The package witharrows for plain-TeX and LaTeX*

F. Pantigny
fpantigny@wanadoo.fr

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Abstract

The LaTeX package witharrows provides environments {WithArrows} and {DispWithArrows} similar to the environments {aligned} and {align} of amsmath but with the possibility to draw arrows on the right side of the alignment. These arrows are usually used to give explanations concerning the mathematical calculus presented.

In this document, we describe the LaTeX extension witharrows (however, witharrows can also be used with plain-TeX: see p. 23). This package can be used with xelatex, lualatex, pdflatex but also by the classical workflow latex-dvips-ps2pdf (or Adobe Distiller). This package loads the packages l3keys2e, varwidth, tikz and the Tikz libraries arrows.meta and bending. The arrows are drawn with Tikz and that's why several compilations may be necessary.

This package provides an environment {WithArrows} to construct alignments of equations with arrows for the explanations on the right side:

```
$\begin{WithArrows}
A & = (a+1)^2 \Arrow{we expand} \\
  & = a^2 + 2a + 1  % <------- don't put \\ here
\end{WithArrows}$
```

$$\begin{aligned} A &= (a+1)^2 \\ &= a^2 + 2a + 1 \end{aligned} \quad \Big\downarrow \textit{we expand}$$

The arrow has been drawn with the command \Arrow on the row from which it starts. The command \Arrow must be used in the second column (the best way is to put it at the end of the second cell of the row as in the previous example).

The environment {WithArrows} bears similarities with the environment {aligned} of amsmath (and mathtools). The extension witharrows also provides an environment {DispWithArrows} which is similar to the environment {align} of amsmath: cf. p. 17.

1 Options for the shape of the arrows

The command \Arrow has several options. These options can be put between square brackets, before, or after the mandatory argument.
The option jump gives the number[1] of rows the arrow must jump (the default value is, of course, 1).

```
$\begin{WithArrows}
A & = \bigl((a+b)+1\bigr)^2 \Arrow[jump=2]{we expand} \\
  & = (a+b)^2 +  2(a+b) +1 \\
  & = a^2 + 2ab + b^2 + 2a + 2b +1
\end{WithArrows}$
```

*This document corresponds to the version 2.6c of witharrows, at the date of 2021/03/04.

[1]It's not possible to give a non-positive value to jump. See below (p. 2) the way to draw an arrow which goes backwards.