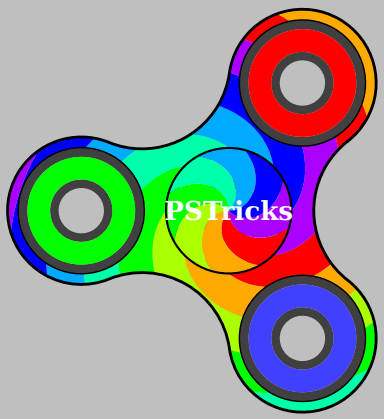
PSTricks

pst-spinner

v.1.02

May 23, 2017



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A fidget spinner is a type of stress-relieving toy. A basic fidget spinner consists of a bearing in the center of a design made from any of a variety of materials including brass, stainless steel, titanium, copper and plastic. The toy may help people who have trouble focusing or fidgeting by acting as a release mechanism for nervous energy or stress. [8]

Thanks to:

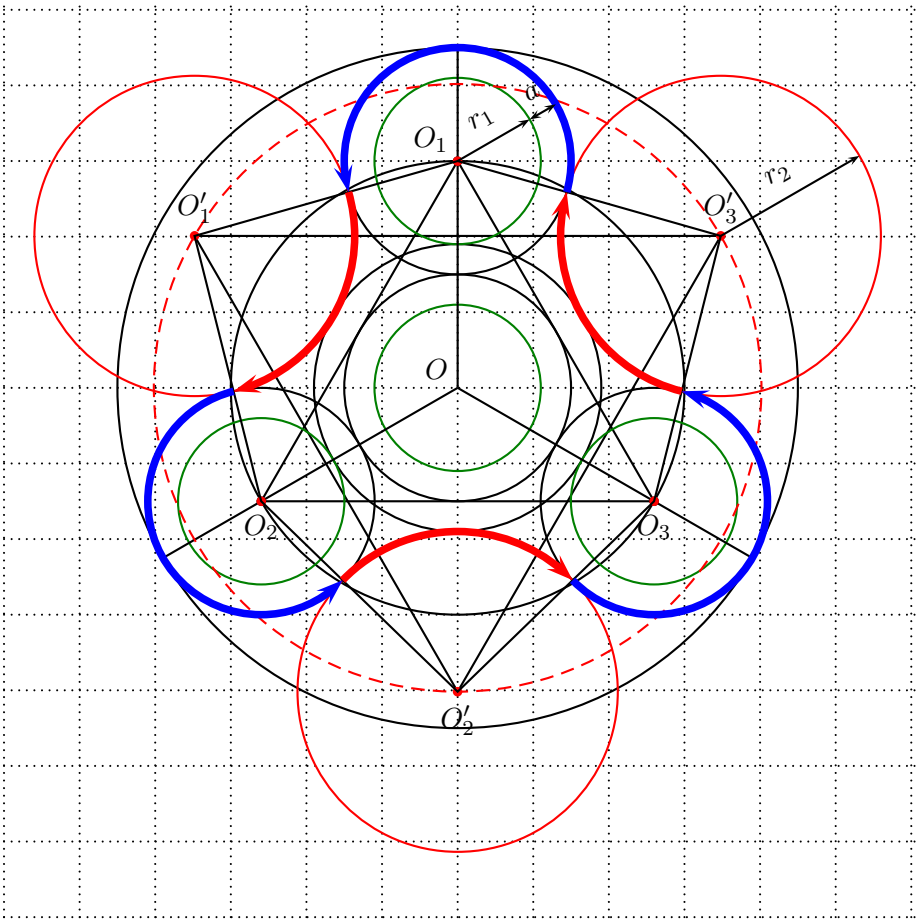
Contents

1 Introduction

This package aims to propose a model of the fidget spinner gadget. It exists under different forms, with 2, 3 poles and even more. We chosed the most popular model: the triple Fidget Spinner. The dimensions of the model are linked to that of the ball bearings: outer diameter 22 mm and inner diameter 8 mm. The composite axis of a quality ball bearing is in the center of an equilateral triangle at the tops of which are placed bearings With balls identical to that of the axis but of any quality or colored rings. The contour of the object is Consisting of perfectly connected circular arcs.

2 Theory

For calculations the Fidget Spinner is written in a circle of radius R. All other dimensions are deduced. In the diagram r_1 is the outer radius of a ball bearing. A is the distance between a ball bearing and the edge outside the object. $R_1 + a$ is the radius of the circle tangent to the circle of radius R, r_2 is the radius of the circle arc of connection to the circles of radius $r_1 + a$ and to the central circle of radius $r_1 + 2a$.



3 The Macro

For calculations, the Fidget Spinner is written in a circle of radius R. All other dimensions are deduced. The colors of the rings can be chosen as well as the background color of the object. This object can be customized with a picture. The command is:

`\psFidgetSpinner [Options] (`x_0, y_0`)`

with two optional arguments. If the (x_0, y_0) is missing then $(0, 0)$ is assumed as the origin of the spinner.

4 Optional arguments

4.1 The Radius R

The radius R of the circle in which the triple Fidget spinner is inscribed. It is preset to `R=3.9`.

4.2 The colors

The colors with their default value. They are numbered in the order: central bearing, peripheral rings, and central cap.

- `color0=honeydew`
- `color1=red`
- `color2=green`
- `color3=blue`
- `colorMask=honeydew`

4.3 Rotation

With the optional argument `rotation` the output of the spinner can be rotated.

4.4 mask

`mask` is a boolean value to customize the object with an image in eps format. Preset to `false`.

4.5 customizeMask

`customizeMask` is a boolean value. When set to `true` the image is also printed on the cap of the central ball roll.

4.6 image

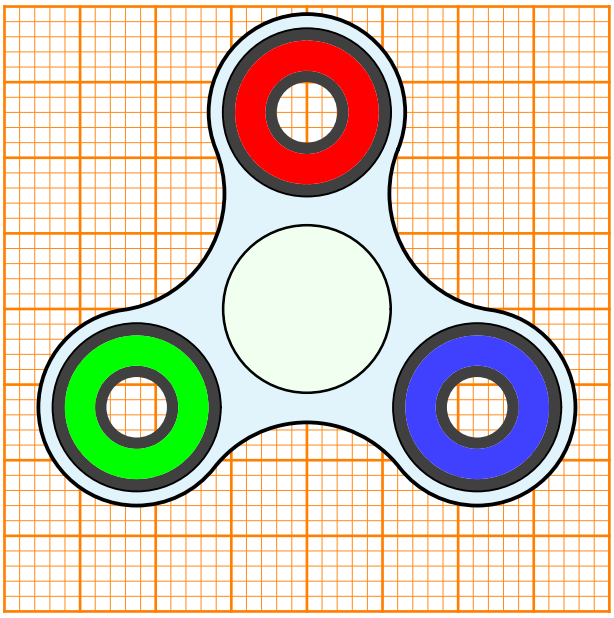
The keyword `image` defines the name including the path of the image and is preset to empty.

4.7 Background color

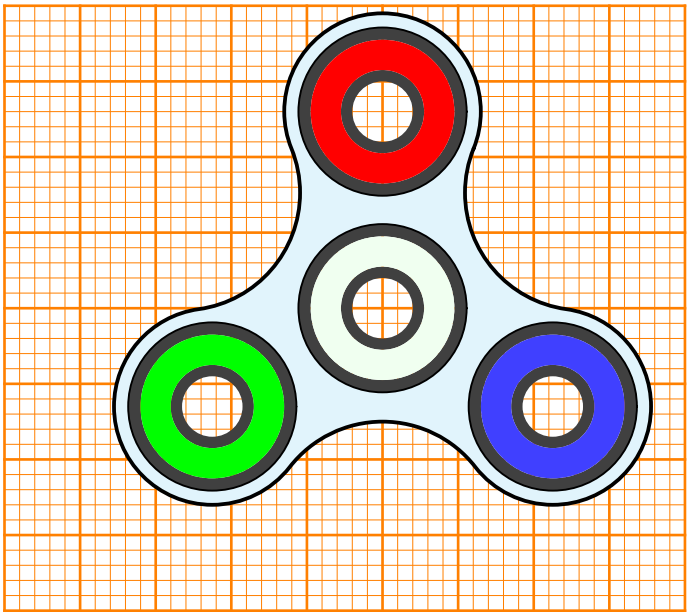
The background color is set with the default PSTricks parameter `fillcolor` and the linecolor and linewidth with `linecolor` and `linewidth`.

5 examples

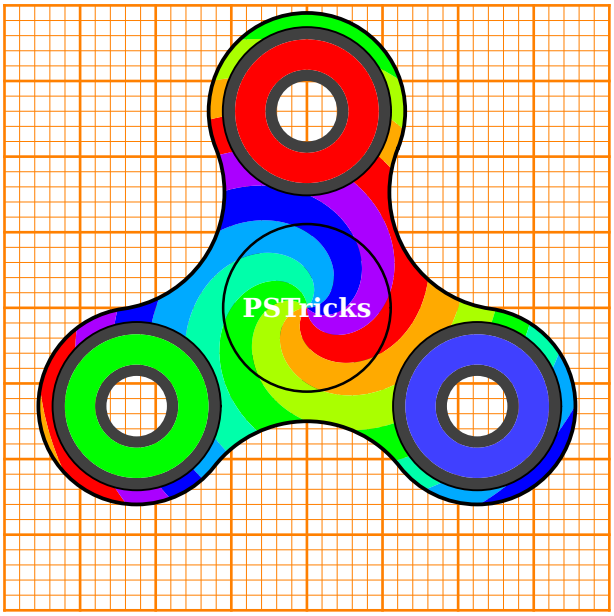
```
\begin{pspicture}(-4,-4)(4,4)
\psgrid[style=mmpaper](-4,-4)(4,4)
\psFidgetSpinner[
  fillcolor=cyan!10,
  linewidth=0.05,mask]
\end{pspicture}
```



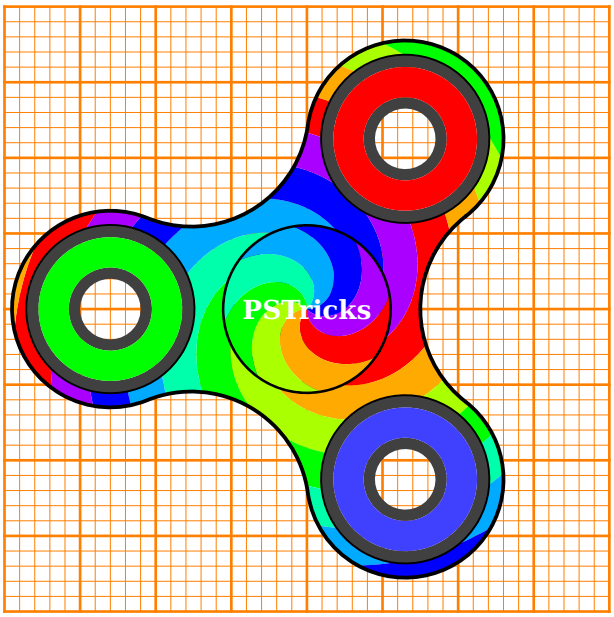
```
\begin{pspicture}(-4,-4)(5,4)
\psgrid[subgriddiv=5,
 gridlabels=0,
 gridwidth=1pt,
 gridcolor=orange,
 subgridwidth=0.1pt,
 subgridcolor=orange](-4,-4)(5,4)
\psFidgetSpinner[
  fillcolor=cyan!10,
  linewidth=0.05,
  mask=false](1,0)
\end{pspicture}
```

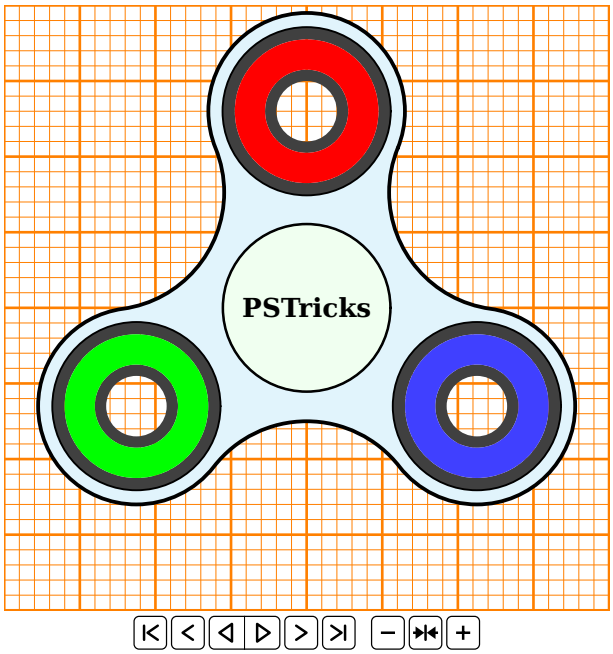


```
\begin{pspicture}(-4,-4)(4,4)
\psgrid[subgriddiv=5,
  gridlabels=0,
  gridwidth=1pt,
  gridcolor=orange,
  subgridwidth=0.1pt,
  subgridcolor=orange](-4,-4)(4,4)
\psFidgetSpinner[colorMask=blue,
  linewidth=0.05,mask,customize,
  customizeMask,
  image=images/spirales-hsb.eps]
\rput(0,0){\color{white}\textbf{
    PSTricks}}
\end{pspicture}
```




```
\begin{pspicture}(-4,-4)(4,4)
\psgrid[subgriddiv=5,
  gridlabels=0,
  gridwidth=1pt,
  gridcolor=orange,
  subgridwidth=0.1pt,
  subgridcolor=orange](-4,-4)(4,4)
\psFidgetSpinner[colorMask=blue,
    linewidth=0.05,
  mask,customize,customizeMask,
  image=images/spirales-hsb.eps,
  rotation=-30]
\rput(0,0){\color{white}\textbf{
    PSTricks}}
\end{pspicture}
```






```
\begin{animateinline}[
  controls,loop,
  begin={\begin{pspicture}(-4,-4)(4,4)},
  end={\end{pspicture}}]{25}% 25 images/s
\multiframe{72}{i=0+5}{%
\psgrid[subgriddiv=5,
  gridlabels=0,
  gridwidth=1pt,
  gridcolor=orange,
  subgridwidth=0.1pt,
  subgridcolor=orange](-4,-4)(4,4)
\rput{\i}{\psFidgetSpinner[R=3.9,fillcolor=cyan!10,linewidth=0.05,mask]}
\rput(0,0){\textbf{PSTricks}}}
\end{animateinline}
```

6 List of all optional arguments for pst-spinner

Key	Type	Default
R	ordinary	3.9
rotation	ordinary	0
color0	ordinary	honeydew
color1	ordinary	red
color2	ordinary	green
color3	ordinary	blue
colorMask	ordinary	honeydew
mask	boolean	true
customize	boolean	true
customizeMask	boolean	true
image	ordinary	

References

[1] Denis Girou. “Présentation de PSTricks”. In: *Cahier GUTenberg* 16 (Apr. 1994), pp. 21–70.

[2] Michel Goosens et al. *The LaTeX Graphics Companion*. 2nd ed. Reading, Mass.: Addison-Wesley Publishing Company, 2007.

[3] Alan Hoenig. *TeX Unbound: LaTeX & TeX Strategies, Fonts, Graphics, and More*. London: Oxford University Press, 1998.

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

[5] Frank Mittelbach and Michel Goosens et al. *The LaTeX Companion*. 2nd ed. Boston: Addison-Wesley Publishing Company, 2004.

[6] Herbert Voß. *PSTricks Grafik für TeX und LaTeX*. 7th ed. Heidelberg/Berlin: DANTE – Lehmanns, 2016.

[7] Herbert Voß. *PSTricks Graphics for LaTeX*. 1st ed. Cambridge: UIT, 2011.

[8] WikipediA. *Fidget spinner*. May 11, 2017. URL: https://en.wikipedia.org/wiki/Fidget_spinner (visited on 05/11/2017).

[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. *PSTricks - PostScript macros for generic TeX*. http://www.tug.org/application/PSTricks, 1993.

[11] Timothy Van Zandt and Denis Girou. “Inside PSTricks”. In: *TUGboat* 15 (Sept. 1994), pp. 239–246.

Index