

The `eso-pic` package*

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1 Introduction

This package makes it easy to add some picture commands to every page at absolute positions.

2 Usage

See also the example \LaTeX documents (`eso-*.tex`).

2.1 Basic commands for adding \LaTeX stuff to the page background

| | |
|------------------------------------|---|
| <code>\AddToShipoutPicture</code> | All the picture commands which are parameters of an <code>\AddToShipoutPicture</code> command will be added to the internal macro <code>\ESO@HookI</code> . This macro is part of a zero-length <code>picture</code> environment with basepoint at the lower left corner of the page (default) or at the upper left corner (package option "texcoord"). The <code>picture</code> environment will be shipped out at every new page. |
| <code>\ClearShipoutPicture</code> | A call of <code>\ClearShipoutPicture</code> clears the contents of <code>\ESO@HookI</code> . |
| <code>\AddToShipoutPicture*</code> | <code>\AddToShipoutPicture*</code> works like <code>\AddToShipoutPicture</code> but only for the current page. It used the internal macro <code>\ESO@HookII</code> which contents will be removed automatically. |
| <code>\LenToUnit</code> | Allows a length as parameter to a picture command. |
| <code>\gridSetup</code> | <code>\gridSetup[\langle gridunitname \rangle]{\langle gridunit \rangle}{\langle labelfactor \rangle}{\langle griddelta \rangle}{\langle gridDelta \rangle}{\langle gap \rangle}</code> . For details see the implementation section. |
| <code>\AtPageUpperLeft</code> | Helper macros for easier positioning on the page. |
| <code>\AtPageLowerLeft</code> | |
| <code>\AtPageCenter</code> | |
| <code>\AtTextUpperLeft</code> | |
| <code>\AtTextLowerLeft</code> | |
| <code>\AtTextCenter</code> | |
| <code>\AtStockUpperLeft</code> | |
| <code>\AtStockLowerLeft</code> | |
| <code>\AtStockCenter</code> | |

*This document corresponds to `eso-pic v2.0a`, dated 2009/10/07.

2.2 Package options

| Option | Value | Comments |
|---------------------------|-------------------------------|---|
| <code>pscoord</code> | empty or <i>true, false</i> | The zero point of the coordinate system is the lower left corner of the page (the default). |
| <code>texcoord</code> | empty or <i>true, false</i> | The zero point of the coordinate system is the upper left corner of the page. |
| <code>grid</code> | empty or <i>true, false</i> | A grid is drawing; default: false. |
| <code>gridunit</code> | <i>mm, in, bp, pt</i> | Distance between gridlines are multiples of <code>gridunit</code> . default: mm. |
| <code>gridcolor</code> | a valid color name | Color of the main gridlines; default: black |
| <code>subgridcolor</code> | a valid color name | Color of the subgridlines; default: black. |
| <code>subgridstyle</code> | <i>solid</i> or <i>dotted</i> | ‘dotted’ is very slow! default: solid. |
| <code>colorgrid</code> | empty or <i>true, false</i> | Shortcut for ‘grid=true’, ‘gridcolor=red’ and ‘subgridcolor=green’; default: false. |
| <code>dvips</code> | empty or <i>true, false</i> | Is also true if the package option <code>dvips</code> is used by <code>color</code> or <code>graphics</code> . If true package <code>eepic</code> is loaded for better performance of dotted lines. |

3 Implementation

3.1 The main functionality

```

1 \RequirePackage{atbegshi}

\LenToUnit
2 \providecommand*\LenToUnit[1]{#1@gobble}

\ESO@isMEMOIR Support for the memoir class.
3 \newcommand\ESO@isMEMOIR[2]{#2}
4 \@ifclassloaded{memoir}{\renewcommand\ESO@isMEMOIR[2]{#1}}{}

\AtPageUpperLeft
5 \newcommand\AtPageUpperLeft[1]{%
6   \put(0,\LenToUnit{-\ESO@yoffsetI}){#1}%
7 }

\AtPageLowerLeft
8 \newcommand\AtPageLowerLeft[1]{\AtPageUpperLeft{%
9   \put(0,\LenToUnit{-\paperheight}){#1}}}

\AtPageCenter
10 \newcommand\AtPageCenter[1]{\AtPageUpperLeft{%
11   \put(\LenToUnit{.5\paperwidth},\LenToUnit{-.5\paperheight}){#1}}%
12 }

\AtStockLowerLeft
13 \newcommand\AtStockLowerLeft{}

```

```

14 \ESO@isMEMOIR{%
15   \renewcommand\AtStockLowerLeft[1]{%
16     \begingroup
17       \@tempdima=-\stockwidth
18       \advance\@tempdima\trimedge
19       \advance\@tempdima\paperwidth
20       \if@twoside\ifodd\c@page\else
21         \@tempdima=-\trimedge
22       \fi\fi
23       \@tempdimb=-\stockheight
24       \advance\@tempdimb\paperheight
25       \advance\@tempdimb\trimtop
26       \AtPageLowerLeft{%
27         \put(\LenToUnit{\@tempdima},\LenToUnit{\@tempdimb}){#1}%
28       }%
29     \endgroup
30   }
31 }{%
32   \let\AtStockLowerLeft=\AtPageLowerLeft
33 }

```

\AtStockUpperLeft

```

34 \newcommand\AtStockUpperLeft{}
35 \ESO@isMEMOIR{%
36   \renewcommand\AtStockUpperLeft[1]{%
37     \AtStockLowerLeft{%
38       \put(0,\LenToUnit{\stockheight}){#1}%
39     }%
40   }%
41 }{%
42   \let\AtStockUpperLeft=\AtPageUpperLeft
43 }

```

\AtStockCenter

```

44 \newcommand\AtStockCenter{}
45 \ESO@isMEMOIR{%
46   \renewcommand\AtStockCenter[1]{%
47     \AtStockLowerLeft{%
48       \put(\LenToUnit{.5\stockwidth},\LenToUnit{.5\stockheight}){#1}%
49     }%
50   }%
51 }{%
52   \let\AtStockCenter=\AtPageCenter
53 }

```

\AtTextUpperLeft

```

54 \ESO@isMEMOIR{%
55   \newcommand\AtTextUpperLeft[1]{%
56     \begingroup
57       \ifodd\c@page
58         \@tempdima=\spinemargin
59       \else
60         \@tempdima=\paperwidth
61         \advance\@tempdima-\textwidth

```

```

62     \advance\@tempdima-\spinemargin
63     \fi
64     \@tempdimb=-\uppermargin
65     \AtPageUpperLeft{%
66         \put(\LenToUnit{\@tempdima},\LenToUnit{\@tempdimb}){#1}%
67     }%
68     \endgroup
69 }
70 }{%
71     \newcommand\AtTextUpperLeft[1]{%
72         \begingroup
73         \@tempdima=1in\relax
74         \ifodd\c@page
75             \advance\@tempdima\oddsidemargin
76         \else
77             \advance\@tempdima\evensidemargin
78         \fi
79         \@tempdimb=-1in\relax
80         \advance\@tempdimb-\topmargin
81         \advance\@tempdimb-\headheight
82         \advance\@tempdimb-\headsep
83         \AtPageUpperLeft{%
84             \put(\LenToUnit{\@tempdima},\LenToUnit{\@tempdimb}){#1}%
85         }%
86     \endgroup
87 }
88 }

```

\AtTextLowerLeft

```

89 \newcommand\AtTextLowerLeft[1]{\AtTextUpperLeft{%
90     \put(0,\LenToUnit{-\textheight}){#1}}}

```

\AtTextCenter

```

91 \newcommand\AtTextCenter[1]{\AtTextUpperLeft{%
92     \put(\LenToUnit{.5\textwidth},\LenToUnit{-.5\textheight}){#1}}}

```

\ESO@HookI

\ESO@HookII

\ESO@HookIII

```

93 \newcommand{\ESO@HookI}{}
94 \newcommand{\ESO@HookII}{}
95 \newcommand{\ESO@HookIII}{}

```

\AddToShipoutPicture

```

96 \newcommand{\AddToShipoutPicture}{%
97     \@ifstar{\g@addto@macro\ESO@HookII}{\g@addto@macro\ESO@HookI}}

```

\ClearShipoutPicture

```

98 \newcommand{\ClearShipoutPicture}{\global\let\ESO@HookI\@empty}

```

\AtBeginShipout (see package atbegshi)

\AtBeginShipoutUpperLeft

```

99 \ESO@isMEMOIR{%
100     \AtBeginShipout{%
101         \@tempdima=-\trimedge
102         \advance\@tempdima-\paperwidth

```

```

103 \advance\@tempdima\stockwidth
104 \if@twoside\ifodd\c@page\else
105 \advance\@tempdima2\trimedge
106 \advance\@tempdima\paperwidth
107 \advance\@tempdima-\stockwidth
108 \fi\fi
109 \@tempdimb=\ESO@yoffsetI
110 \advance\@tempdimb-\trimtop
111 \nointerlineskip
112 \AtBeginShipoutUpperLeft{%
113 \put(\LenToUnit{\@tempdima},\LenToUnit{\@tempdimb}){%
114 \ESO@HookIII\ESO@HookI\ESO@HookII
115 \global\let\ESO@HookII\@empty
116 }%
117 }%
118 }
119 }{%
120 \AtBeginShipout{%
121 \nointerlineskip
122 \AtBeginShipoutUpperLeft{%
123 \put(0,\LenToUnit{\ESO@yoffsetI}){%
124 \ESO@HookIII\ESO@HookI\ESO@HookII
125 \global\let\ESO@HookII\@empty
126 }%
127 }%
128 }
129 }

```

3.2 The background grid

```
130 \RequirePackage{keyval}
```

Initialising some macros

```

131 \newif\ifESO@dviPS\ESO@dviPSfalse \newif\ifESO@grid\ESO@gridfalse
132 \newif\ifESO@texcoord\ESO@texcoordfalse
133 \newcommand*\ESO@gridunitname{}
134 \newcommand*\ESO@gridunit{}
135 \newcommand*\ESO@labelfactor{}
136 \newcommand*\ESO@griddelta{}\newcommand*\ESO@griddeltaY{}
137 \newcommand*\ESO@gridDelta{}\newcommand*\ESO@gridDeltaY{}
138 \newcommand*\ESO@gridcolor{}
139 \newcommand*\ESO@subgridcolor{}
140 \newcommand*\ESO@subgridstyle{dotted}% ???
141 \newcommand*\ESO@gap{}
142 \newcommand*\ESO@yoffsetI{}\newcommand*\ESO@yoffsetII{}
143 \newcommand*\ESO@gridlines{\thinlines}
144 \newcommand*\ESO@subgridlines{\thinlines}
145 \newcommand*\ESO@hline[1]{\ESO@subgridlines\line(1,0){#1}}
146 \newcommand*\ESO@vline[1]{\ESO@subgridlines\line(0,1){#1}}
147 \newcommand*\ESO@Hline[1]{\ESO@gridlines\line(1,0){#1}}
148 \newcommand*\ESO@Vline[1]{\ESO@gridlines\line(0,1){#1}}
149 \newcommand\ESO@fcolorbox[4][\fbox{#4}]{}
150 \newcommand\ESO@color[1]{}
151 \newcommand\ESO@colorbox[3][\fbox{#3}]{}

```

```

152 \begingroup
153 \fboxrule=\z@\fbox{#3}%
154 \endgroup
155 }

```

`\gridSetup`

```

156 \newcommand\gridSetup[6] [] {%
157 \edef\ESO@gridunitname{#1}\edef\ESO@gridunit{#2}
158 \edef\ESO@labelfactor{#3}\edef\ESO@griddelta{#4}
159 \edef\ESO@gridDelta{#5}\edef\ESO@gap{#6}}

```

All the key-value options

```

160 \define@key{ESO}{texcoord}[true]{\csname ESO@texcoord#1\endcsname}
161 \define@key{ESO}{pscoord}[true]{\csname @tempswa#1\endcsname
162 \if@tempswa\ESO@texcoordfalse\else\ESO@texcoordtrue\fi}
163 \define@key{ESO}{dvips}[true]{\csname ESO@dvips#1\endcsname}
164 \define@key{ESO}{grid}[true]{\csname ESO@grid#1\endcsname
165 \setkeys{ESO}{gridcolor=black,subgridcolor=black}}
166 \define@key{ESO}{colorgrid}[true]{\csname ESO@grid#1\endcsname
167 \setkeys{ESO}{gridcolor=red,subgridcolor=green}}
168 \define@key{ESO}{gridcolor}{\def\ESO@gridcolor{#1}}
169 \define@key{ESO}{subgridcolor}{\def\ESO@subgridcolor{#1}}
170 \define@key{ESO}{subgridstyle}{\def\ESO@subgridstyle{#1}}%
171 \define@key{ESO}{gridunit}{%
172 \def\@tempa{#1}
173 \def\@tempb{bp}
174 \ifx\@tempa\@tempb
175 \gridSetup[\@tempa]{1bp}{1}{10}{50}{2}
176 \else
177 \def\@tempb{pt}
178 \ifx\@tempa\@tempb
179 \gridSetup[\@tempa]{\p@}{1}{10}{50}{2}
180 \else
181 \def\@tempb{in}
182 \ifx\@tempa\@tempb
183 \gridSetup[\@tempa]{.1in}{.1}{2}{10}{.5}
184 \else
185 \gridSetup[mm]{1mm}{1}{5}{20}{1}
186 \fi
187 \fi
188 \fi
189 }
190 \setkeys{ESO}{subgridstyle=solid,pscoord=true,gridunit=mm}

```

`\ProcessOptionsWithKV` This macro can process package options using ‘key=value’ syntax.

```

191 \def\ProcessOptionsWithKV#1{%
192 \let\@tempc\@empty
193 \@for\CurrentOption:=\@classoptionslist\do{%
194 \ifundefined{KV@#1\CurrentOption}%
195 {}{\edef\@tempc{\@tempc,\CurrentOption,}}}%
196 \edef\@tempc{%
197 \noexpand\setkeys{#1}{\@tempc\@optionlist{\@currname.\@current}}}%
198 \@tempc
199 \AtEndOfPackage{\let\@unprocessedoptions\relax}}%

```

```

200 \ProcessOptionsWithKV{ESO}%

\ESO@div Divides length #1 by #2  $\times$  \ESO@gridunit and adds one. Result is in \@tempcnta.
201 \newcommand\ESO@div[2]{%
202   \@tempdima=#1\relax\@tempdimb=\ESO@gridunit\relax
203   \@tempdimb=#2\@tempdimb\divide\@tempdima by \@tempdimb
204   \@tempcnta\@tempdima\advance\@tempcnta\@ne}

205 \AtBeginDocument{%
206   \ifundefined{colorbox}{%
207     \IfFileExists{xcolor.sty}{\RequirePackage{xcolor}}%
208     {\RequirePackage{color}}%
209   }{%
210     \let\ESO@color=\color\let\ESO@colorbox=\colorbox
211     \let\ESO@fcolorbox=\fcolorbox
212     \ESO@dvi=false
213     \ifundefined{Gin@driver}{%
214       {%
215         \ifx\Gin@driver\@empty\else%
216           \filename@parse{\Gin@driver}\def\reserved@a{dvips}%
217           \ifx\filename@base\reserved@a\ESO@dvi=true\fi
218         \fi
219       }%
220     \ifESO@dvi\def\@tempb{eepic}\else\def\@tempb{epic}\fi
221     \def\@tempa{dotted}%\def\ESO@gap{\LenToUnit{6\@wholewidth}}%
222     \ifx\@tempa\ESO@subgridstyle
223       \IfFileExists{\@tempb.sty}%
224       {%
225         \RequirePackage{\@tempb}
226         \renewcommand*\ESO@hline[1]{\ESO@subgridlines\dottedline{\ESO@gap}%
227           (0,0)(##1,0)}
228         \renewcommand*\ESO@vline[1]{\ESO@subgridlines\dottedline{\ESO@gap}%
229           (0,0)(0,##1)}
230       }{}
231     \else
232       \ifx\ESO@gridcolor\ESO@subgridcolor%
233         \renewcommand*\ESO@gridlines{\thicklines}
234       \fi
235     \fi
236   }
237   \ifESO@texcoord
238     \def\ESO@yoffsetI{\z@}\def\ESO@yoffsetII{-\paperheight}
239     \edef\ESO@griddeltaY{-\ESO@griddelta}\edef\ESO@gridDeltaY{-\ESO@gridDelta}
240   \else
241     \def\ESO@yoffsetI{-\paperheight}\def\ESO@yoffsetII{\z@}
242     \edef\ESO@griddeltaY{\ESO@griddelta}\edef\ESO@gridDeltaY{\ESO@gridDelta}
243   \fi

\ESO@gridpicture
244 \newcommand\ESO@gridpicture{%
245   \begingroup
246   \setlength\unitlength{\ESO@gridunit}%
247   \ESO@color{\ESO@subgridcolor}%

```

```

— horizontal subgrid lines —
248   \ESO@div{\paperheight}{\ESO@griddelta}%
249   \multiput(0,0)(0,\ESO@griddeltaY){\@tempcnta}%
250   {\ESO@hline{\LenToUnit{\paperwidth}}}%

— vertical subgrid lines —
251   \ESO@div{\paperwidth}{\ESO@griddelta}%
252   \multiput(0,\LenToUnit{\ESO@yoffsetII})(\ESO@griddelta,0){\@tempcnta}%
253   {\ESO@vline{\LenToUnit{\paperheight}}}%
254   \ESO@color{\ESO@gridcolor}%

— horizontal grid lines —
255   \ESO@div{\paperheight}{\ESO@gridDelta}%
256   \multiput(0,0)(0,\ESO@gridDeltaY){\@tempcnta}%
257   {\ESO@Hline{\LenToUnit{\paperwidth}}}%

— vertical grid lines —
258   \ESO@div{\paperwidth}{\ESO@gridDelta}%
259   \multiput(0,\LenToUnit{\ESO@yoffsetII})(\ESO@gridDelta,0){\@tempcnta}%
260   {\ESO@Vline{\LenToUnit{\paperheight}}}%

— horizontal numbers —
261   \fontsize{10}{12}\normalfont%
262   \ESO@div{\paperwidth}{\ESO@gridDelta}%
263   \multiput(0,\ESO@gridDeltaY)(\ESO@gridDelta,0){\@tempcnta}{%
264   \@tempcntb=\@tempcnta\advance\@tempcntb-\@multicnt
265   \ifnum\@tempcntb>1\relax
266   \multiply\@tempcntb by \ESO@gridDelta\relax
267   \@tempdima=\@tempcntb sp\@tempdima=\ESO@labelfactor\@tempdima
268   \@tempcntb=\@tempdima%
269   \makebox(0,0)[c]{\ESO@colorbox{white}{\the\@tempcntb}}%
270   \fi}%

— vertical numbers —
271   \ifx\ESO@gridunitname\@empty\def\@tempa{0}\else\def\@tempa{1}\fi
272   \ESO@div{\paperheight}{\ESO@gridDelta}%
273   \multiput(\ESO@gridDelta,0)(0,\ESO@gridDeltaY){\@tempcnta}{%
274   \@tempcntb=\@tempcnta\advance\@tempcntb-\@multicnt%
275   \ifnum\@tempcntb>\@tempa\relax
276   \multiply\@tempcntb by \ESO@gridDelta\relax%
277   \@tempdima=\@tempcntb sp\@tempdima=\ESO@labelfactor\@tempdima
278   \@tempcntb=\@tempdima
279   \makebox(0,0)[c]{\ESO@colorbox{white}{\the\@tempcntb}}%
280   \fi
281   }%

— the unit label —
282   \ifx\ESO@gridunitname\@empty\else
283   \thicklines\fbboxrule=\@wholewidth
284   \put(\ESO@gridDelta,\ESO@gridDeltaY){\makebox(0,0)[c]{%
285   \ESO@fcolorbox{\ESO@gridcolor}{white}{%
286   \textbf{\ESO@gridunitname}}}}}%
287   \fi
288   \normalcolor%
289   \endgroup
290 }

```


Add the grid to the shipout picture (`\ESO@HookIII` is independent from the user commands `\AddToShipoutPicture` and `\AddToShipoutPicture*`).

291 `\ifESO@grid\g@addto@macro\ESO@HookIII{\ESO@gridpicture}\fi`

Change History

| | | |
|-------|---|--|
| v0.4 | General: Initial version 1 | instead of <code>\newcommand</code> for <code>\LenToUnit</code> 2 |
| v0.5 | General: Some bug corrections . . . 1 | v1.1 |
| v0.6 | General: Some corrections for compatibility with the <code>html</code> package suggested by Ross Moore and a licence note 1 | General: New commands and package options for background grids. 1 |
| v0.7 | General: New command <code>\AddToShipoutPicture*</code> 1 | v1.1a |
| v1.0 | General: New commands <code>\LenToUnit</code> , <code>\AtPageUpperLeft</code> , <code>\AtPageCenter</code> , <code>\AtTextUpperLeft</code> , and <code>\AtTextCenter</code> 1 | <code>\ESO@gridpicture</code> : Font setting added. 8 |
| v1.0a | <code>\ClearShipoutPicture</code> : Changed <code>\let</code> to <code>\global\let</code> (suggested by Alberto Lusiani). . . . 4 | v1.1b |
| v1.0c | General: New command <code>\AtTextLowerLeft</code> and corrections to <code>\AtTextUpperLeft</code> 1 | General: New command <code>\AtPageLowerLeft</code> 1 |
| v1.0d | <code>\LenToUnit</code> : Using <code>\providecommand</code> | New package options "texcoord" and "pscoord" 1 |
| | | v1.1c |
| | | General: Remove the disadvantageous check of 'pdfTeX'. Now using with X _ε LaTeX should be possible. 7 |
| | | v2.0a |
| | | General: Better test of color/xcolor 7 |
| | | <code>\AtStockCenter</code> : New 3 |
| | | <code>\AtStockLowerLeft</code> : New 2 |
| | | <code>\AtStockUpperLeft</code> : New 3 |
| | | <code>\AtTextUpperLeft</code> : Works now for class <code>memoir</code> 3 |

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