PSTricks

pst-knot

Plotting special knots; v.0.02

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Contents

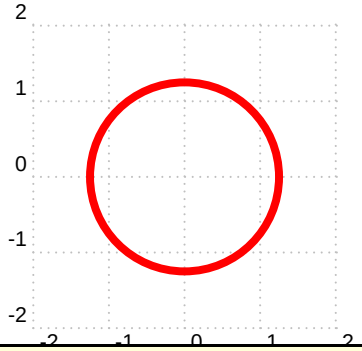
1 introduction

This is the very first try of drawing knots. The package uses the PostScript subroutines of the file psMath.pro from Matthias Buch-Kromann.) Currently there are only two macros for knots.

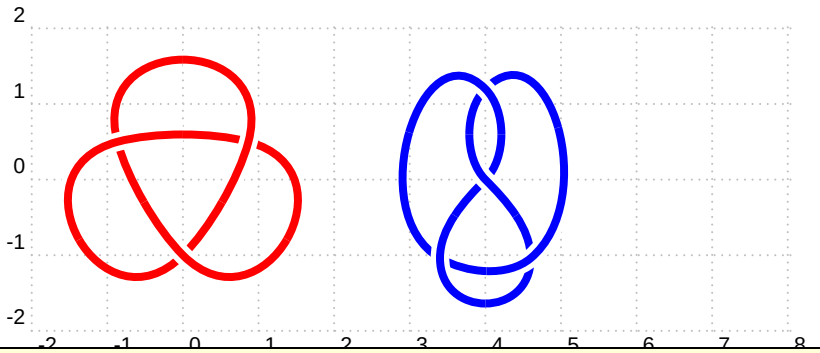
2 \psKnot

The macro \psKnot has one optional and two mandatory arguments, the origin of the image and the knot type. The following list shows all available knot types.

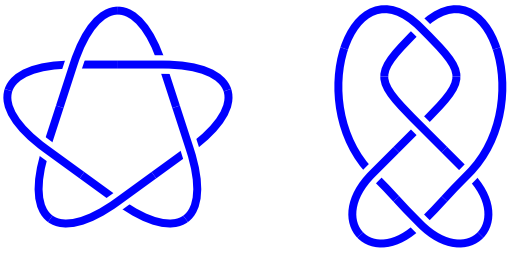
\psKnot [Options] (x,y) {*knot type*}



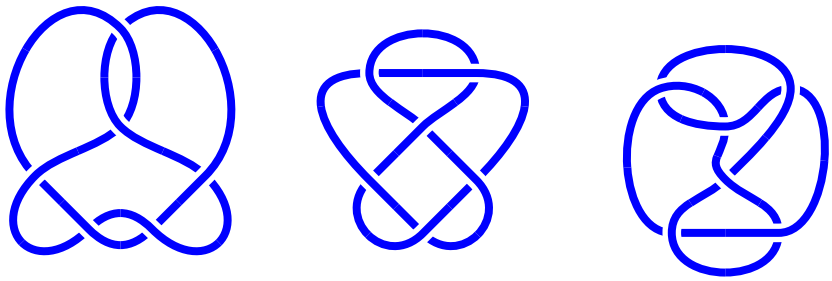

```
\begin{pspicture}[showgrid=true](-2,-2)(2,2)
  \psKnot[linewidth=3pt,linecolor=red](0,0){0-1}
\end{pspicture}
```



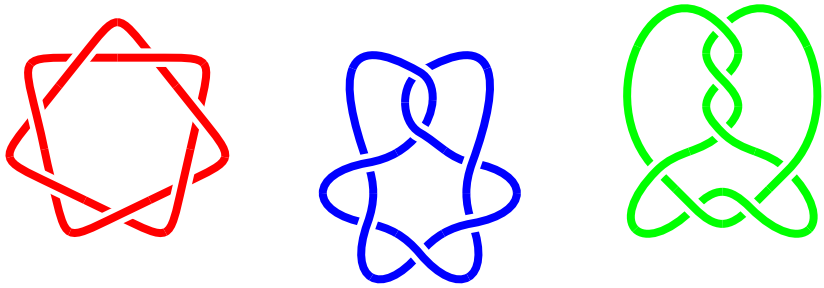

```
\begin{pspicture}[showgrid=true](-2,-2)(8,2)
  \psKnot[linewidth=3pt,linecolor=red](0,0){3-1}
  \psKnot[linewidth=3pt,linecolor=blue](4,0){4-1}
\end{pspicture}
```



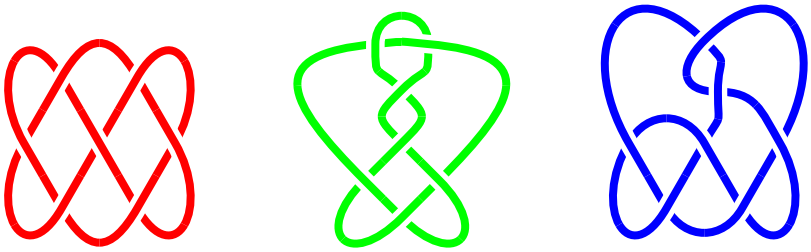
```
\begin{pspicture}(-2,-2)(8,2)
  \psKnot[linewidth=3pt,linecolor=blue](0,0){5-1}
  \psKnot[linewidth=3pt,linecolor=blue](4,0){5-2}
\end{pspicture}
```



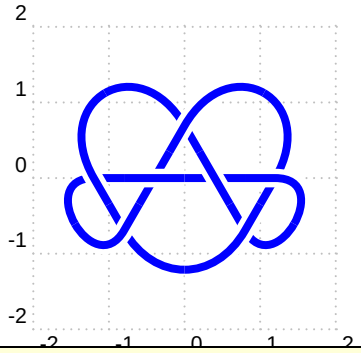
```
\begin{pspicture}(-2,-2)(10,2)
  \psKnot[linewidth=3pt,linecolor=blue](0,0){6-1}
  \psKnot[linewidth=3pt,linecolor=blue](4,0){6-2}
  \psKnot[linewidth=3pt,linecolor=blue](8,0){6-3}
\end{pspicture}
```



```
\begin{pspicture}(-2,-2)(10,2)
  \psKnot[linewidth=3pt,linecolor=red](0,0){7-1}
  \psKnot[linewidth=3pt,linecolor=blue](4,0){7-2}
  \psKnot[linewidth=3pt,linecolor=green](8,0){7-3}
\end{pspicture}
```



```
\begin{pspicture}(-2,-2)(10,2)
  \psKnot[linewidth=3pt,linecolor=red](0,0){7-4}
  \psKnot[linewidth=3pt,linecolor=green](4,0){7-5}
  \psKnot[linewidth=3pt,linecolor=blue](8,0){7-6}
\end{pspicture}
```



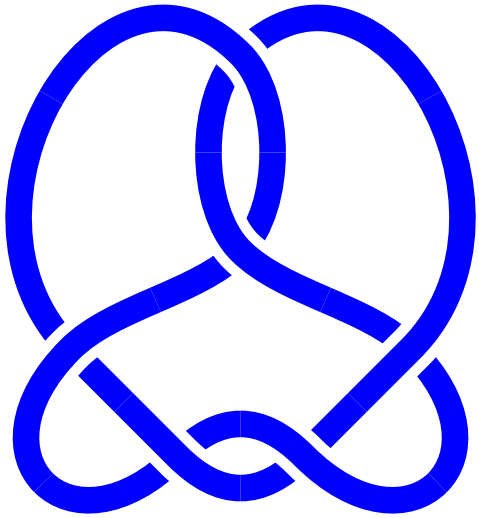

```
\begin{pspicture}[showgrid=true](-2,-2)(2,2)
  \psKnot[linewidth=3pt,linecolor=blue](0,0){7-7}
\end{pspicture}
```

3 Special settings

There exists three special optional arguments for the macro `\psKnot`.

3.1 Scaling

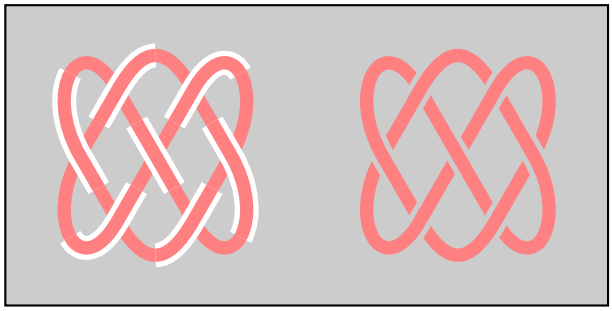
The image can be scaled with `scale`, which can take one or two values for x and y scaling. For only one value it is scaled for x and y with the same value. The default is 1 1.



```
\begin{pspicture}(-4,-4)(4,4)
  \psKnot[linewidth=5pt,linecolor=blue,knotscale=2](0,0){6-1}
\end{pspicture}
```

3.2 Border color

The background color of the border can be controlled by `knotbgcolor`. It can use any possible color value and it makes only sense for a colored background to get the same color for the crossing.

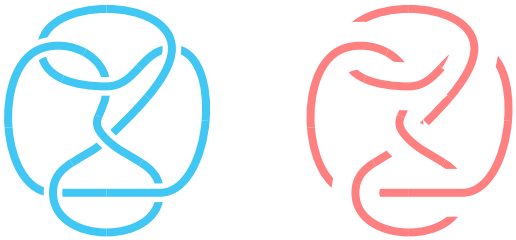


```
\begin{pspicture}(-2,-2)(6,2)
  \psframe[fillcolor=black!20,fillstyle=solid](-2,-2)(6,2)
  \psKnot[linewidth=5pt,linecolor=red!50](0,0){7-4}
  \psKnot[linewidth=5pt,linecolor=red!50,
    knotbgcolor=black!20](4,0){7-4}
\end{pspicture}
```

Pay attention that black!20 is the same as 0,8 of gray.

3.3 Border width

The width of the border is controlled by the keyword `knotborder` and it is preset to `5\pslinewidth`. The border width is added to the current linewidth.

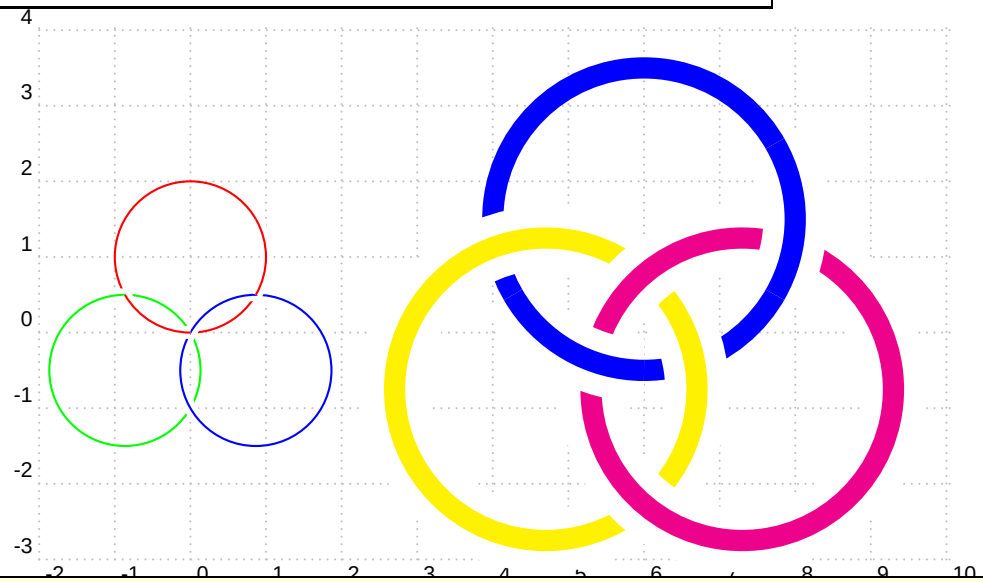


```
\begin{pspicture}(-2,-2)(6,2)
  \psKnot[linewidth=3pt,linecolor=cyan!60](0,0){6-3}
  \psKnot[linewidth=3pt,linecolor=red!50,
    knotborder=5\pslinewidth](4,0){6-3}
\end{pspicture}
```

4 \psBorromean

The macro `\psBorromean` draws the so called Borromean rings. It has one optional and three mandatory arguments, the origin of the image, the inner and outer radius. The following list shows all available knot types.

`\psBorromean` `[Options]` (x,y)`{`*circle radius*`}{`*inner radius*`}`




```
\begin{pspicture}[showgrid=true](-2,-3)(10,4)
  \psBorromean(0,0){1cm}{1cm}
  \psBorromean[linewidth=8pt,knotborder=2\pslinewidth,
    bmcolor={blue,yellow,magenta}](6,0){2cm}{1.5cm}
\end{pspicture}
```

5 List of all optional arguments for pst-knot

Key	Type	Default
knotborder	ordinary	2
knotbgcolor	ordinary	1
knotscale	ordinary	1 1
bmcolor	ordinary	[none]

References

[1] Denis Girou. Présentation de PSTricks. *Cahier GUTenberg*, 16:21–70, April 1994.

[2] Michel Goosens, Frank Mittelbach, Sebastian Rahtz, Denis Roegel, and Herbert Voß. *The LaTeX Graphics Companion*. Addison-Wesley Publishing Company, Reading, Mass., 2 edition, 2007.

[3] Laura E. Jackson and Herbert Voß. Die Plot-Funktionen von pst-plot. *Die TeXnische Komödie*, 2/02:27–34, June 2002.

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[5] Herbert Voß. Die mathematischen Funktionen von PostScript. *Die TeXnische Komödie*, 1/02, March 2002.

[6] Herbert Voß. *LaTeX Referenz*. DANTE – Lehmanns, Heidelberg/Hamburg, 1. edition, 2007.

[7] Herbert Voß. *PSTricks – Grafik für TeX und LaTeX*. DANTE – Lehmanns, Heidelberg/Hamburg, 4. edition, 2007.

[8] Timothy van Zandt. *PSTricks - PostScript macros for generic TeX*. http://www.tug.org/application/PSTricks, 1993.

[9] Timothy van Zandt. *multido.tex - a loop macro, that supports fixed-point addition*. CTAN:/graphics/pstricks/generic/multido.tex, 1997.

[10] Timothy van Zandt. *pst-plot: Plotting two dimensional functions and data*. CTAN:graphics/pstricks/generic/pst-plot.tex, 1999.

[11] Timothy van Zandt and Denis Girou. Inside PSTricks. *TUGboat*, 15:239–246, September 1994.

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