

## 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 [2.5 on the following page](#) for a local change of the color output.

### 2. pstricks.tex (2.46– 2013/08/20)

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,...](...)(...)
```

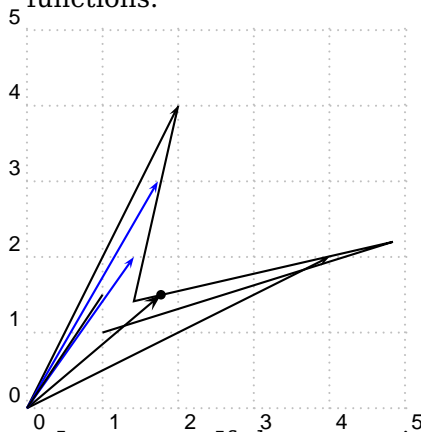
#### 2.1. labelsep

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 is not allowed and leads to an error!

#### 2.2. Coordinates

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.



```

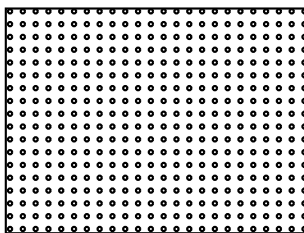
1 \def\fn{#1}{#1^2} \def\y{2}
2 \begin{pspicture}[showgrid](5,5)
3 \pnode(+{sqrt(Pi)},1.5*(sin(x)^2+cos(x)^2)){A}
4 \psdot(A) \psline[arrowscale=1.5]{->}(A)
5 \psline{->}(*2 {x^2}) \psline{->}(**{y^2} 2)
6 \psline(1,1)(**{\fn} 2.2)(2;45)(*2 {\fn})
7 \psline[linecolor=blue]{->}(+{sqrt(2)},\fn)
8 \psline[linecolor=blue]{->}(+{sqrt(3)},{\fn})
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  $\TeX$  will take the first closing parenthesis as closing delimiter for the complete coordinate argument  $(\dots)$  which then gives an error.

### 2.3. Fillstyle dots

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



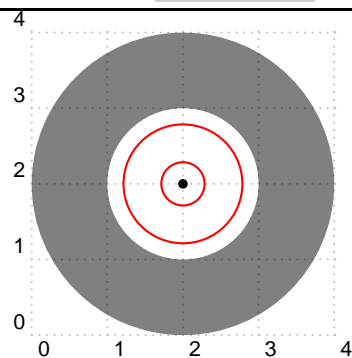
```

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

```

### 2.4. 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}

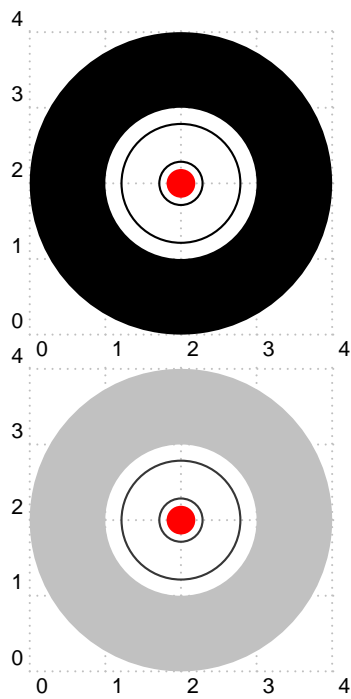
```

### 2.5. 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}

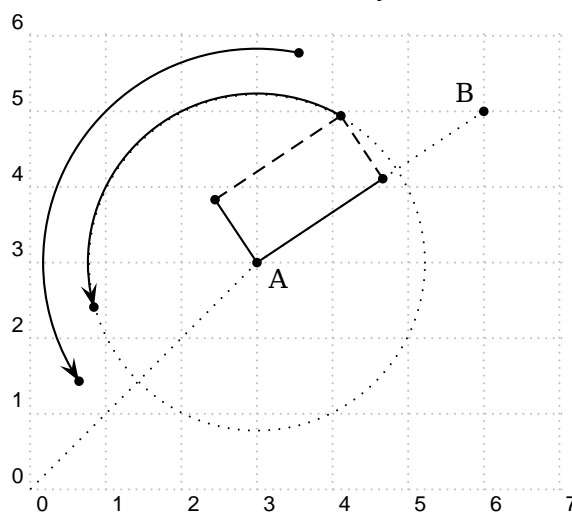
```

### 3. The PostScript header files

#### 3.1. pstricks.pro

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

- |      |            |  |
|------|------------|--|
| 1.29 | 2013-07-13 | - fix bug with missing angle in special node coordinates<br>- fix for fnpnodes (argument must be in {})<br>- 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=...<br>into account  |
| 1.26 | 2013-04-09 | - added macros \Lcs{psncurve} and \Lcs{psnccurve}<br>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   \pscicle[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.
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- [8] Herbert Voß. *L<sup>A</sup>T<sub>E</sub>X Quick Reference*. UIT, Cambridge/UK, 1. edition, 2011.
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- [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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