508 %%%
509 %%% Commands to be executed just after \begin{document}
510 %%%
511 \AtBeginDocument{%
512 \selectlanguage{français}%
513 \graphicspath{{images/}{img/}{Images}{Img}{ps}{eps}{PS}{EPS}%
514 {postscript}{postscripts}{pdf}{PDF}}%
515 \PREMIEREPAGE%
516 }
517 %%%
518 %%% Commands to be executed just before \end{document}
519 %%%
520 \AtEndDocument{\vfill}
521 %

```