PSTricks

News - 2013

new macros and bugfixes for the basic package pstricks

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2013

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Contents

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 (2.49c– 2013/12/27)

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.

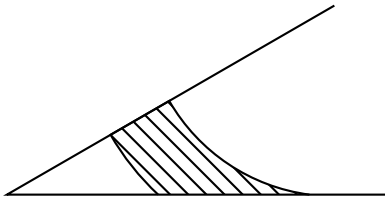
```
\begin{pspicture}[pgffunctions,...](...)(...)
```

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`:

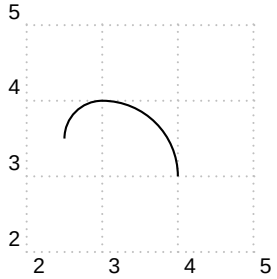


```
\begin{pspicture}(5,3)
  \pnode(5;30){A}
  \psline(A)(0,0)(5;0)
  \pscustom[fillstyle=vlines]{%
    \psarcAB(A)(0,0)(2,0)
    \reversepath
    \psarcAB(A)(0,0)(4,0)}
\end{pspicture}
```

2.3. Coordinates

Postscript mode

A preceeding `!` 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:

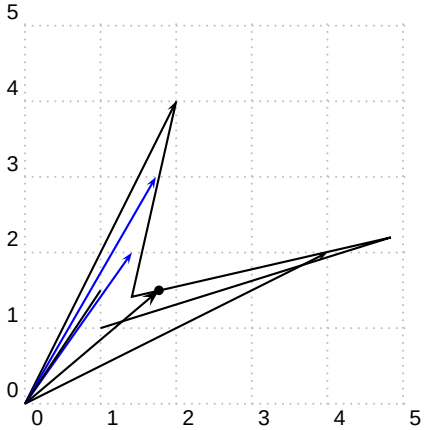



```
\begin{pspicture}[showgrid](2,2)(5,5)
\pscustom{
  \psarc(3,3){1}{0}{90}
  \rmoveto(.5;-90)
  \psarc[liftpen=2](!!CP){.5}{90}{180}}
\end{pspicture}
```

`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 noatation, 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.

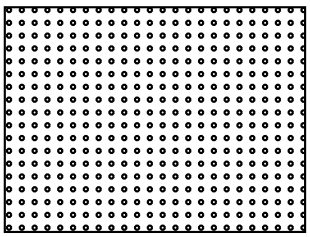



```
\def\f(#1){#1^2} \def\y{2}
\begin{pspicture}[showgrid](5,5)
\pnode(+{sqrt(Pi),1.5*(sin(x)^2+cos(x)^2)}){A}
\psdot(A) \psline[arrowscale=1.5]{->}(A)
\psline{->}(*2 {x^2}) \psline{->}(**{y^2} 2)
\psline(1,1)(**{\f(y)} 2.2)(2;45)(*2 {\f(x)})
\psline[linecolor=blue]{->}(+{sqrt(2),\f(x)})
\psline[linecolor=blue]{->}(+{sqrt(3)},{\f(x)})
\psline(+1,x+0.5)
\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 clsong delimiter for the complete coordinate argument `(...)` which then gives an error.

2.4. Fillstyle dots

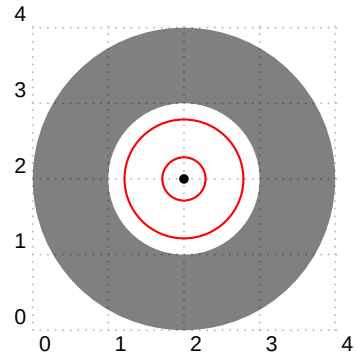
A fix for the fill style `dots` to make it work again:



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

2.5. New macro \psRing

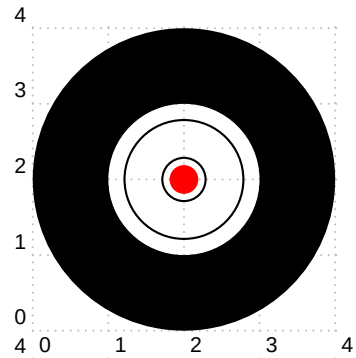
\psRing`*` `[Options]` (*x*,*y*){*Inner Radius*}{*Outer Radius*}



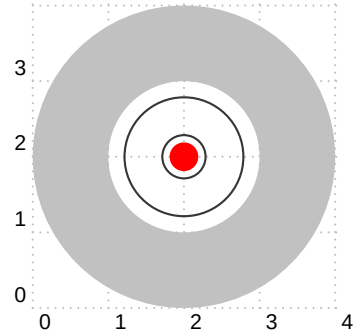

```
\begin{pspicture}[showgrid](4,4)
  \psRing[linecolor=red](2,2){0.3}{0.8}
  \psRing*[opacity=0.5](2,2){1}{2}
\psdot(2,2)
\end{pspicture}
```

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

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




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




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

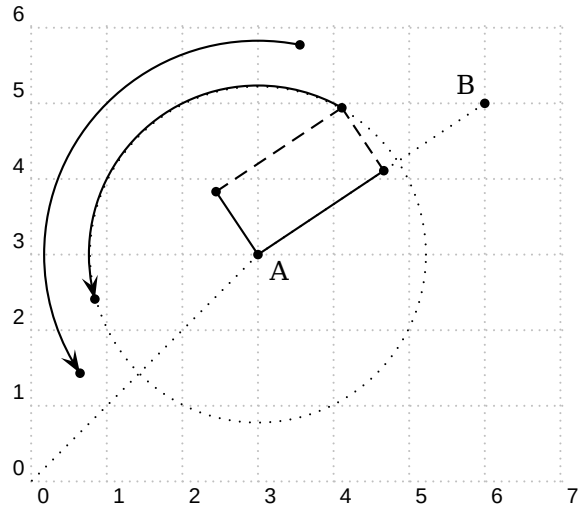
3. The PostScript header files

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
```




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

References

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[3] Nikolai G. Kollock. *PostScript richtig eingesetzt: vom Konzept zum praktischen Einsatz*. IWT, Vaterstetten, 1989.

[4] Herbert Voß. Die mathematischen Funktionen von Postscript. *Die TeXnische Komödie*, 1/02:40–47, March 2002.

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