

# rotpages.sty — Multiple page rotation in L<sup>A</sup>T<sub>E</sub>X

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January 25th, 2002

## Abstract

This latex package permits to format documents where small sets of pages are rotated by 180 degrees and rearranged, so that they can be read by turning the printed copy upside-down. It was primarily meant for collecting exercises and solutions, to train students before exams. The package permits to print the exercise texts normally and the solutions rotated. The idea is to make it a bit harder for the students to unintentionally read the solutions before trying to solve the exercises autonomously. Other uses might obviously be possible.

## 1 Introduction

The package *rotpages.sty* is meant to be used when parts of a document should be made purposely difficult to read or obfuscated. An obvious way to make it difficult to read something is to print it upside down. This is well known by all those keen on puzzles and crosswords: on the puzzle magazines the solutions are often printed “the wrong way” in order to prevent the readers from spoiling the pleasure of the quiz by unintentionally reading the solutions before having made sufficient attempts at finding them on their own.

A similar situation emerges in collecting exercises and solutions as an aid for students training for exams. The solutions must be there, so that the students can check their results and avoid getting stuck when they cannot answer some question. At the same time the solutions should not be easily readable,

otherwise the temptation to read them even before attempting to solve a problem is too strong. A typical format for exercise collections consists in putting all the exercises at the beginning of a booklet all the answers at the end. However, this makes people flap pages back and forth all the time. Having the solutions close to the relevant exercises and obfuscating them by page rotation can possibly be a better practice.

In latex, it is very easy to rotate small amounts of text. The package *graphics* is a valid aid in this sense. However, it is not easy to deal with large amounts of text. If the rotated material has to span many pages, it cannot be put in a `\rotatebox` command. Furthermore, if many pages need to be rotated, it is not sufficient to flip them individually: they must also be rearranged so that they appear in the proper order when the printed copy of the document is read “upside down”.

The package `rotpages.sty` permits to rotate a few pages, rearranging them consistently and preserving the normal latex algorithm for breaking the material into pages.

## 2 Usage

The package defines only two commands: `\rotboxpages` and `\endrotboxpages`, which take no arguments.

The command `\rotboxpages` closes the current page and starts delimiting the text which needs typesetting “the wrong way round”. The command `\endrotboxpages` marks the end of the region which is typeset bottom-up, makes sure that the rotated pages

are flushed onto the `dvi` file and opens a fresh page. The rotated material is printed surrounded by a frame. Page headers and footers continue display the proper way.

When used in two-column mode, the package correctly rotates the columns independently, rearranging them if necessary. The rotated columns get individually framed.

The file `rotpages-example.tex` provides an example.

### 3 Known bugs and quirks

The package is relatively young and no bugs are known so far. It should be observed that the `.dvi` files produced with `rotpages.sty` cannot be viewed properly with `xdvi`, `kdvi` and probably other `dvi` previewers. However, this is not a problem of `rotpages.sty`, rather of `xdvi` which does not understand correctly some of the `\specials` produced by the `graphics` package which is internally invoked by `rotpages` for the page rotation. The postscript files produced by `dvips` display and print correctly.

In order to re-arrange the pages which are rotated, the shipping of the formatted material to the `dvi` file needs to be deferred until all the rotated pages are processed. This puts a limit on the number of pages which can be rotated at once, since the deferring mechanisms uses a stack which eats up latex memory.

### 4 Internal operation

The package works by redefining the `\@makecol` macro, which is normally used by latex to format and ship a page to the `dvi` file. Particularly, at the `\rotboxpages` command, the `\@opcol` and the `\@startcolumn` macros are temporarily disabled, so that no page gets shipped to the `dvi` file and no page number can be updated. Furthermore, the `\@makecol` macro is temporarily modified, so that the formatted pages get framed, rotated and accumulated in a stack.

At the `\endrotboxpages` command, the behaviour of latex gets reset to the standard. After that, the pages that had previously been accumulated onto the `rotpages` stack are flushed to the `dvi` file. The stack mechanism assures that the pages get to the `dvi` file in the correct (rearranged) order.

For the page rotation, `rotpages.sty` relies on the standard graphics package. However, page rotation is delicate. When the graphics package flips a page vertically, its measures can often get rounded. One must force them to the correct value, otherwise latex complains about overfull/underfull boxes.

### 5 To-do

- Allow the package to pass options to the underlying graphics package, particularly concerning the drivers (`dvips`, `xdvi`, etc.) to use.
- Make the package more flexible with regard to the formatting of rotated pages. Now they are unconditionally framed. Options to control this behaviour will probably be introduced in the next release.