The current state of the PSTricks project

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Abstract

PSTricks is an abbreviation for PostScript Tricks and uses the enormous graphical capabilities of the *old* programming language PostScript. It is a so-called page code language (PCL) which is distributed since 1984 by Adobe Systems. PostScript is fully Turing compatible and a stack-oriented programming language, like Forth, Hewlett Packard pocket calculators, et al. PDF is derived from PostScript, with some important extensions but without the possibility of mathematical calculations.

1 Creating graphics with PSTricks

TEX as a typesetting machine cannot make full use of the possibilities of PostScript. There cannot be a direct interaction between TEX and PostScript; it is more of a one way communication from TEX to PostScript. The interface between these two systems is the DVI converter dvips which converts the DVI output of TEX into the PostScript format. Here we use DVI output only as an intermediate format; it is not really of interest. On the TEX side the user has to reserve some space (a box) which is filled on the PostScript side with a graphic or some text. If this space is not reserved then everything will be printed over the text, depending on the current point before the PostScript-related code. This PostScript code must be transferred from TEX via the DVI output with the macro \special. Its contents are ignored by TEX and passed to PostScript where it will be executed by a PostScript interpreter such as Ghostscript or Distiller.

Figure 1 shows the important flow from the TEX source to the destination format PDF. When using a graphical user interface (GUI) for editing the TEX source one can choose the output format PDF, but has to ensure that it follows the path LATEX–dvips–ps2pdf. For three often-used GUIs, Figure 2 shows the preferences to select for this method of compiling a LATEX source document.

The first example shows the use of PostScript-related specials without reserving any space on the TEX level. In the beginning and in the end there is a named node which can be connected by a line or a curve, in this instance by a curve with an arrow and stroke opacity. It is drawn over the text; there was no space reserved on the TEX level. In examples like these it may be useful to draw directly over the main text part of the document.

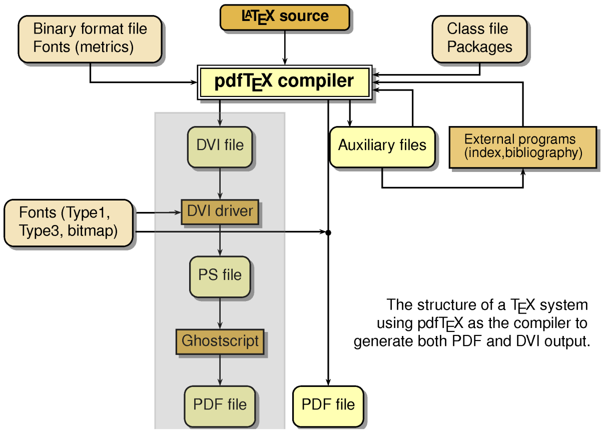
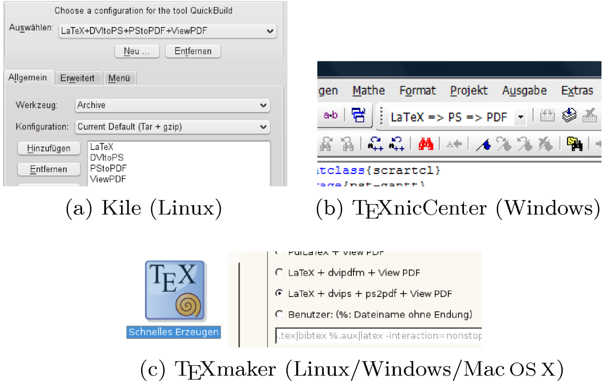


Figure 1: The shaded path shows how to generate PDF output when using PostScript code in the TEX source.



Choose a configuration for the tool QuickBuild

Auswählen: LaTeX+DVItoPS+PStoPDF+ViewPDF

Werkzeug: Archive

Konfiguration: Current Default (Tar + gzip)

LaTeX
DVItoPS
PStoPDF
ViewPDF

(a) Kile (Linux)

LaTeX => PS => PDF

```
tclass{scrartcl}
```

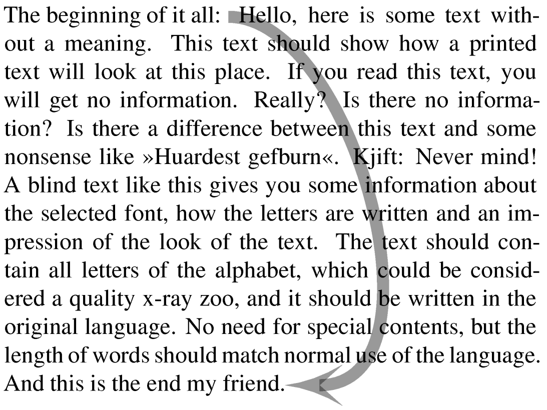
(b) TEXnicCenter (Windows)

○ PdfLaTeX + View PDF
○ LaTeX + dvipdfm + View PDF
● LaTeX + dvips + ps2pdf + View PDF
○ Benutzer: (%: Dateiname ohne Endung)

.tex|bibtex %.aux|latex -interaction=nonstop

(c) TEXmaker (Linux/Windows/Mac OS X)

Figure 2: Preferences for the destination format PDF via the intermediate format DVI.



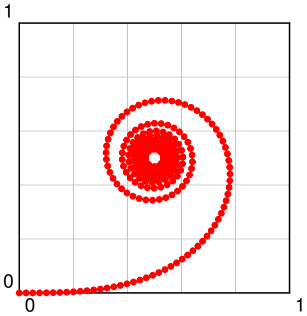
The beginning of it all: Hello, here is some text without a meaning. This text should show how a printed text will look at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like »Huardest gefburn«. Kjift: Never mind! A blind text like this gives you some information about the selected font, how the letters are written and an impression of the look of the text. The text should contain all letters of the alphabet, which could be considered a quality x-ray zoo, and it should be written in the original language. No need for special contents, but the length of words should match normal use of the language. And this is the end my friend.

```
\usepackage{blindtext,pst-node}
\SpecialCoor
\rnode{A}{The beginning of it all: }
\blindtext \rnode{E}{ And this is
the end my friend.}
\nccurve[linewidth=5pt,strokeopacity=0.4,
  ncurvB=0.9,arrowscale=1.5,arrows=-D>]{A}{E}
```

The advantage of PSTricks in comparison to METAPOST or Ti*k*Z is the possibility of using all features of a powerful programming language with very good support for graphic operations. This is the reason why *any* calculation with mathematical functions or large external data sets can be done before the output is printed. Solving a differential equation on the fly is as possible as drawing three-dimensional solids with hidden lines and surfaces; everything is done on the PostScript side. In the TEX or LATEX source one has only to define the space of the box and to describe the code with TEX or LATEX macros which are then passed as specials to PostScript. The next example shows the output of the solution of the differential equation system of first order:

$$\dot{x} = \cos\frac{\pi}{2}\cdot x^2 \tag{1}$$

$$\dot{y} = \sin\frac{\pi}{2}\cdot x^2 \tag{2}$$



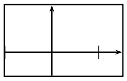
```
\usepackage{pstricks-add}
\psset{unit=5}
\begin{pspicture}(-0.04,-0.04)(1,1)
\psgrid[subgriddiv=5,subgridcolor=lightgray]
\psplotDiffEqn[whichabs=0,whichord=1,linecolor=red,
  method=rk4,algebraic,plotpoints=400,
  showpoints=true]{0}{10}{0 0}%
   {cos(Pi*x^2/2)|sin(Pi*x^2/2)}
\end{pspicture}
```

The parameters (coordinates) of the environment pspicture have a different meaning for TEX and PostScript; for TEX they define width and height of the box which has its lower left side at the current point in TEX. When there is no shift defined, then the lower side of this box is always on the baseline of the current text line. It is for TEX just the same as a box for a single letter. TEX needs the coordinates only for its formatting; what will be inserted later into this box is not of interest to TEX.

For PostScript the coordinates define a two-dimensional area with the lower left and upper right corner of the rectangle. The origin of this cartesian coordinate system may be inside or outside of this rectangle; it depends on the values of the coordinates.

An example: begin{pspicture}(-1,-2)(4,4) defines for TEX a box with a width of five length units $(4-(-1))$ and a height of six length units $(4-(-2))$. For PostScript the origin of this box is one length unit to the right and two length units up, measured from the current point, which is the lower left of the TEX box.

The next example defines, on the TEX level, a box with a width and height of 2.5 cm×1.5 cm.

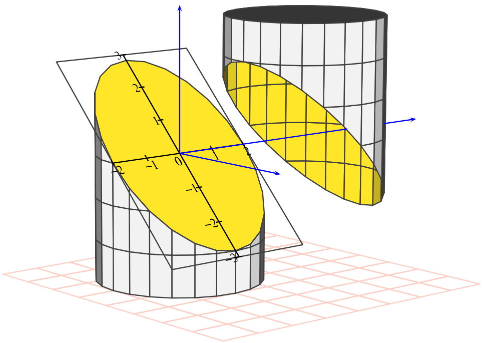
The box with a reserved space of 2,5cm×1,5cm is by definition with its lower left side at the current point. The lower side is on the baseline, which can easily be seen on the this box:  its internal origin maybe somewhere, also outside this box. In this example the origin is at (1,0.5) units, measured from the lower left corner of the box.

```
\usepackage{pstricks,pst-plot}
\raggedright The box with a reserved space
of 2,5cm$\cdot$1,5cm is by definition with
its lower left side at the current point.
The lower side is on the baseline, which
can easily be seen on the this box:
\psframebox[framesep=0]{%
\begin{pspicture}(-1,-0.5)(1.5,1)
 \psaxes[labels=none]{->}(0,0)(-1,-0.5)(1.5,1)
\end{pspicture}}
its internal origin maybe somewhere, also
outside this box. In this example the origin
is at \texttt{(1,0.5)} units, measured from
the lower left corner of the box.
```

There are several optional arguments for the main environment pspicture:

```
\pspicture * [Options] (xMin,yMin)(xMax,yMax)
   ...
\endpspicture
\pspicture * [Options] (xMax,yMax)
   ...
\endpspicture
\begin{pspicture * } [Options] (xMin,yMin)(xMax,yMax)
   ...
\end{pspicture * }
\begin{pspicture * } [Options] (xMax,yMax)
   ...
\end{pspicture * }
```

Another main focus of PSTricks is three-dimensional graphic objects, with support for the hidden line algorithm for lines and surfaces. The powerful package pst-solides3d allows combining any three-dimensional solid, given by coordinates or a mathematical expression. The following example shows the book cover image from [2], a cylindrical object divided by a plane into two parts, one of which is moved and rotated.



```
\usepackage[dvipsnames]{pstricks}
\usepackage{pst-solides3d}

\begin{pspicture}[solidmemory](-4,-5)(7,4)
\psset{viewpoint=50 -40 10 rtp2xyz,Decran=50,
  linecolor=darkgray,lightsrc=viewpoint}
\psSolid[object=grille,action=draw,base=-3 5 -3 5,
  linecolor=Salmon!40](0,0,-3)
\psSolid[object=cylindre,r=2,h=6,ngrid=6 24,
  plansepare={[0.707 0 0.707 0]},name=Zylinder,
  action=none](0,0,-3)
\psSolid[object=load,load=Zylinder1,
  fillcolor=black!5,fcol=0 (Goldenrod)]
\psSolid[object=load,load=Zylinder0,RotZ=90,
  fillcolor=black!5,rm=0,hollow,incolor=Goldenrod](0,4,0)
\psSolid[object=plan,action=draw,definition=equation,
   args={[0.707 0 0.707 0] 90},base=-2 2 -3 3,planmarks]
\psSolid[object=line,args=0 0 0 0 5.5 0,
  linecolor=blue]% first half of y axis
\color{white}\axesIIID[showOrigin=false,
  linecolor=blue](0,6.8,0)(3.5,8,3.5)
\end{pspicture}
```

2 PSTricks project background

The first version of the main package pstricks, written by Timothy Van Zandt and published nearly 20 years ago, is still the base package for the so-called PSTricks project. A list of all additional packages published since 1991 appears at the PSTricks web page http://PSTricks.tug.org. In [1] and especially [2] the packages are described and shown with a lot of examples. Here, we will list the packages with only one significant example, to give a glimpse at what the package provides. More examples or some more information can be found on the PSTricks web page (http://PSTricks.tug.org), CTAN (http://mirrors.ctan.org), or your local TEX distribution's documentation, e. g., using the texdoc program.

All PSTricks packages load by default the main package pstricks, which itself loads the package xcolor, which has a better support for colors than the package color.

3 PSTricks and PDF

Figure 1 showed the different ways of generating PDF output from (LA)TEX source. With PSTricks, only the part in grey can be used to generate a PDF. Unless you are using the package microtype there will be no difference between a PDF generated in the PSTricks way with latex and one directly generated with pdflatex. When using a graphical user interface, e. g. Kile for Linux, TeXShop for Mac OS X, or TEXnicCenter for Windows, it is only one mouse click to generate the PDF output. The intermediate DVI and PostScript files are only temporaries, and can be deleted after generating the PDF.

The remaining sections describe several ways of using PSTricks-related code within a document whose final version will be compiled with pdflatex, which supports inclusion of images in PDF, PNG, and JPG formats, as well as the microtype package for optimized text formatting.

3.1 dvips and ps2pdf

If your PSTricks figure is created by a (LA)TEX file separate from your main document, say fig.tex, you can process it independently. First run tex or latex on fig.tex to create fig.dvi; then dvips fig.dvi to create fig.ps; and finally ps2pdf fig.ps (or another distiller program) to create fig.pdf. Then your main document can include fig.pdf like any PDF graphic.

3.2 pst2pdf

This is a Perl script to be used instead of the pdflatex command. This way of creating PDF output is the best choice when all graphics are needed as external images.

The script extracts all pspicture and postscript environments from the main text body and then runs these code snippets with the same preamble as the main document. The PDF output from each of these single documents is then cropped to get rid of the white space around the figure and also converted into EPS and (on Linux only) PNG formats.

After producing all PostScript-related code as a single image, saved in a default subdirectory images/, the script pst2pdf runs the source one last time with pdflatex and replaces all PostScript code with the previously created image.

The script has several optional arguments which are described with their defaults at the beginning of the script.

3.3 pst-pdf and ps4pdf

This package from Rolf Niepraschk allows the cutting of the pspicture or postscript environments from the created DVI file into a new file *-pics.ps, which then is converted into a file `*-pics.pdf`. Every image will be on one page and the size of the image is taken from the `pspicture` coordinates or from the bounding box for a `postscript` environment. In a last `pdflatex` run the `PDF` images are inserted instead of the PostScript-related code. There are four steps needed:

1. `latex FILE`
2. `dvips -Ppdf -o FILE-pics.ps FILE.dvi`
3. `ps2pdf -dAutoRotatePages=/None \`
   `FILE-pics.ps FILE-pics.pdf`
4. `pdflatex FILE`

Alternatively, one can use the script `ps4pdf` to perform these steps. The script is part of any TeX distribution, and also available on CTAN. There are also some profiles for use from GUI programs, also available on CTAN (`http://mirror.ctan.org/graphics/pstricks/pst-support/`).

3.4 `auto-pst-pdf`

This package from Will Robertson works in the same way as `pst-pdf`, but it doesn't need a script or the four runs by the user. Everything is done in a single `pdflatex` run, and therefore you must allow execution of external programs from within `pdflatex`: the `shell-escape` option for TeX Live or `enable-write18` for MiKTeX. Some GUI profiles are available from CTAN (`http://mirror.ctan.org/graphics/pstricks/pst-support/`).

3.5 `pdftricks`

This package from Radhakrishnan CV, Rajagopal CV, and Antoine Chambert-Loir was the first one to support PostScript-related code with `pdflatex`. It works in a similar way as `pst-pdf`, but it needs additional code in the preamble to separate the PostScript part from the `PDF` part. More information is available from CTAN, or by running `texdoc pdftricks`.

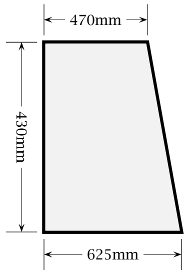
References

[1] Frank Mittelbach, Michel Goosens, Sebastian Rahtz, Denis Roegel, and Herbert Voß. *The LaTeX Graphics Companion*. Addison-Wesley Publishing Company, Boston, second edition, 2006.

[2] Herbert Voß. *PSTricks – Grafik für TeX und LaTeX*. DANTE – Lehmanns, Heidelberg/Hamburg, fifth edition, 2008.

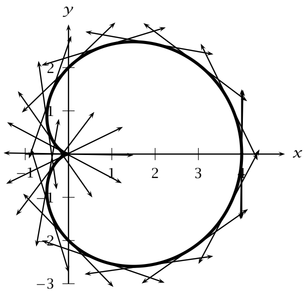
◇ Herbert Voß
DANTE e.V.
`http://PSTricks.tug.org`

`pstricks`: Main package with the base macros for lines, curves, areas, etc.



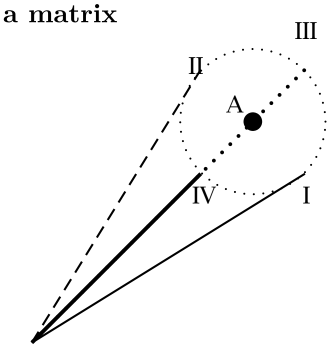
```
\usepackage{pstricks}

\psset{unit=0.05mm}% 1:20,or=0.1mm for 1:10
\begin{pspicture}(-100,-100)(1000,650)
  \pspolygon[linewidth=2pt,fillcolor=gray!10,
    fillstyle=solid](0,0)(0,470)(860,625)(860,0)
  \psset{linewidth=0.2pt,arrowscale=2,tbarsize=10pt}
  \psline{|<->|}(0,-100)(860,-100)
  \rput*(430,-100){430mm}
  \psline{|<->|}(960,0)(960,625)
  \rput*{90}(960,312.5){625mm}
  \psline{|<->|}(-100,0)(-100,470)
  \rput*{90}(-100,235){470mm}
\end{pspicture}
```

`pstricks-add`: Extended base macros for the packages `pstricks`, `pst-node`, and `pst-plot`



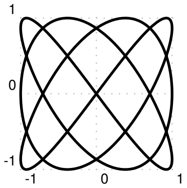
```
\usepackage{pstricks-add}
\usepackage{multido}

\psscalebox{0.75}{%
\begin{pspicture}(-1,-3)(4.75,3)
 \psaxes{->}(0,0)(-1,-3)(5,3)
 \psplot[polarplot,linewidth=2pt,algebraic,
   plotpoints=500]{0}{6.289}{2*(1+cos(x))}
 \multido{\r=0.000+0.314}{21}{ %
   \psplotTangent[polarplot,Derive=-2*sin(x),
     algebraic,arrows=<->]{\r}{1.5}{2*(1+cos(x))}}
\end{pspicture}}
```

`pst-node`: Nodes and node connections in text and a matrix



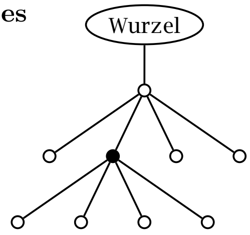
```
\usepackage{pst-node} \SpecialCoor
\begin{Example}[ltxps]{\xLcs{pnode}\xLcs{uput}}
\begin{pspicture}(4,4)
  \pnode(3,3){A}\psdot[dotscale=2](A)\uput[135](A){A}
  \pscircle[linestyle=dotted](A){1}
  \psline([nodesep=1,angle=-45]A)\uput[0](3.5,2){I}
  \psline[linestyle=dashed]([nodesep=-1,angle=-45]A)
  \uput[-45](2,4){II}
  \psline[linestyle=dotted,linewidth=1.5pt]%
    ([offset=1,angle=-45]A)\uput[-225](4,4){III}
  \psline[linewidth=1.5pt]([offset=1,angle=135]A)
  \uput[0](2,2){IV} \nccurve{->}{A}{0,0}
\end{pspicture}
```

`pst-plot`: Plotting of mathematical functions or external data sets



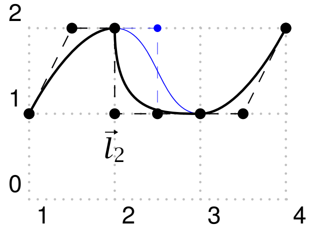
```
\usepackage{pst-plot}
\psset{xunit=1.5cm,yunit=1.5cm}
\begin{pspicture}[showgrid=true](-1.1,-1.1)(1.1,1.1)
\psparametricplot[plotstyle=curve,linewidth=1.5pt,
  plotpoints=200]{-360}{360}%
  {t 1.5 mul sin t 2 mul 60 add sin}
\end{pspicture}
```

`pst-tree`: Trees



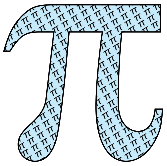
```
\usepackage{pst-tree}
\pstree[levelsep=1cm,radius=3pt]{\Toval{Wurzel}}{%
  \pstree{\TC}{%
    \TC
    \pstree{\TC*}{\TC\TC\TC\TC}%
    \TC\TC}}
```

`pst-bezier`: Bézier curves



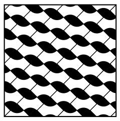
```
\usepackage{pst-bezier}
\pspicture[showgrid=true](5,3)\psset{showpoints=true}
\psbcurve[linecolor=blue,linewidth=0.01](1,1)%
  (2,2)(3,1)(4,2)
\psbcurve(1,1)(2,2)l(2,1)(3,1)(4,2)
\uput[-90](2,1){$\vec{l}_{2}$}
\endpspicture
```

`pst-text`: Character and text manipulation



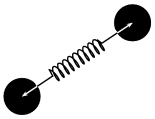
```
\usepackage{pst-text}
\usepackage[tiling]{pst-fill}
\DeclareFixedFont{\ps}{U}{psy}{m}{n}{8cm}
\psboxfill{\footnotesize$\pi$}
\begin{pspicture}(0,0)(.25\linewidth,8)
\pscharpath[fillstyle=solid,
   fillcolor=cyan!20,
   addfillstyle=boxfill,fillangle=30,
   fillsep=0.6mm]{%
     \rput[b](-0.5,0){\ps\char112}}
\end{pspicture}
```

`pst-fill`: Filling and tiling



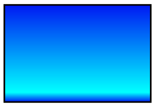
```
\usepackage[tiling]{pst-fill}
\newcommand\FArcW{%
  \begin{pspicture}(-0.25,-0.25)(0.25,0.25)%
    \pswedge*(-0.25,-0.25){0.25}{0}{90}
    \pswedge*(0.25,0.25){0.25}{180}{270}
    \psframe[linewidth=0.1pt]%
      (-0.25,-0.25)(0.25,0.25)
  \end{pspicture}}
\begin{pspicture}(3.1,3.1)
\psboxfill{\FArcLW}
\psframe[fillstyle=boxfill,fillcyclex=2,
  fillangle=45](3,3)
\end{pspicture}
```

pst-coil: Coils and zigzag lines



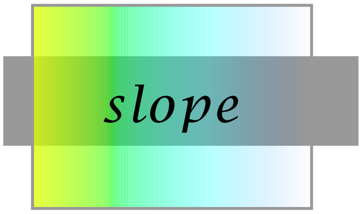
```
\usepackage{pst-node,pst-coil}
\SpecialCoor

\begin{pspicture}(4,3)
\cnode*(0.5,0.5){0.5}{A}
\cnode*(3.5,2.5){0.5}{B}
\pccoil[coilwidth=0.4,
  coilaspect=35,coilheight=0.5,
  linecolor=white]{<->}(A)(B)
\nccoil[coilwidth=0.4,coilaspect=35,
  coilheight=0.5]{A}{B}
\end{pspicture}
```

pst-grad: Color gradients



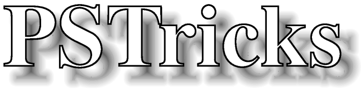
```
\usepackage{pst-grad}

\begin{pspicture}(3,2.25)
\psframe[fillstyle=gradient](3,2)
\end{pspicture}
```

pst-slpe: Extended color gradients



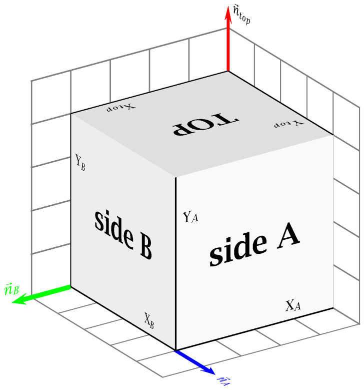
```
\usepackage{pst-slpe}
\def\st#1{\makebox[2.75cm]{$\vcenter to55pt{}#1$}}

\begin{pspicture}(2.5,2.5)
 \psset{fading,endfading=0.75,linecolor=black!40}
 \psframe*(-0.3,-0.25)(3.5,20pt)
 \psframebox[fillstyle=slope]{\LARGE\st{slope}}
\end{pspicture}
```

pst-blur: Shadows



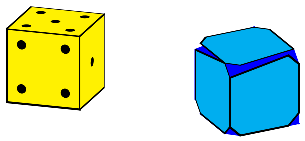
```
\usepackage{pst-blur,pst-text}
\DeclareFixedFont{\RM}{T1}{ptm}{b}{n}{1.75cm}

\psset{shadow=true,blur=true,shadowsize=10pt,
  blurradius=5pt}
\pscharpath{\RM PSTricks}
```

pst-3d: Basic macros for tilting and three dimensional objects



```
\usepackage{pst-3d}

\begin{pspicture}(-4.5,-3)(3,4.75)
\psset{viewpoint=1 1.5 0.8}
{\psset{gridlabels=0pt,subgriddiv=0,gridcolor=black!50}
\ThreeDput[normal=0 0 1]{\psgrid(5,5)}
\ThreeDput[normal=0 -1 0]{\psgrid(5,5)}
\ThreeDput[normal=1 0 0]{\psgrid(5,5)}}
\ThreeDput[normal=0 0 1]{%
  \psline[linewidth=3pt,linecolor=blue]{->}(4,4)(4,5.5)
  \uput[90](4,5.5){%
    \psrotateleft{\textcolor{blue}{$\vec{n}_A$}}}}%$%xy
\ThreeDput[normal=0 -1 0]{%
  \psline[linewidth=3pt,linecolor=green]{->}(4,0)(5.5,0)
  \uput[90](5.5,0){\psscalebox{-1 1}{%
    \textcolor{green}{$\vec{n}_B$}}}}%$%xz
\ThreeDput[normal=1 0 0]{%
  \psline[linewidth=3pt,linecolor=red]{->}(0,4)(0,5.5)
  \uput[0](0,5.5){$\vec{n}_{top}$}} %yz
\ThreeDput[normal=0 0 1](0,0,4){%
  \psframe*[linecolor=gray!25](4,4)
  \rput(2,2){\Huge\textbf{TOP}}}
\ThreeDput[normal=0 1 0](4,4,0){%
  \psframe*[linecolor=gray!5](4,4)
  \rput(2,2){\Huge\textbf{side A}}}
\ThreeDput[normal=1 0 0](4,0,0){%
  \psframe*[linecolor=gray!15](4,4)
  \rput(2,2){\Huge\textbf{side B}}}
% Die kleinen Achsen
\ThreeDput[normal=0 0 1](0,0,4){%
  \psline(4,0)\uput[90](3,0){X$_{top}$}
  \psline(0,4)\uput[0](0,3){Y$_{top}$}}
\ThreeDput[normal=0 1 0](4,4,0){%
  \psline(4,0)\uput[90](3,0){X$_{A}$}
  \psline(0,4)\uput[0](0,3){Y$_{A}$}}
\ThreeDput[normal=1 0 0](4,0,0){%
  \psline(4,0)\uput[90](3,0){X$_{B}$}
  \psline(0,4)\uput[0](0,3){Y$_{B}$}}
\end{pspicture}
```

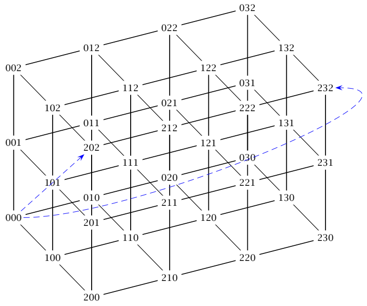
pst-ob3d: Simple three dimensional objects



```
\usepackage{pst-ob3d}\SpecialCoor
```

```
\begin{pspicture}(-1,-0.5)(3,1.7)
\psset{fillstyle=solid,fillcolor=yellow,RandomFaces=true}
\PstDie[viewpoint=1 -3 1]
\rput(1.5,0){\PstCube[Corners=true,CornersColor=blue,
  fillstyle=solid,fillcolor=cyan,viewpoint=1 2 1]
  {1}{1}{1}}
\end{pspicture}
```

pst-gr3d: Simple three dimensional grids



```
\usepackage{pst-gr3d,pst-node,multido}\SpecialCoor
```

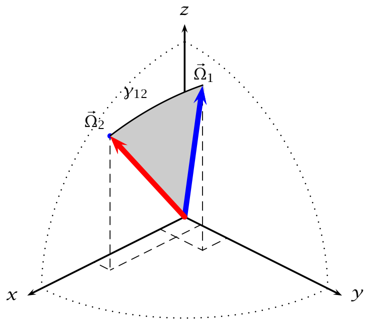
```
\psscalebox{0.5}{\footnotesize
\PstGridThreeD[GridThreeDNodes,unit=2.5](2,3,2)
\multido{\ix=0+1}{3}{%
  \multido{\iy=0+1}{4}{%
    \multido{\iz=0+1}{3}{%
      \rput*(Gr3dNode\ix\iy\iz){$\ix\iy\iz$}}}}
\psset{linecolor=blue,linestyle=dashed,
  linewidth=0.3pt,arrowscale=2,nodesep=8pt}
\pcline{->}(Gr3dNode000)(Gr3dNode202)
\pccurve{->}(Gr3dNode000)(Gr3dNode232)}
```

pst-fr3d: Three dimensional buttons

```
\usepackage{pst-fr3d}
```

```
\PstFrameBoxThreeD
  [FrameBoxThreeDOn=false]
  {\Large Off}
\quad
\PstFrameBoxThreeD{\Large On}% default
```

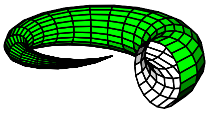
pst-3dplot: Three dimensional graphic objects in parallel projection



```
\usepackage{pst-3dplot}
\def\oA{\pstThreeDLine[linecolor=blue,linewidth=3pt,
  arrows=c-> ](0,0,0)(1,60,70)}
\def\oB{\pstThreeDLine[linecolor=red,linewidth=3pt,
  arrows=c->](0,0,0)(1,10,50)}
\def\oAB{\pstThreeDEllipse[beginAngle=58,
  endAngle=90](0,0,0)(1,140,40)(1,10,50)}
```

```
\begin{pspicture}(-4.8,-1.75)(4.8,3.75)
\psset{unit=4cm,drawCoor,beginAngle=90,endAngle=180,
  linestyle=dotted}
\pstThreeDCoor[drawing,linewidth=1pt,linecolor=black,
  linestyle=solid,xMin=0,xMax=1.1,yMin=0,yMax=1.1,
  zMin=0,zMax=1.1]
\pstThreeDEllipse(0,0,0)(-1,0,0)(0,1,0)
\pstThreeDEllipse(0,0,0)(-1,0,0)(0,0,1)
\pstThreeDEllipse[beginAngle=0,
  endAngle=90](0,0,0)(0,0,1)(0,1,0)
\psset{SphericalCoor,linestyle=solid}
\pstThreeDDot[dotstyle=none](1,10,50)
\pstThreeDDot[dotstyle=none](1,60,70)
\pscustom[fillstyle=solid,fillcolor=black!20,
  linestyle=none]{\oB\oAB\oA} \oA\oB\oAB
\pstThreeDPut[origin=lb](1.1,60,70){$\vec\Omega_1$}
\pstThreeDPut[origin=rb](1.2,10,50){$\vec\Omega_2$}
\pstThreeDPut[origin=lb](1,10,65){$\gamma_{12}$}
\end{pspicture}
```

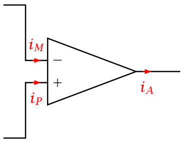
pst-solides3d: Three dimensional graphic objects in central projection



```
\usepackage{pst-solides3d}
```

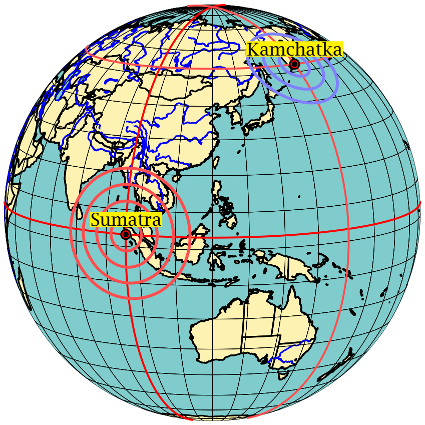
```
\psset{viewpoint=100 50 20 rtp2xyz,
  Decran=60,lightsrc=10 15 10}
\defFunction[algebraic]{corne}(u,v)%
  {(2 + u*cos(v))*sin(2*pi*u)}%
  {(2 + u*cos(v))*cos(2*pi*u)+2*u}%
  {u *sin(v)}
\begin{pspicture}(-2,-2)(2,2)
\psSolid[object=surfaceparametree,
  base=0 1 0 2 pi mul,
  function=corne,ngrid=20]
\end{pspicture}
```

`pst-circ`: Electronic and microelectronic electrical circuits



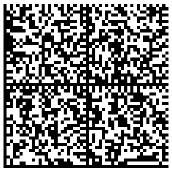
```
\usepackage{pst-circ}

\begin{pspicture}(4,3.5)
\pnode(0,3){A}\pnode(0,0){B}
\pnode(4,1.5){C}
\OA[OAperfect=false,OAiplus,
  OAiminus,OAiout,
  OAipluslabel=$i_P$,
  OAiminuslabel=$i_M$,
  OAioutlabel=$i_A$,
  intensitycolor=red,
  intensitylabelcolor=red](A)(B)(C)
\end{pspicture}
```

`pst-geo`: Two and three dimensional geographical objects



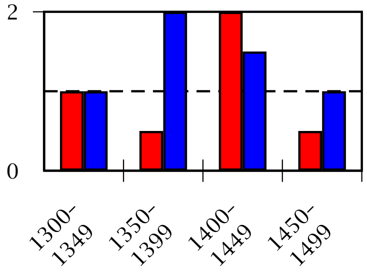
```
\usepackage{pst-map3d}

\psset{unit=0.75,Radius=5,Dobs=200,Decran=200,
  path=data/pstricks,PHI=10,THETA=120,circlewidth=1.5pt}
\begin{pspicture}(-5,-5)(5,5)
\WorldMapThreeD[circles=false,australia=true]
\psmeridien{95.98} \psparallel{3.30}
\psepicenter[circlecolor=red!70,waves=4,
  Rmax=2000](95.98,3.30){Sumatra}
\psmeridien[meridiencolor=red!70]{160}
\psparallel[parallelcolor=red!70]{52.76}
\psepicenter[circlecolor=blue!50](160,52.76){Kamchatka}
\end{pspicture}
```

`pst-barcode`: Barcodes



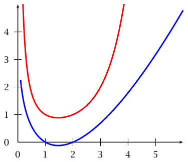
```
\usepackage{pst-barcode}

\begin{pspicture}(1in,1in)
\psbarcode{%
  Herbert Voss Wagenstraße 21 14129 Berlin
  http://www.dante.de/}%
  {rows=52 columns=52}{datamatrix}
\end{pspicture}
```

`pst-bar`: Bar diagrams



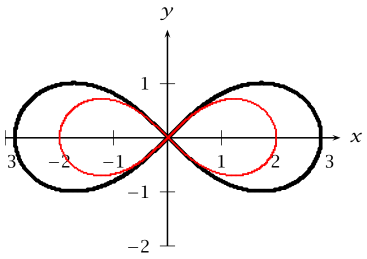
```
\usepackage{pst-plot,pst-bar}
\begin{filecontents*}{data1T.csv}
1300--1349, 1350--1399, 1400--1449, 1450--1499
1, 0.5, 2, 0.5
1, 2, 1.5, 1
\end{filecontents*}

\readpsbardata{\data}{data1T.csv}
\begin{pspicture}(-0.5,-2)(4,2)\footnotesize
\psline[linestyle=dashed](0,1)(4,1)
\psaxes[axesstyle=frame,Dy=2,labels=y](0,0)(4,2)
\psbarchart[barstyle={red,blue},barlabelrot=45,
  chartstyle=cluster]{\data}
\end{pspicture}
```

`pst-math`: Extended PostScript functions



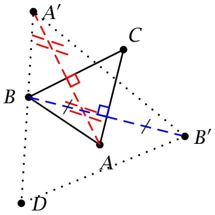
```
\usepackage{pst-plot,pst-math}

\begin{pspicture*}(-0.75,-.75)(6,5)
 \psaxes{->}(6,5)
 \psset{linewidth=1.5pt,
   plotpoints=200}
 \psplot{.1}{6}{x GAMMA}
 \psplot{.1}{6}{x GAMMALN}
\end{pspicture*}
```

`pst-func`: Special mathematical functions: polynomials, distributions, implicit, etc.



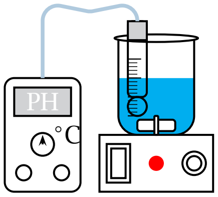
```
\usepackage{pst-func,pstricks-add}
\begin{pspicture*}(-3,-2.2)(3.6,2.5)
\psaxes{->}(0,0)(-3,-2)(3.2,2)[$x$,0][$y$,90]
\psplotImp[linewidth=2pt,algebraic](-5,-2.2)(5,2.4){%
  (x^2+y^2)^2-8*(x^2-y^2)}
\rput*(2,1.5){$\left(x^2+y^2\right)^2-8(x^2-y^2)=0$}
\psplotImp[linewidth=1pt,linecolor=red,
  algebraic](-5,-2.2)(5,2.4){(x^2+y^2)^2-4*(x^2-y^2)}
\end{pspicture*}
```

pst-eucl: Euclidean geometry



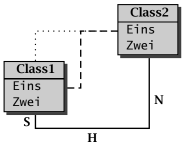
```
\usepackage{pst-eucl}
\psset{unit=0.4}%
\begin{pspicture}(0,-2)(8,7)
\pstTriangle(1,3){B}(5,5){C}
            (4,1){A}
\pstOrtSym{A}{B}{C}[D]
\psset{CodeFig=true}
\pstOrtSym[CodeFigColor=red]
          {C}{B}{A}
\pstOrtSym[SegmentSymbol=pstslash,
  dotsep=3mm,linestyle=dotted,
  CodeFigColor=blue]{C}{A}{B}
\pspolygon[linestyle=dotted,
  linewidth=1pt](A')(B')(D)
\end{pspicture}
```

pst-labo: Chemical objects



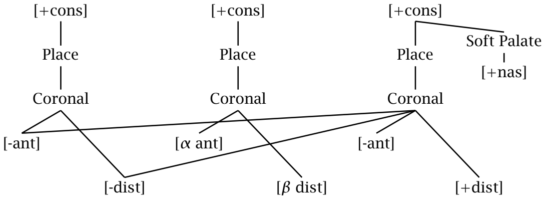
```
\usepackage{pst-labo}

\psset{unit=0.5cm,
  glassType=becher,
  burette=false}
\pstDosage[phmetre]
```

pst-uml: UML diagrams



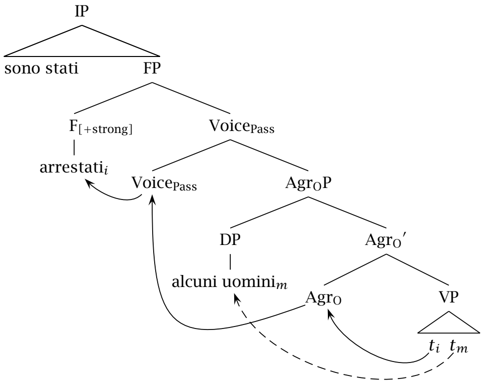
```
\usepackage{pst-uml}
\begin{pspicture}(5,4)
\rput(1,1.5){\rnode{A}{%
  \umlClass{Class1}{Eins\\Zwei}}}
\rput(4,3){\rnode{B}{%
  \umlClass{Class2}{Eins\\Zwei}}}
\end{pspicture}
\psset{linewidth=1pt}%
\ncNE[linestyle=dotted]{A}{B}
\ncEVE[linestyle=dashed]{A}{B}
\ncSHN{A}{B}\nbput[npos=0.5]
      {\textbf{S}}
\nbput[npos=1.5]{\textbf{H}}
\nbput[npos=2.5]{\textbf{N}}
```

pst-asr: Autosegmental representations for linguistics



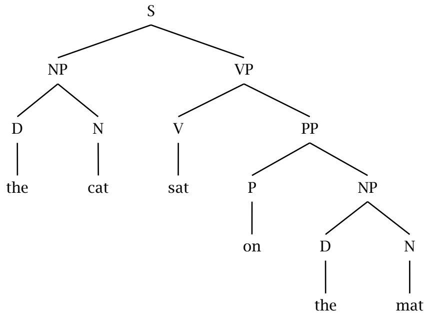
```
\usepackage{pst-asr}
\newpsstyle{dotted}{linestyle=dotted,
  linewidth=1.2pt,dotsep=1.6pt}
\newpsstyle{crossing}{xed=true,
  xedtype=\xedcirc,style=dotted}
\newpsstyle{dotted}{linestyle=dotted,
  linewidth=1.2pt,dotsep=1.6pt}
\newpsstyle{crossing}{xed=true,xedtype=\xedcirc,
                      style=dotted}
\newtier{softpal,ant,dist,nasal} \tiershortcuts
\psset{xgap=1.5in,yunit=3em,ts=0 (Pg),sy=1 ([),
  ph=-1 (Cg),softpal=.3 (Sg),nasal=-.4 ([),ant=-2 ([),
  dist=-3 ([),tssym=Place,sysym=\textrm{[+cons]},
  everyph=Coronal}
\DefList{\softpalA{2.5},\antoffset{-.22},
  \distoffset{.36}} \quad \asr \1{}\1{}\1{}|
\@(\softpalA,softpal){Soft Palate} \-(2,sy)
\@(\softpalA,nasal){\textrm{[+nas]}}
  \-(\softpalA,softpal) % ant features
\@(\antoffset,ant){\textrm{[-ant]}} \-(0,ph)
  \-[style=crossing](2,ph)
\@[1](\antoffset,ant){\textrm{[$\alpha$ ant]}} \-(1,ph)
\@[2](\antoffset,ant){\textrm{[-ant]}} \-(2,ph)
\@(\distoffset,dist){\textrm{[-dist]}} \-(0,ph)
  \-[style=crossing](2,ph)
\@[1](\distoffset,dist){\textrm{[$\beta$ dist]}} \-(1,ph)
\@[2](\distoffset,dist){\textrm{[+dist]}} \-(2,ph)
|\endasr
```

pst-jtree: Linguistic trees



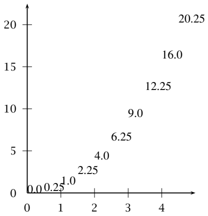
```
\usepackage{pst-jtree}
\jtree[xunit=5em,yunit=2em]
\! = {IP}
  <tri>{\triline{sono stati\hfil}}
  ^<tri>[triratio=.95]{FP}
  :{F$_{\rlap{$\scriptstyle\rm
    [+strong]$}}$}!a {Voice$_{%
      \rlap{$\scriptstyle\rm Pass$}}$}
  :{Voice\rlap{$_{\rm Pass}$}}@A2 {$\rm Agr_OP$}
  :{DP}!b {${\rm Agr_O}'$}
  :[scaleby=.8 1]{$\rm Agr_O$}@A3 [scaleby=.8 1]{VP}
  <tri>[scaleby=.4 .7]{\rnode{A5}{$t_i$}
    \hskip1ex \rnode{A6}{$t_m$}}.
\!a = <shortvert>{arrestati$_i$}@A1 .
\!b = <shortvert>{alcuni uomini$_m$}@A4 .
\psset{arrows=->}
\nccurve[angleA=225,angleB=-45]{A2}{A1}
\nccurve[angleA=200,angleB=-90,ncurv=1.5]{A3}{A2}
\nccurve[angleA=-130,angleB=-70]{A5}{A3}
\nccurve[angleA=-130,angleB=-70,
  linestyle=dashed]{A6}{A4}
\endjtree
```

`pst-qtree`: A `qtree`-like interface for drawing trees



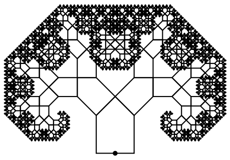
```
\usepackage{pst-qtree}

\begin{Example}[ltxps]{\xLcs[pst-qtree]{Tree}}
\Tree
  [.S [.NP [.D the ] [.N cat ]
  ] [.VP [.V sat ] [.PP [.P on ]
    [.NP [.D the ] [.N mat ] ] ] ] ]
```

`infix-RPN`: Converting an algebraic expression (infix) to a PostScript expression (postfix)



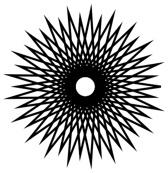
```
\usepackage{infix-RPN,pst-func,
  multido}
\SpecialCoor

\psset{yunit=0.25}
\begin{pspicture}(-0.25,-2)(5,22.5)
\infixtoRPN{x*x}
\multido{\rx=0.0+0.5}{10}{%
  \rput(!/x \rx\space def
  \RPN\space x exch ){%
    \psPrintValue{\RPN}}}
\psaxes[dy=5,Dy=5]{->}(5,22.5)
\end{pspicture}
```

`pst-fractal`: Fractals



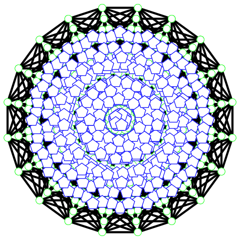
```
\usepackage{pst-fractal}

\begin{pspicture}(-3,0)(3,4)
  \psPTree\psdot*(0,0)
\end{pspicture}
```

`pst-poly`: Polygons



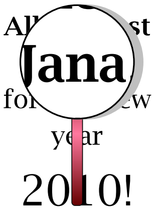
```
\usepackage{pst-poly}

\PstPolygon[PolyNbSides=21,
  PolyOffset=2,
  PolyIntermediatePoint=-0.9]
```

`pst-coxeterp`: Regular polytopes



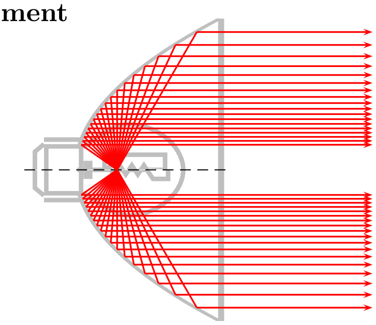
```
\usepackage{pst-coxeterp}

\begin{pspicture}(-2,-2)(2,2)
\psset{unit=0.4cm,
  colorCenters=blue,
  styleCenters=pentagon,
  sizeCenters=0.2}
\gammapn[P=5,dimension=4]
\end{pspicture}
```

`pst-lens`: Lens magnification



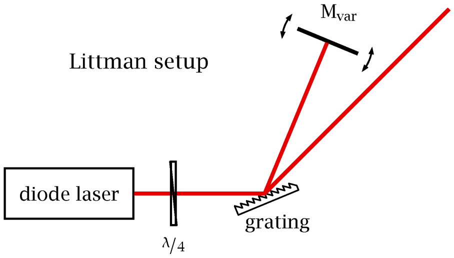
```
\usepackage{pst-lens}

\def\Wishes{{%
  \rput[lb](0,0){%
    \Large\begin{minipage}{3cm}
      \centering
      \textbf{All the best}\\
        \textbf{Jana},\\
          for the new year\\\Huge 2010!
    \end{minipage}}}}
    \begin{pspicture}(0,-1.5)(3,4)
  \Wishes\PstLens[LensMagnification=2]%
    (1.5,2.5){\Wishes}
\end{pspicture}
```

`pst-optic`: Two dimensional optical arrangement



```
\usepackage{pst-optic}
\psset{unit=0.5}
\begin{pspicture}(-1.5,-5.5)(10,5.5)
  \rput(0,0){\beamLight[drawing=false,mirrorDepth=4.75,
    mirrorWidth=0.1,mirrorHeight=10,linecolor=lightgray]}
  \makeatletter \pst@getcoor{Focus}\pst@tempf
  \psset{linecolor=red}
  \multido{\n=60+5}{18}{\mirrorCVGRay[linecolor=red,
    mirrorDepth=4.75,mirrorHeight=10](Focus)(!
      /XF \pst@tempf pop \pst@number\psxunit div def
    \n\space cos XF add \n\space sin neg){Endd1}
    \psOutLine[arrows=->,length=.25](Endd1)(Endd1'')){Endd2}
    \mirrorCVGRay[linecolor=red,mirrorDepth=4.75,
      mirrorHeight=10](Focus)(!
        /XF \pst@tempf pop \pst@number\psxunit div def
         \n\space cos XF add \n\space sin ){End1}
    \psOutLine[arrows=->,length=.25](End1)(End1'')){End2}}
  \makeatother
\end{pspicture}
```

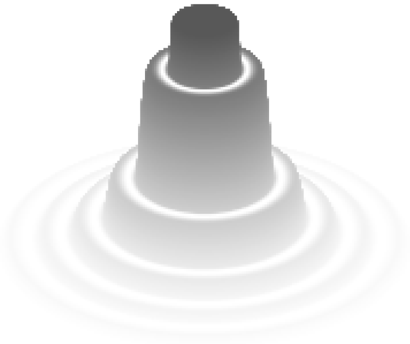
pst-optexp: Experimental optics



```
\usepackage{pst-optexp, nicefrac}
```

```
\begin{pspicture}(-4,-1)(3,3)
\addtopsstyle{Beam}{linewidth=2\pslinewidth,
  linecolor=red!90!black}
\psset{labeloffset=0.5}
\pnode(-2,0){LaserOut}\pnode(0,0){Grat}
\pnode(4;45){Out}\pnode(2.5;67.5){Mvar}
\optbox[optboxwidth=2,labeloffset=0,
  endbox](Grat)(LaserOut){diode laser}
\mirror[variable,conn=o-] %
  (Grid)(Mvar)(Grid){M$_\mathrm{var}$}
\optgrid[beam](LaserOut)(Grat)(Out){grating}
\optretplate[position=0.3,labeloffset=0.8] %
  (LaserOut)(Grat){$\nicefrac{\lambda}{4}$}
\rput[l](-3,2){Littman setup}
\end{pspicture}
```

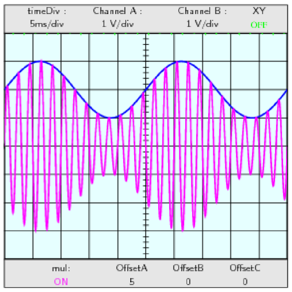
pst-diffraction: Generating a diffraction



```
\usepackage{pst-diffraction}
```

```
\begin{pspicture}(-3.5,-1.5)(3.5,3.5)
\psdiffractionCircular[IIID,r=0.5e-3,f=10,
  pixel=0.5,lambda=520,colorMode=0]
\end{pspicture}
```

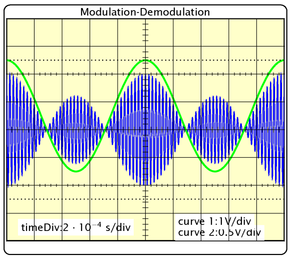
pst-osci: Simulating the output of an oscilloscope



```
\usepackage{pst-osci}
```

```
\Oscillo[amplitude1=1,
  amplitude2=1,CC2=2,
  period2=25,period1=2,
  combine=true,
  operation=mul,
  offset1=5]
```

pst-am: Modulation and demodulation

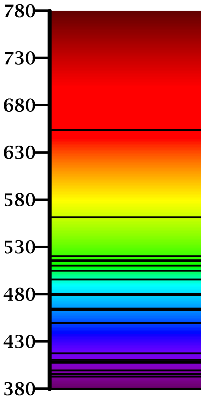


Amplitude porteuse	4 V
Amplitude audio	2 V
Frequence porteuse	$4 \cdot 10^4$ Hz
Frequence audio	$1 \cdot 10^3$ Hz
Decalage(U_0)	0,5 V
R	3 300 Ω
C	$3{,}9 \cdot 10^{-8}$ F

```
\usepackage{pst-am}
```

```
\psAM[SignalModulant,
  SignalModule,
  timeDiv=2e-4,
  U0=0.5,
  frequencePorteuse=4e4,
  Up=4,Um=2,
  voltDivY2=0.5,values]
```

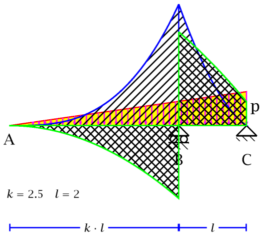
pst-spectra: Spectral lines



```
\usepackage{pst-spectra,
  pstricks-add}
```

```
\begin{pspicture}(0,-0.75)(2,4.75)
\rput{90}(1,0){%
  \psspectrum[axe,Dl=50,wlangle=-90,
   wlcmd={\scriptsize\bfseries},
   begin=780,end=380,
   element=Es,
   absorption](5,2)(0,0)}
\end{pspicture}
```

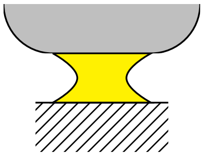
pst-stru: Structural schemes in civil engineering



```
\usepackage{pst-stru}
```

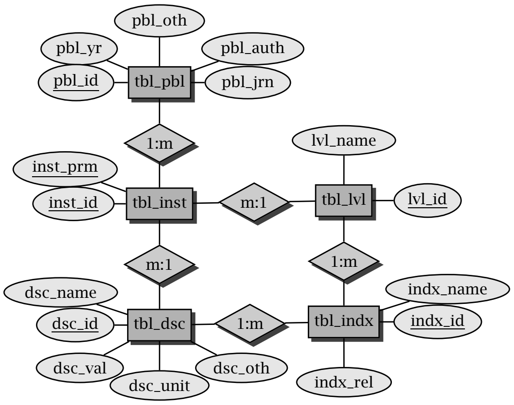
```
\begin{pspicture}(-1,-3)(12,4)
  \psset{arrowsize=0.8mm,
   arrowinset=0}
  \triload[K=2.5,P=8,L=2]
\end{pspicture}
```

`pst-pad`: Attachment models



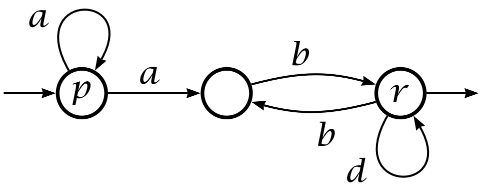
```
\usepackage{pst-pad}

\begin{pspicture}(4,4)
\PstPad(2,2)
\end{pspicture}
```

`pst-dbicons`: Entity-Relationship diagrams



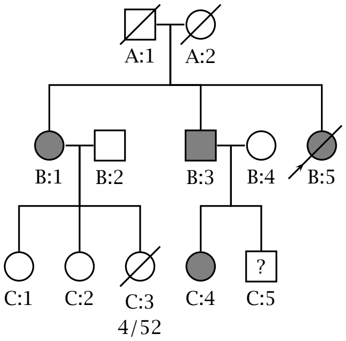
```
\usepackage{pst-dbicons}

\seticonparams{entity}{shadow=true,fillcolor=black!30,
  fillstyle=solid}
\seticonparams{attribute}{fillcolor=black!10,
  fillstyle=solid}
\seticonparams{relationship}{shadow=true,
  fillcolor=black!20,fillstyle=solid}
\begin{tabular}{cc}
  \begin{tabular}{c}
    \entity{tblpbl}[tbl\_pbl]\\[2cm]
    \entity{tblinst}[tbl\_inst]\\[2cm]
    \entity{tbldsc}[tbl\_dsc] \\[2cm]
  \end{tabular}\hspace{6em}
  \begin{tabular}{c}~\\[2cm]
    \entity{tbllvl}[tbl\_lvl]\\[2cm]
    \entity{tblindx}[tbl\_indx]\\[2cm]
  \end{tabular}
  \attributeof{tblpbl}[3em]{0}{pbljrn}[pbl\_jrn]
  \attributeof{tblpbl}[3em]{90}{pbloth}[pbl\_oth]
  \attributeof{tblpbl}[3em]{30}{pblauth}[pbl\_auth]
  \attributeof{tblpbl}[3em]{150}{pblyr}[pbl\_yr]
  \attributeof{tblpbl}[3em]{180}[key]{pblid}[pbl\_id]
  \attributeof{tblinst}[3em]{150}[key]{instprm}[inst\_prm]
  \attributeof{tblinst}[3em]{180}[key]{instid}[inst\_id]
  \attributeof{tbldsc}[3em]{180}[key]{dscid}[dsc\_id]
  \attributeof{tbldsc}[3em]{150}{dscname}[dsc\_name]
  \attributeof{tbldsc}[3em]{220}{dscval}[dsc\_val]
  \attributeof{tbldsc}[3em]{270}{dscunit}[dsc\_unit]
  \attributeof{tbldsc}[3em]{320}{dscoth}[dsc\_oth]
  \attributeof{tbllvl}[3em]{0}[key]{lvlid}[lvl\_id]
  \attributeof{tbllvl}[3em]{90}{lvlname}[lvl\_name]
  \attributeof{tblindx}[3em]{0}[key]{indxid}[indx\_id]
  \attributeof{tblindx}[3em]{30}{indxname}[indx\_name]
  \attributeof{tblindx}[3em]{270}{indxrel}[indx\_rel]
  \relationshipbetween{tblpbl}{tblinst}{1:m}%relationships
  \relationshipbetween{tblinst}{tbldsc}{m:1}
  \relationshipbetween{tblinst}{tbllvl}{m:1}
  \relationshipbetween{tbldsc}{tblindx}{1:m}
  \relationshipbetween{tbllvl}{tblindx}{1:m}
\end{tabular}
```

`pst-vaucanson-g`: Drawing automata and graphs



```
\usepackage{vaucanson-g}

\begin{VCPicture}{(0,-2)(5.5,2)}
 \State[p]{(0,0)}{A} \State{(2.5,0)}{B}
 \State[r]{(5.5,0)}{C}\Initial{A} \Final{C}
 \EdgeL{A}{B}{a} \ArcL{B}{C}{b}
 \ArcL{C}{B}{b} \LoopN{A}{a} \LoopS{C}{d}
\end{VCPicture}
```

`pst-pdgr`: Medical pedigrees

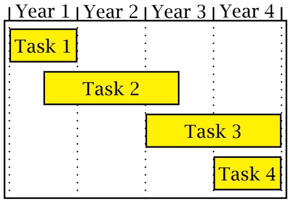


```
\usepackage{pst-pdgr}

\begin{pspicture}(6,6) \psset{belowtextrp=t,armB=1}
 \rput(2.5,5.5){\pstPerson[male,deceased,
   belowtext=A:1]{A:1}}
 \rput(3.5,5.5){\pstPerson[female,deceased,
   belowtext=A:2]{A:2}}
 \pstRelationship[descentnode=A:1_2]{A:1}{A:2}
 \rput(1,3.5){\pstPerson[female,affected,
   belowtext=B:1]{B:1}}
 \pstDescent{A:1_2}{B:1}
 \rput(2,3.5){\pstPerson[male,belowtext=B:2]{B:2}}
 \pstRelationship[descentnode=B:1_2]{B:1}{B:2}
 \rput(3.5,3.5){\pstPerson[male,affected,
   belowtext=B:3]{B:3}}
 \pstDescent{A:1_2}{B:3}
 \rput(4.5,3.5){\pstPerson[female,belowtext=B:4]{B:4}}
 \pstRelationship[descentnode=B:3_4]{B:3}{B:4}
 \rput(5.5,3.5){\pstPerson[female,affected,deceased,
   proband,belowtext=B:5]{B:5}}
 \pstDescent{A:1_2}{B:5}
 \rput(0.5,1.5){\pstPerson[female,belowtext=C:1]{C:1}}
 \pstDescent{B:1_2}{C:1}
 \rput(1.5,1.5){\pstPerson[female,belowtext=C:2]{C:2}}
 \pstDescent{B:1_2}{C:2}
 \rput(2.5,1.5){\pstPerson[female,deceased,
   belowtext={\tabular{c}C:3\\4/52\endtabular}]{C:3}}
 \pstDescent{B:1_2}{C:3}
 \rput(3.5,1.5){\pstPerson[female,affected,
  belowtext=C:4]{C:4}}
 \pstDescent{B:3_4}{C:4}
 \rput(4.5,1.5){\pstPerson[male,insidetext=?,
  belowtext=C:5]{C:5}}
 \pstDescent{B:3_4}{C:5}
\end{pspicture}
```

`pst-light3d`: Three dimensional light effects

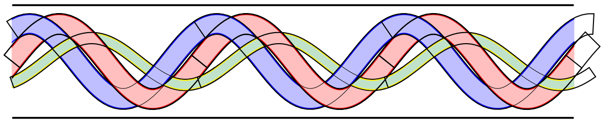
```
\usepackage{pst-light3d}

\DeclareFixedFont{\RM}{T1}{ptm}{m}{n}
             {2cm}
\psset{linestyle=none,fillstyle=solid,
  fillcolor={[rgb]{1,0.84,0}}}
\PstLightThreeDText
  [LightThreeDXLength=0.5]%
  {\RM\TeX}
```

`pst-gantt`: Gantt charts



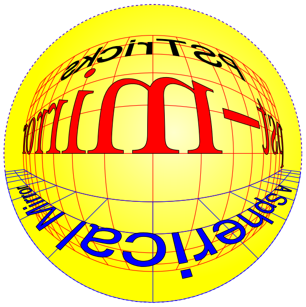
```
\usepackage{pst-gantt}

\begin{PstGanttChart}[yunit=1.5,
 ChartUnitIntervalName=Year,
 ChartUnitBasicIntervalName=Month,
 TaskUnitIntervalValue=12,TaskUnitType=Year,
 ChartShowIntervals]{4}{4}
 \PstGanttTask[TaskInsideLabel={Task 1}]{0}{1}
 \PstGanttTask[TaskInsideLabel={Task 2},
   TaskUnitType=Month]{6}{24}% 24 mon start at 6
  \PstGanttTask[TaskInsideLabel={Task 3}]{2}{2}
  \PstGanttTask[TaskInsideLabel={Task 4}]{3}{1}
\end{PstGanttChart}
```

`pst-thick`: Very thick lines and curves



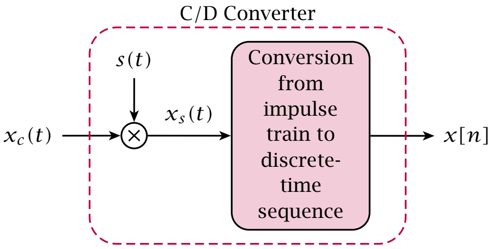
```
\usepackage{pst-thick}
\newpsstyle{thicklinejaune}{fillstyle=solid,
  fillcolor=yellow!50!cyan!50,linecolor=yellow,
  plotpoints=360}
\newpsstyle{thicklinevert}{fillstyle=solid,
  fillcolor=green!50,linecolor=green,plotpoints=360}
\newpsstyle{onlycurvejaune}{linecolor=yellow,
  plotpoints=360}
\def\SinusPhase#1#2#3{%
  /P #1 def /A #2 def /F #3 DegtoRad def
  /O 360 P div def /x0 t def
  /y0 t F add O mul sin A mul def % A*sin(O*t)
  /dx dt def /dy t F add dt add O mul sin
  t F add O mul sin sub A mul def }

\psset{unit=0.5}
\begin{pspicture}(0,-4)(30,4)
\def\motif{\psclip{\psframe[linestyle=none,
  dimen=inner](0,-3)(10,3)}
  \psthick[stylethick=thicklineblue]{-1}{11}%
    {\SinusPhase{10}{2}{90}}
  \psthick[stylethick=thicklinejaune,E=0.5]{-1}{11}%
    {\SinusPhase{10}{1.25}{-100}}
  \psthick{-1}{11}{\SinusPhase{10}{2}{0}}
  \psclip{\psthick[stylethick=vide,E=1.1]%
    {-1}{11}{\SinusPhase{10}{2}{0}}}
    \psthick[stylethick=thicklineblue]{0}{3}%
      {\SinusPhase{10}{2}{90}}
  \endpsclip
  \psclip{\psthick[stylethick=vide,E=1.1]{0}{11}%
    {\SinusPhase{10}{2}{90}}}
    \psthick{5}{9}{\SinusPhase{10}{2}{0}}
  \endpsclip
  \psclip{\psthick[stylethick=vide,E=0.6]{0}{11}%
    {\SinusPhase{10}{1.25}{-100}}}
    \psthick[stylethick=thicklineblue]{7}{9}%
      {\SinusPhase{10}{2}{90}}
  \endpsclip
  \psclip{\psthick[stylethick=vide,E=1.1]{0}{10}%
    {\SinusPhase{10}{2}{0}}}
    \psthick[stylethick=thicklinejaune,E=0.5]{7}{11}%
      {\SinusPhase{10}{1.25}{-100}}
  \endpsclip
  \psclip{\psthick[stylethick=vide,E=1.1]{0}{11}%
    {\SinusPhase{10}{2}{0}}}
    \psthick[stylethick=thicklinejaune,E=0.5]{-0.5}{1}%
      {\SinusPhase{10}{1.25}{-100}}
  \endpsclip
\endpsclip}%
\motif\rput(10,0){\motif}\rput(20,0){\motif}
\psline[linewidth=0.1](0,3)(30,3)
\psline[linewidth=0.1](0,-3)(30,-3)
\end{pspicture}
```

`pst-mirror`: Projections on a spherical mirror



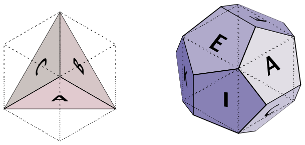
```
\usepackage{pst-mirror,pst-grad}

\psscalebox{0.7}{\begin{pspicture}(-7,-7)(7,7)
 \newpsstyle{GradWhiteYellow}{fillstyle=gradient,
 gradbegin=yellow,gradend=yellow!20,linecolor=yellow!50,
 GradientCircle=true,gradmidpoint=0,GradientPos={(1,1)}}
 \pscircle[style=GradWhiteYellow]{7.07}
 \pstSphereGrid[linecolor=red,grille=10,Ymin=-50,
   Ymax=50,Xmax=80,Xmin=-80,normale=0 0](20,0,0)
 \pstSphereGrid[linecolor=blue,grille=10,Ymin=-40,
   Ymax=-20,Xmax=80,Xmin=-80,normale=0 90](40,0,-10)
 \pstTextSphere[fillstyle=solid,fillcolor=red,
   normale=0 0,fontscale=40,PSfont=Time-Roman,yO=0]
   (20,0,10){pst-mirror}
 \pstTextSphere[fillstyle=solid,fillcolor=black,
   normale=0 0,fontscale=20,PSfont=Helvetica,yO=0]
   (20,0,35){PSTricks}
 \pstTextSphere[fillstyle=solid,fillcolor=blue,
   normale=0 90,fontscale=10,PSfont=Helvetica,yO=2.5]
   (10,0,-10){A Spherical Mirror}
\end{pspicture}}
```

`pst-sigsys`: Signal processing



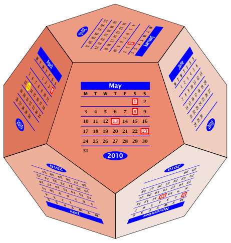
```
\usepackage{pstricks} \usepackage[pstadd]{pst-sigsys}

\begin{pspicture}(-2,-2)(5.5,2)
 \rput(-1.75,0){\rnode{xc}{$x_c(t)$}}
 \pscircleop[operation=times](0,0){otimes}
 \rput(0,1.25){\rnode{s}{$s(t)$}}
 \psblock[fillstyle=solid,fillcolor=purple!20]%
   (2.75,0){conv}{\parbox[c]{2\psunit}%
   {\centering Conversion from impulse
    train to discrete-time sequence}}
 \rput(5.5,0){\rnode{x}{$x[n]$}}
 \psset{style=Arrow}
 \ncline[nodesepA=.15]{xc}{otimes}
 \ncline[nodesepA=.15]{s}{otimes}
 \ncline{otimes}{conv}\naput{$x_s(t)$}
 \ncline[nodesepB=.15]{conv}{x}
 \psframe[linecolor=purple,linestyle=dashed,
   style=Dash](-.75,-1.5)(4.5,1.5)
 \rput(1.875,1.75){C/D Converter}
\end{pspicture}
```

`pst-platon`: Platonic solids



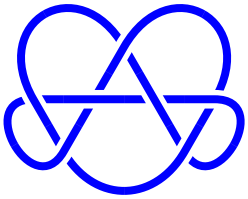
```
\usepackage{pst-platon}

\psTetrahedron\qquad
\psDodecahedron
```

`pst-calendar`: Two or three dimensional calendars



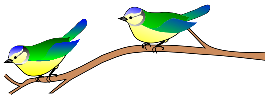
```
\usepackage{pst-calendar}

\begin{Example}[ltxps]{}
\psscalebox{0.13}{ %
 \psCalDodecaeder[Jahr=2010,
   style=march]}
```

`pst-knot`: Knot lines



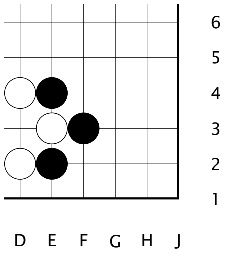
```
\usepackage{pst-knot}

\begin{pspicture}(-2,-2)(2,2)
\psKnot[linewidth=3pt,
  linecolor=blue](0,0){7-7}
\end{pspicture}
```

`pst-fun`: Funny objects



```
\usepackage{pst-fun}

\begin{pspicture}(0,-1.3)(10,3)
 \psBird[Branch]
 \rput{-20}(4,1.8){\psBird}
\end{pspicture}
```

`psgo`: The game of Go



```
\usepackage{psgo}

\psscalebox{0.7}{%
\begin{psgopartialboard}[9]{(4,1)(9,6)}
\stone{white}{c}{3} \stone{white}{e}{3}
\stone{white}{d}{2} \stone{white}{d}{4}
\stone{black}{f}{3} \stone{black}{e}{2}
\stone{black}{e}{4}
\end{psgopartialboard}}
```