

# parrun.sty\*

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## Abstract

The package `parrun` provides a set of macros useful for typesetting several (two) streams of text running parallel on the same physical page in a vertical layout.

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## 1 Introduction

It may occur, especially in anthologies and collections, that a translation and the original parallel text must not be disposed on two different pages or columns, but one *above* the other. The package `parrun` has been designed to handle this situation. The user interface is simple and provides two environments in order to define the respective streams of text and a command for placing them on the page, saving for each of them an exact fraction of the bodytext.

Finally, as `parrun` showed himself, during tests, incompatible with package `multicol`, I had to introduce an explicit option for typesetting in two or more columns the second stream of text.

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## 2 User interface

### 2.1 Environments

`fframe`  
`sframe`

The way to use the two environments is easy and there are no additional arguments. The environments do just what their names say, *i.e.* they place in a `\box` the text enclosed between the initial and the final declaration, following the usual formulation `\begin{<env>}` *<general text>* `\end{<env>}`.

### 2.2 The command `\Place`

The actual arrangement on the page of the content of the two `boxes`, following the user instructions, is the task of the command `\Place`. There are two ways to use it:

`\Place*`

- the starred version (`\Place*`), without arguments, tries to automatically compute the optimal fraction of `\textheight` to be reserved for each `box`, so you need not to bore yourself with the whole matter.

`\Place`

- the unstarred version is provided for the case the algorithm of autocomputation fails, and takes two arguments, *i.e.*: the space to be reserved on the page for the two `boxes`, expressed in fractions of `\textheight`. So, typing `\Place{423}{57}`, you mean that the page will be divided in two regions, whose height is  $0.423\text{\textheight}$  and  $0.57\text{\textheight}$  respectively.

`\Place` checks whether the text is ill-balanced, with a stream keeping on running while the other is already finished, and, in the case of the unstarred version looks also after the total fraction of the text actually placed on the page checking it doesn't exceed the `bodytext`. In both cases compilation is halted and a warning appears giving possibility to get more help. Then compilation goes on till end and a table of the most important quantities used by the package is typed at the end of the log file, providing a useful hint for values to be used with the unstarred version in the case the autocomputation algorithm gives a bad result.

### 2.3 The option `multicol`

`multicol`

As already mentioned, the package provides internally an option `multicol` for typesetting the content of the second stream of text on two columns. The user need only load the option together with the package (`\usepackage[multicol]{parrun}`).

`\cnum`

Changing the value of counter `\cnum`, the user can, as a consequence, vary the number of columns.

### 2.4 Limitations

Involving boxes containing large portions of text the package deals with large dimensions. `TEX` has very loose limitations in the use of large dimensions, yet these limitations exist and to find himself involved in such problems is easier than one can think. Obviously the use of a multicolumn layout increases the possibility to overrun the limits, so this solution should be used with care. The only apology I can make is that the package has been designed for such tasks that request no large amounts of text stuffed in a box. Maybe a different approach should be taken into consideration. Besides, large font dimensions and small heights of the `bodytext` can have as result an oscillating behaviour of the output which remains unbalanced.

### 3 The code

1     `<*parrun>`

#### 3.1 Package identification

2     `\NeedsTeXFormat{LaTeX2e}[2001/06/01]`  
 3     `\ProvidesPackage{parrun}[2003/11/18 v1.1 Package for parallel text]`  
 4     `\RequirePackage{ifthen}`  
 5     `\RequirePackage{calc}`

#### 3.2 Conditionals and the option declaration

6     `\newif\ifmultic@l`  
 7     `\DeclareOption{multicol}{\multic@ltrue}`  
 8     `\ProcessOptions`

#### 3.3 The beginning

We declare the `\boxes` ...

9     `\newbox\ffram`  
 10    `\newbox\sfram`  
 ... the counters (`\cnum`, defining the number of columns in the option `multicol` is by default set equal to two)...

11    `\newcount\k`  
 12    `\newcount\cnum`  
 13    `\cnum=2`  
 ... and some useful lengths.  
 14    `\newlength\flength`  
 15    `\newlength\slength`  
 16    `\newlength\ffrac`  
 17    `\newlength\sfrac`  
 18    `\newlength\nop`  
 19    `\newlength\total`  
 20    `\newlength\actualheight`  
 21    `\newlength\initsskip`  
 22    `\setlength{\initsskip}{0pt}`  
 23    `\newdimen\colframsep`  
 24    `\newdimen\h`  
 25    `\newdimen\test`  
 26    `\newdimen\temp`  
 27    `\colframsep=8pt`

#### 3.4 Environments

**ffram**     The two environments `ffram` and `sfram` place respectively in the two  
**sfram**     `\boxes` `ffram` and `sfram` the *general text* enclosed between the initial and  
 the final declaration.

28     `\newenvironment{ffram}{\global\setbox\ffram=\vbox\bgroup}{\vfill\egroup}`

**sfram**     For what concerns `sfram` it has to distinguish if the option `multicol` is in  
 force or not. In the first case he has to redefine `\hsize` so that the text can  
 be distributed on the specified number of columns.

29     `\newenvironment{sfram}{%`  
 30         `\ifmultic@l \k=\cnum \advance\k by -1`

```

31         \dimen0=\textwidth \divide\dimen0 by
32         \cnum \advance\dimen0 by -\k\colframsep
33         \hsize=\dimen0
34     \fi
35     \global\setbox\sfram=\vbox\bgroup}
36 {\vfill\egroup}

```

### 3.5 Commands for placing boxes

They are the commands directly charged to place the text on the page. They call, directly or indirectly, the primitive `\vsplit` (for further details on its functioning see T<sub>E</sub>Xbook [1]).

There are five macros: two for the option `multicol`, two for the package without options, and the last one shared (obviously it's `\v@idb@xtwo`, typesetting a void `\box` at the bottom of the page, when `\sfram` is void). Arguments are passed by `\Place`, consisting in fractions of `\textheight`, but, as can be easily seen, in the two macros used by `multicol` (`\b@xbalance` and `\v@idb@xbalance`) only two arguments are visible. The third has been swallowed by `\rigidbalance`, a macro to be examined in the following.

```

\vsplit
\v@idb@xtwo
\b@xbalance
\v@idb@xbalance
\rigidbalance
37     \newcommand{\b@xbalance}{%
38         \vbox to\initskip{}
39         \vsplit\ffram to \flength
40         \smallskip \hrule \smallskip
41         \rigidbalance}
42     \newcommand{\v@idb@xbalance}{%
43         \vbox to\initskip{}
44         \vbox to \flength{}
45         \smallskip \hrule \smallskip
46         \rigidbalance}
47     \newcommand{\v@idb@xone}{%
48         \vbox to\initskip{}
49         \vbox to \flength{}
50         \smallskip \hrule \smallskip
51         \vsplit\sfram to \slength}
52     \newcommand{\v@idb@xtwo}{%
53         \vbox to\initskip{}
54         \vsplit\ffram to \flength
55         \smallskip \hrule \smallskip
56         \vbox to \slength{}}
57     \newcommand{\splitb@x}{%
58         \vbox to\initskip{}
59         \vsplit\ffram to \flength
60         \smallskip \hrule \smallskip
61         \vsplit\sfram to \slength}

```

`\rigidbalance` This macro has been taken, with remarkable adjustments, from the Appendix “Dirty Tricks” of the T<sub>E</sub>Xbook ([1]) and is needed to make sure that also on the last page the columns have all the same height. Namely, it checks the height of the content of the `\box` and on the base of the outcome it calls the macro `\dosplits` which splits the text in columns of normal height, or the macro `\dobalance` which sets the height of the columns to the height of the remaining content of `\sfram` divided the number of columns and then splits the text.

```

62 \newcommand{\rigidbalance}{\hspace=\textwidth \k=\cnum
63 \ifdim\ht\sfram>\cnum\slength
64 \myline{\splittopskip=\h \vbadness=10000 \hfilneg
65 \valign{##\vfil\cr\dosplits}}
66 \else
67 \myline{\temp=\ht\sfram \advance\temp by \baselineskip
68 \divide\temp by \cnum \splittopskip=\h \vbadness=10000
69 \hfilneg \valign{##\vfil\cr\dobalance}}
70 \fi}
71 \newcommand{\dosplits}{\ifnum\k>0 \noalign{\hfil}
72 \splitoff\global\advance\k-1\cr\dosplits\fi}
73 \newcommand{\splitoff}{
74 \vsplit\sfram to \slength}
75 \newcommand{\dobalance}{\ifnum\k>0 \noalign{\hfil}
76 \finalbalance\global\advance\k-1\cr\dobalance\fi}
77 \newcommand{\finalbalance}{
78 \vsplit\sfram to \temp}

\myline I had also to define a new command \myline restoring the original meaning
of \line, because it has been modified in the LATEX format.

79 \newcommand{\myline}{\hbox to\hspace}

\m@kelayout The macro \m@kelayout executes tests on the content of \ffram and \sfram
and on the base of their outcome calls a particular subroutine for placing
boxes and let appear on the terminal any needed warning. All this regarding
the presence or the absence of the option multicol.

80 \newcommand{\m@kelayout}{%
81 \ifmulticol
82 \whiledo{\ht\ffram>0 \AND \ht\sfram>0}{\b@xbalance}
83 \ifthenelse{\ht\ffram>0 \AND \ht\sfram=0}{\whiledo{\ht\ffram>0
84 \AND \ht\sfram=0}{\v@idb@xtwo}
85 \sec@nderror}
86 \ifthenelse{\ht\ffram=0 \AND \ht\sfram>0}{\whiledo{\ht\ffram=0
87 \AND \ht\sfram>0}{\v@idb@xbalance}
88 \sec@nderror}
89 \else
90 \whiledo{\ht\ffram>0 \AND \ht\sfram>0}{\splitb@x}
91 \ifthenelse{\ht\ffram>0 \AND \ht\sfram=0}{\whiledo{\ht\ffram>0
92 \AND \ht\sfram=0}{\v@idb@xtwo}
93 \sec@nderror}
94 \ifthenelse{\ht\ffram=0 \AND \ht\sfram>0}{\whiledo{\ht\ffram=0
95 \AND \ht\sfram>0}{\v@idb@xone}
96 \sec@nderror}
97 \fi}

\UserDefWidths The macro \UserDefWidths translates the arguments given by the user in
the relative dimensions, executes the check on the resulting amount of the
single fractions and, in case they exceed the dimension of \textheight calls
the consequent warning; then it calls \m@kelayout.

98 \newcommand{\UserDefWidths}[2]{
99 \setlength{\actualheight}{%
100 \textheight-2\smallskipamount-\topskip-\baselineskip}
101 \flength=.#1\actualheight \slength=.#2\actualheight
102 \test=\flength \advance\test by \slength
103 \ifdim\test>\actualheight

```

```

104      \firsterror
105      \fi
106      \m@kelayout
107  }

```

**\AutoCompute** The macro `\AutoCompute`, just as the name says, tries to automatically compute the optimal division of the page in the two regions where the boxes will be placed, so that the text will be well balanced. Actually the macro does not take in consideration the whole `\textheight` during computation, but a newly defined dimension, `\actualheight`, standing for the *actual* height of the bodytext (in its definition is also involved the length `\initskip`, which can be used to insert an additional space between the header and the first box). During computation, scaling is needed to avoid exceeding `\maxdimen`, especially when the multicolumn option is active.

```

108  \newcommand{\AutoCompute}{%
109    \setlength{\actualheight}{%
110      \textheight-2\smallskipamount-\topskip-\baselineskip-\initskip}
111    \ifmultic@l
112      \setlength{\total}{\cnum\ht\ffram+\ht\sfram}
113      \divide\total by 10 \divide\actualheight by 10%
114      \setlength{\nop}{1pt*\ratio{\total}{\cnum\actualheight}}
115      \setlength{\flength}{1pt*\ratio{\ht\ffram}{\nop}}
116      \setlength{\slength}{1pt*\ratio{\ht\sfram}{\cnum\nop}}
117    \else
118      \setlength{\total}{\ht\ffram+\ht\sfram}
119      \divide\total by 10 \divide\actualheight by 10%
120      \setlength{\nop}{1pt*\ratio{\total}{\actualheight}}
121      \setlength{\flength}{1pt*\ratio{\ht\ffram}{\nop}}
122      \setlength{\slength}{1pt*\ratio{\ht\sfram}{\nop}}
123    \fi
124    \setlength{\ffrac}{1pt*\ratio{\flength}{10\actualheight}}
125    \setlength{\sfrac}{1pt*\ratio{\slength}{10\actualheight}}
126    \m@kelayout
127  }

```

**\Place** The macro `\Place` is merely a switcher between `\AutoCompute` and `\UserDefWidths`.

```

128  \newcommand{\Place}{%
129    \@ifstar{\AutoCompute}{\UserDefWidths}
130    \UsefulLengthsTable}

```

### 3.6 Warnings

```

131  \newcommand{\UsefulLengthsTable}{%
132  \AtEndDocument{\immediate\write\m@ne{*****^^J%
133      ffrac=\the\ffrac, sfrac=\the\sfrac^^J%
134      flength=\the\flength, slength=\the\slength^^J%
135      *****}}
136  }
137  \newcommand{\firsterror}{\PackageError{parrun}{%
138    Warning: Text fractions exceeding \string\textheight}
139    {The total dimension of
140    the single fractions of text exceeds \string\textheight.^^J%
141    You probably should reconsider the parameters in \string\Place.^^J%
142    However, if you are sure of what you have done, you can go on.^^J%

```

```

143         Luck!}}
144 \newcommand{\sec@nderror}{\PackageError{parrun}{%
145     Warning: the box still contains some text}
146     {Your text is not well balanced. Probably you'll get a bad ^^J%
147     output. You should reconsider your document's layout.^^J%
148     You will find at the end of the log file some useful^^J%
149     length for dealing with.}
150 }
151 \</parrun>

```

## References

- [1] Donald Knuth. *The T<sub>E</sub>Xbook* Addison–Wesley, Reading, MA, 1996.

## Change History

v1.0		\AutoCompute added. . . 6
General: First public release.	1	\Place: new macro \Place
v1.1		added. . . . . 6
General: Added autocom-		\UserDefWidths: name
putation, some macro		changed from \Frame to
names changed. . . . . 1		\UserDefWidths; some
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