

News - 2013

new macros and bugfixes for the basic package pstricks

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Contents

I. pstricks – package	3
1. pstricks.sty	3
1.1. RGB to gray	3
1.2. CMYK to gray	3
2. pstricks.tex (2.48– 2013/11/29)	3
2.1. labelsep	3
2.2. Coordinates	3
2.3. Fillstyle dots	4
2.4. New macro \psRing	5
2.5. New macros \pssetMonochrome, \pssetGrayscale, and \psresetColor .	5
3. The PostScript header files	5
3.1. pstricks.pro	5
II. Other packages	6
4. pst-node – version 1.31 2013/10/22	6
References	7

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 page 5 for a local change of the color output.

2. pstricks.tex (2.48– 2013/11/29)

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

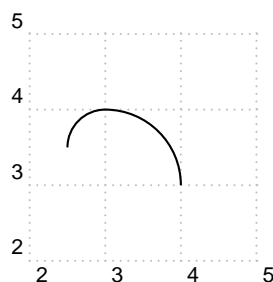
The `labelsep` is the first – optional – argument of `\uput`. It is now possible to use the PostScript notation for this *length*, eg `{! 45 sin 3 mul}`. Then the unit which is active when `\uput` is active is used. With a unit the PS notation ist not allowed and leads to an error!

2.2. 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:

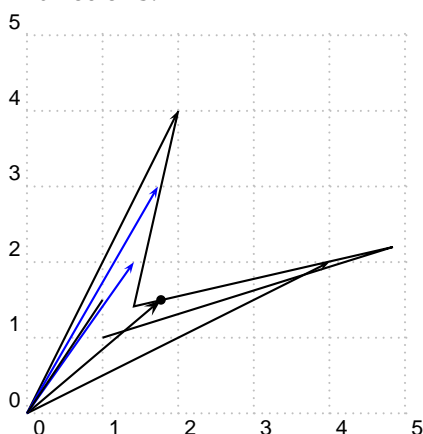


```
1 \begin{pspicture}[showgrid](2,2)(5,5)
2 \pscustom{
3   \psarc(3,3){1}{0}{90}
4   \rmoveto(.5;-90)
5   \psarc[liftpen=2](!!CP){.5}{90}{180}}
6 \end{pspicture}
```

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.

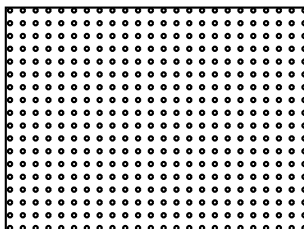


```
1 \def\ f(#1){#1^2} \def\ y{2}
2 \begin{pspicture}[showgrid](5,5)
3 \nnode(+{sqrt(Pi)},1.5*(sin(x)^2+cos(x)^2)){A}
4 \psdot(A) \psline[arrowscale=1.5]{->}(A)
5 \psline{->}(x^2) \psline{->}(y^2) 2)
6 \psline(1,1)(f(y) 2.2)(2;45)(f(x))
7 \psline[linecolor=blue]{->}(sqrt(2),f(x))
8 \psline[linecolor=blue]{->}(sqrt(3),f(x))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

2.3. Fillstyle dots

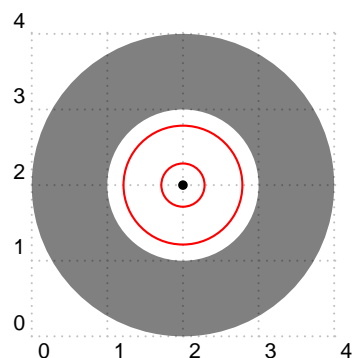
A fix for the fill style dots to make it work again:



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

2.4. New macro \psRing

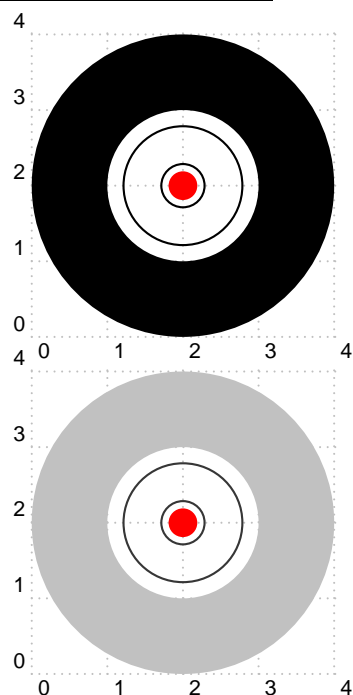
`\psRing * [Options] (x,y){Inner Radius}{Outer Radius}`



```
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}
```

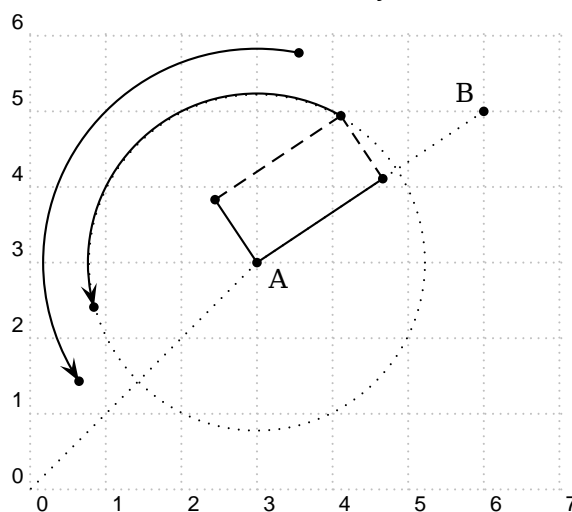
```
1 \begin{pspicture}[showgrid](4,4)
2   \pssetGrayscale%
3   \psRing[linecolor=red](2,2){0.3}{0.8}
4   \psRing*[linecolor=red!30](2,2){1}{2}
5   \psresetColor%
6   \psdot[linecolor=red,dotscale=3](2,2)
7 \end{pspicture}
```

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
- 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   \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^AT_EX Graphics Companion*. Addison-Wesley Publishing Company, Reading, Mass., 2007.
- [2] Laura E. Jackson and Herbert Voß. Die Plot-Funktionen von pst-plot. *Die T_EXnische 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_EXnische 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^AT_EX Referenz*. DANTE – lehmanns media, Heidelberg/Hamburg, 2. edition, 2010.
- [7] Herbert Voß. *PSTricks – Grafik für T_EX und L^AT_EX*. DANTE – Lehmanns Media, Heidelberg/Hamburg, 6. edition, 2010.
- [8] Herbert Voß. *L^AT_EX Quick Reference*. UIT, Cambridge/UK, 1. edition, 2011.
- [9] Herbert Voß. *PSTricks – Graphics for L^AT_EX*. UIT, Cambridge/UK, 1. edition, 2011.
- [10] Michael Wiedmann and Peter Karp. *References for T_EX and Friends*. <http://www.miwie.org/tex-refs/>, 2003.

Index

auto-pst-pdf, 3

dots, 4

Environment

 pspicture, 3

grayscale, 3

Keyvalue

 dots, 4

Keyword

 grayscale, 3

 labelsep, 3

 monochrome, 3

 pgffunctions, 3

labelsep, 3

Macro

 \psresetColor, 5

 \psRing*, 5

 \pssetGrayscale, 5

 \pssetMonochrome, 5

 \uput, 3

monochrome, 3

Package

 auto-pst-pdf, 3

pgffunctions, 3

pspicture, 3

\psresetColor, 5

\psRing*, 5

\pssetGrayscale, 5

\pssetMonochrome, 5

\uput, 3