

## News - 2013

**new macros and bugfixes for the basic package pstricks**

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# Part I.

## pstricks – package

### 1. pstricks.sty

There are new optional arguments `monochrome` and `grayscale` to convert *all* RGB and CMYK colors into black and white or grayscale. The equations are:

#### 1.1. RGB to gray

$$\text{gray} = 0.07\text{red} + 0.71\text{green} + 0.21\text{blue}$$

#### 1.2. CMYK to gray

$$\begin{aligned} c &= c(1 - k) + k \\ m &= m(1 - k) + k \\ y &= y(1 - k) + k \\ r, g, b &= (1 - c), (1 - m), (1 - y) \\ \text{gray} &= 0.299r + 0.587g + 0.114b \end{aligned}$$

This change will be global and effects also all other color setting! See section [2.6 on page 5](#) for a local change of the color output.

### 2. pstricks.tex (2.49– 2013/12/09)

There is a new optional argument `pgffunctions` for the environment `pspicture`. With this option one can force the loading of the special pgf PostScript function which in some cases are missing, when using the package `auto-pst-pdf` and another package which uses pgf macros.

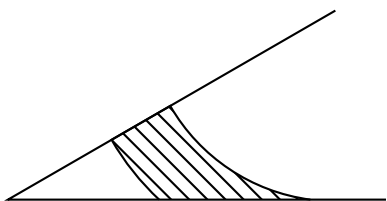
```
\begin{pspicture}[pgffunctions,...](...)(...)
```

#### 2.1. labelsep

The `labelsep` is the first – optional – argument of `\uput`. It is now possible to use the PostScript notation for this *length*, eg `{! 45 sin 3 mul}`. Then the unit which is active when `\uput` is active is used. With a unit the PS notation ist not allowed and leads to an error!

#### 2.2. Customization

`\pscustom` now knows the PostScript function `\reversepath`:



```

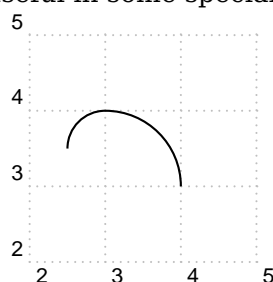
1 \begin{pspicture}(5,3)
2   \pnode(5;30){A}
3   \psline(A)(0,0)(5;0)
4   \pscustom[fillstyle=vlines]{%
5     \psarcAB(A)(0,0)(2,0)
6     \reversepath
7     \psarcAB(A)(0,0)(4,0)}
8 \end{pspicture}

```

## 2.3. Coordinates

### Postscript mode

A preceding ! in coordinates will interpret the following expressing in Postfix notation. The expression is automatically translated from user into screen coordinates. With a double !! this can be omitted and the Postscript expression will not be translated. This is useful in some special cases:



```

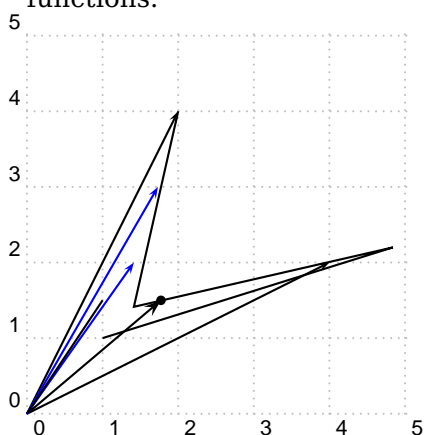
1 \begin{pspicture}[showgrid](2,2)(5,5)
2   \pscustom{
3     \psarc(3,3){1}{0}{90}
4     \rmoveto(.5;-90)
5     \psarc[liftpen=2](!!CP){.5}{90}{180}}
6 \end{pspicture}

```

CP is the internal abbreviation for the Postscript function currentpoint.

### Algebraic mode

Additionally to the special pair of coordinates ( $x$   $f(x)$ ) where  $x$  must be a value in PostScript notation and  $f(x)$  in algebraic notation, there is now a ( $f(y)$   $y$ ) which is vice versa,  $f(y)$  in algebraic and  $y$  in PostScript notation. And there is also a ( $x$   $f(x)$ ), where both expressions must be in algebraic notation and  $x$  must expand to a value or an expression which uses known system or user defined PostScript functions.



```

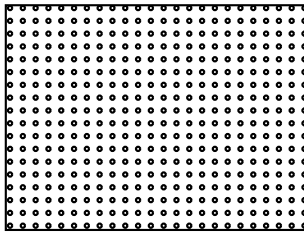
1 \def\f(#1){#1^2} \def\y{2}
2 \begin{pspicture}[showgrid](5,5)
3   \pnode(+{sqrt(Pi)},1.5*(sin(x)^2+cos(x)^2)){A}
4   \psdot(A) \psline[arrowscale=1.5]{->}(A)
5   \psline{->}(x^2) \psline{->}(y^2)
6   \psline(1,1)(f(y)) (2,2)(45)(f(x))
7   \psline[linecolor=blue]{->}(sqrt(2),f(x))
8   \psline[linecolor=blue]{->}(sqrt(3),f(x))
9   \psline(+1,x+0.5)
10 \end{pspicture}

```

Important: If the expression contains itself a parenthesis like ) then the argument must be inside braces; otherwise T<sub>E</sub>X will take the first closing parenthesis as closing delimiter for the complete coordinate argument (...) which then gives an error.

## 2.4. Fillstyle dots

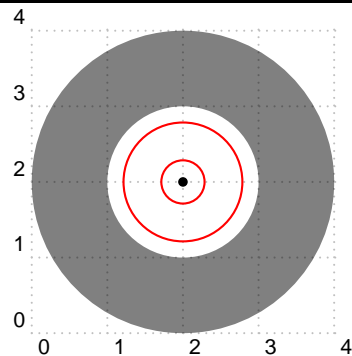
A fix for the fill style dots to make it work again:



```
1 \pspicture(4,3)
2 \psframe[fillstyle=dots](4,3)
3 \endpspicture
```

## 2.5. New macro \psRing

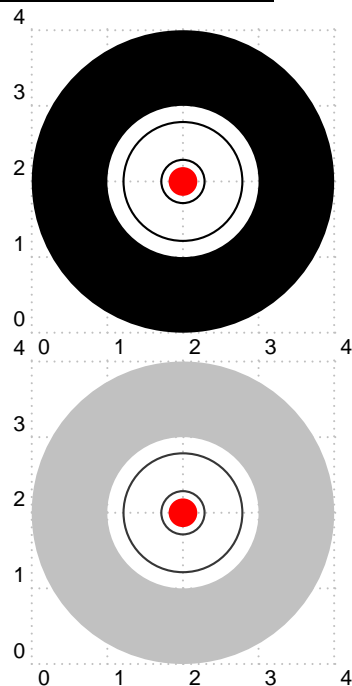
`\psRing*` [Options] (*x,y*) {Inner Radius} {Outer Radius}



```
1 \begin{pspicture}[showgrid](4,4)
2   \psRing[linecolor=red](2,2){0.3}{0.8}
3   \psRing*[opacity=0.5](2,2){1}{2}
4   \psdot(2,2)
5 \end{pspicture}
```

## 2.6. New macros \pssetMonochrome, \pssetGrayscale, and \psresetColor

`\pssetMonochrome`  
`\pssetGrayscale`  
`\psresetColor`



```
1 \begin{pspicture}[showgrid](4,4)
2   \pssetMonochrome%
3   \psRing[linecolor=red](2,2){0.3}{0.8}
4   \psRing*[linecolor=red!30](2,2){1}{2}
5   \psresetColor%
6   \psdot[linecolor=red,dotscale=3](2,2)
7 \end{pspicture}
```

```
1 \begin{pspicture}[showgrid](4,4)
2   \pssetGrayscale%
3   \psRing[linecolor=red](2,2){0.3}{0.8}
4   \psRing*[linecolor=red!30](2,2){1}{2}
5   \psresetColor%
6   \psdot[linecolor=red,dotscale=3](2,2)
7 \end{pspicture}
```

## **3. The PostScript header files**

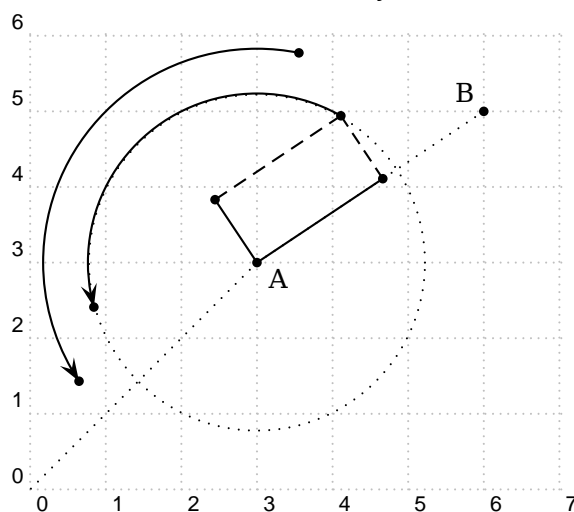
### **3.1. pstricks.pro**

## Part II.

# Other packages

### 4. pst-node – version 1.31 | 2013/10/22

- 1.29 2013-07-13 - fix bug with missing angle in special node coordinates
  - fix for fnpnodes (argument must be in {})
  - fix typo in the documentation
- 1.28 2013-07-10 - added \pnodes (plural) for multiple node definition
- 1.27 2013-04-12 - added macro \Lcs{Cnodeput} which takes radius=... into account
- 1.26 2013-04-09 - added macros \Lcs{psncurve} and \Lcs{psnccurve} for a sequence of nodes created by \Lcs{curvepnodes}
- 1.25 2012-09-21 - Global node coordinates only with saveNodeCoors



```

1 \begin{pspicture}[showgrid](0,-0.5)(7,6)
2   \pnode(3,3){A}\psdot(A)\uput[-35](A){A}
3   \pnode(6,5){B}\psdot(B)\uput[135](B){B}
4   \psline[linestyle=dotted](A)\psline[linestyle=dotted](A)(B)
5   \pscircle[linestyle=dotted](A){!5 sqrt}
6   \pnode([nodesep=2]{B}A){P0}\psdot(P0)
7   \pnode([offset=1]{B}A){P1}\psdot(P1)
8   \pnode([nodesep=2,offset=1]{B}A){P}\psdot(P)
9   \psline(A)([nodesep=2]{B}A)\psline[linestyle=dashed](P0)(P)
10  \psline(A)([offset=1]{B}A)\psline[linestyle=dashed](P1)(P)
11  \pnode([nodesep=2,offset=1,angle=135]{B}A){Q}\psdot(Q)
12  \psarc[origin={A},arrowscale=2]{->}(A){!5 sqrt}{(P)}{(Q)}
13  %
14  \pnode([nodesep=2,offset=2]{B}A){P}\psdot(P)
15  \pnode([nodesep=2,offset=2,angle=135]{B}A){Q}\psdot(Q)
16  \psarc[origin={A},arrowscale=2]{->}(A){!8 sqrt}{(P)}{(Q)}
17 \end{pspicture}

```

## References

- [1] Michel Goossens, Frank Mittelbach, Sebastian Rahtz, Denis Roegel, and Herbert Voß. *The L<sup>A</sup>T<sub>E</sub>X Graphics Companion*. Addison-Wesley Publishing Company, Reading, Mass., 2007.
- [2] Laura E. Jackson and Herbert Voß. Die Plot-Funktionen von pst-plot. *Die T<sub>E</sub>Xnische Komödie*, 2/02:27–34, June 2002.
- [3] Nikolai G. Kollock. *PostScript richtig eingesetzt: vom Konzept zum praktischen Einsatz*. IWT, Vaterstetten, 1989.
- [4] Herbert Voß. Die mathematischen Funktionen von Postscript. *Die T<sub>E</sub>Xnische Komödie*, 1/02:40–47, March 2002.
- [5] Herbert Voss. *PSTricks Support for pdf*. <http://PSTricks.tug.org/main.cgi?file=pdf/pdfoutput>, 2002.
- [6] Herbert Voß. *L<sup>A</sup>T<sub>E</sub>X Referenz*. DANTE – lehmanns media, Heidelberg/Hamburg, 2. edition, 2010.
- [7] Herbert Voß. *PSTricks – Grafik für T<sub>E</sub>X und L<sup>A</sup>T<sub>E</sub>X*. DANTE – Lehmanns Media, Heidelberg/Hamburg, 6. edition, 2010.
- [8] Herbert Voß. *L<sup>A</sup>T<sub>E</sub>X Quick Reference*. UIT, Cambridge/UK, 1. edition, 2011.
- [9] Herbert Voß. *PSTricks – Graphics for L<sup>A</sup>T<sub>E</sub>X*. UIT, Cambridge/UK, 1. edition, 2011.
- [10] Michael Wiedmann and Peter Karp. *References for T<sub>E</sub>X and Friends*. <http://www.miwie.org/tex-refs/>, 2003.



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