

# Package: spt (via r-universe)

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**Title** Sierpinski Pedal Triangle

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**Description** A collection of algorithms related to Sierpinski pedal triangle (SPT).

**License** Unlimited

**Repository** CRAN

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**NeedsCompilation** yes

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chaos	<i>Chaos Games for Sierpinski (Pedal) Triangle</i>
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## Description

To construct SPT/ST via Chaos games.

## Usage

```
chaos(abc, ...)
```

**Arguments**

abc            An R object of class 'st' or 'spt'.  
...            Controls.

**Details**

If 'abc' is an acute triangle or obtuse 'st' triangle, the algorithms works. For obtuse 'spt' triangle, we need think of something else to measure the dimation.

**Value**

Iteration number should be large (say 10000).

**Author(s)**

B. Wang <bwang@jaguar1.usouthal.edu>

**References**

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. *Fractals*. 16(2): 141-150.

**Examples**

```
(abc1 = st(50,60))  
chaos(abc1, iter=2000)  
(abc2 = spt(50,60))  
chaos(abc2, iter=1000)
```

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spt

*Sierpinski Pedal Triangle*

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**Description**

To initial, plot and show a Sierpinski pedal triangles.

**Usage**

```
spt(A,B)
```

**Arguments**

A, B            The degrees of two of the three angles of a triangle.

**Details**

When the original triangle is an acute triangle, the area of the smallest SPT/PT to be drawn is determined by  $(tol * S)$ , where  $S$  is the total area for plotting. No restriction is applied to `iter`.

If the original triangle is an obtuse triangle, the largest value of `iter` is 12.

`tol`: A stopping criteria to draw the sub-SPT. Default value 0.0001.

**Value**

The dimension of the SPT will be returned if the original triangle is an acute triangle.

The viewport of showing the SPT/ST "abc" can be changed by changing the value of `abc$viewport`.

**Author(s)**

B. Wang <bwang@jaguar1.usouthal.edu>

**References**

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. *Fractals*. 16(2): 141-150.

**Examples**

```
(abc = spt(50,60))
plot(abc, iter=7)
```

```
(abc = spt(50,10))
plot(abc, iter=3)
abc$viewport = c(0,-70,84,100)
plot(abc, iter=6)
```

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 st

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*Sierpinski Triangle*


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**Description**

To initial, plot and show a Sierpinski triangles.

**Usage**

```
st(A,B)
```

**Arguments**

A, B                    The degrees of two of the three angles of a triangle.

**Details**

When the original triangle is an acute triangle, the area of the smallest ST to be drawn is determined by  $(\text{tol} * S)$ , where  $S$  is the total area for plotting. No restriction is applied to `iter`.

If the original triangle is an obtuse triangle, the largest value of `iter` is 12.

`tol`: A stopping criteria to draw the sub-SPT. Default value 0.0001.

**Value**

The dimension of the ST will be returned if the original triangle is an acute triangle.

**Author(s)**

B. Wang <bwang@jaguar1.usouthal.edu>

**References**

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. *Fractals*. 16(2): 141-150.

**Examples**

```
(abc = st(50,60))  
plot(abc, iter=10)
```

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