

# Package ‘RImageJROI’

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**Title** Read 'ImageJ' Region of Interest (ROI) Files

**Description** Provides functions to read 'ImageJ' (<<http://imagej.nih.gov/ij/>>) Region of Interest (ROI) files, to plot the ROIs and to convert them to 'spatstat' (<<http://spatstat.org/>>) spatial patterns.

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ij2spatstat

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*Convert 'ijroi' and 'ijzip' objects to spatstat spatial patterns*


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## Description

Converts `ijroi` and `ijzip` objects to a list of `spatstat.geom` spatial patterns.

## Usage

```
ij2spatstat(
  X,
  window = NULL,
  pattern.type = NULL,
  unitname = NULL,
  scale = 1,
  return.type = FALSE,
  convert.only = NULL
)
```

## Arguments

|                           |  |
|---------------------------|--|
| <code>X</code>            | <code>ijroi</code> or <code>ijzip</code> object to be converted.   |
| <code>window</code>       | the <code>window</code> for returned spatial patterns. Can be an <code>owin</code> object defining a common window for all returned patterns, a character string 'range' leading to a common window based <code>range</code> of all returned patterns, or NULL (default) leading to separate windows for each pattern. |
| <code>pattern.type</code> | a character string specifying the desired pattern type to be returned (" <code>ppp</code> ", " <code>psp</code> " or " <code>owin</code> "). Works only if <code>X</code> is an 'ijroi' object. Ignored otherwise. Defaults to an appropriate pattern type depending on the ROI type (see 'Details').                  |
| <code>unitname</code>     | Name of the unit of length for the resulting window(s) (see <code>owin</code> ).   |
| <code>scale</code>        | A numeric value defining the scale of photograph in pixels / unitname. Defaults to 1.  |
| <code>return.type</code>  | should the type of ROI object(s) be returned in addition to <code>spatstat.geom</code> spatial patterns? Defaults to FALSE.  |
| <code>convert.only</code> | a character vector specifying the <code>strType</code> of ROI objects to be converted (see <code>plot.ijroi</code> for possible pattern types). Pattern types not mentioned will not be converted. Works only if <code>X</code> is an 'ijzip' object. Ignored otherwise.   |

## Details

The function converts `ijroi` and `ijzip` objects to `spatstat.geom` spatial patterns for further calculations with the objects. By default, areal types ("rect", "oval", "ELLIPSE", "polygon") are converted to `owin` objects. Line types ("line" (including "ARROW"), "freeline", "polyline", "angle", "free-hand" (excluding "ELLIPSE")) are converted to `psp` objects and "point" types to `ppp` objects.

**Value**

Returns a list of [spatstat.geom](#) patterns of appropriate type (see 'Details'). If `return.type = TRUE` returns a list with two levels specifying the `spatstat.geom` pattern and the ROI type.

**Author(s)**

Mikko Vihtakari

**See Also**

[read.ijroi](#) [read.ijzip](#)

**Examples**

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
ij2spatstat(x)
```

---

plot.ijroi

*Plot ijroi object*

---

**Description**

Plots ImageJ ROI objects using the '[base](#)' [graphics](#) package.

**Usage**

```
## S3 method for class 'ijroi'
plot(x, add = FALSE, xlab = "", ylab = "", main = "", asp = 1, ...)
```

**Arguments**

|      |   |
|------|---|
| x    | The <code>ijroi</code> object.  |
| add  | Whether to add to an existing plot.   |
| xlab | a title for the x axis: <a href="#">title</a> .   |
| ylab | a title for the y axis: <a href="#">title</a> .   |
| main | an overall title for the plot: <a href="#">title</a> .                                  |
| asp  | numeric defining the aspect ratio y/x: see <a href="#">plot.window</a> . Defaults to 1. |
| ...  | Additional parameters.  |

## Details

ImageJ ROI objects created with following tools are plotted using following graphics commands:

- Rectangle tool ("rect") `rect`. Plotted based on coordinates.
- Oval selections ("oval") `polygon`. Plotted based on equation.
- Freehand selections ("freehand") `lines`. Plotted based on coordinates.
- Elliptical selections ("freehand", "ELLIPSE") `lines`. Plotted based on equation.
- Point Tool and Multi-Point Tool ("point") `points`. Plotted based on coordinates.
- Straight Line ("line") `lines`. Plotted based on coordinates.
- Arrow tool ("line", "ARROW") `arrows`. Plotted based on coordinates. Stroke width passed to `lwd` argument.
- Segmented Line ("polyline") `lines`. Plotted based on coordinates.
- Freehand Line ("freeline") `lines`. Plotted based on coordinates.

All graphics allow the additional parameters from appropriate functions. Aspect ratio (`asp`) is 1 by default leading to correct representation of ImageJ objects. If correct representation is not important, set `asp = NA` to use the R base-graphics default setting.

## Author(s)

David Sterratt, Mikko Vihtakari

## See Also

[read.ijroi](#), [read.ijzip](#), [plot.ijzip](#)

## Examples

```
# type 0 'polygon' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "polygon.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 1 'rect' ROIs are plotted using rect()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "rect.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# type 2 'oval' ROIs are plotted using polygon()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "oval.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# type 3 'line' ROIs (among others listed in 'details') are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "line.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 3 arrows are a subtype of 'line'. Plotted using arrows(). The stroke width is
```

```

# carried over. To change width, use lwd argument
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "arrow.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 4 'freeline' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "freehand_line.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 5 'polyline' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "segmented_line.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 7 'freehand' selection ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "freehand_selection.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 7 Objects created using 'Elliptical selections' tool are also saved as
# 'freehand', but with subtype 'ELLIPSE'. The coordinates for this type are flawed
# and plotting is done using equation for an ellipse
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "elliptical.roi")
x <- read.ijroi(file)
plot(x, border = "red")
lines(x$coords[,1], x$coords[,2]) ## plotted based on coordinates.

# type 10 'point' ROIs are plotted using points()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "multi_point.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# If following is shown as a (round) circle, asp = 1
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "circle.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# text is stored as type 'rect' with subtype 'TEXT'. Currently
# only the outlining rectangle is returned
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "text.roi")
x <- read.ijroi(file)
plot(x, border = "red")

```

---

plot.ijzip

*Plot ijzip object*


---

## Description

Plots .zip files containing ImageJ ROI objects using the ['base' graphics](#) package.

**Usage**

```
## S3 method for class 'ijzip'
plot(x, add = FALSE, xlab = "", ylab = "", main = "", asp = 1, ...)
```

**Arguments**

|      |   |
|------|---|
| x    | The ijzip object.   |
| add  | Whether to add to an existing plot.   |
| xlab | a title for the x axis: see <a href="#">title</a> .   |
| ylab | a title for the y axis: see <a href="#">title</a> .   |
| main | an overall title for the plot: see <a href="#">title</a> .                                  |
| asp  | numeric defining the aspect ratio y/x: see <a href="#">plot.window</a> . Defaults to 1.     |
| ...  | Arguments to be passed to methods, such as graphical parameters (see <a href="#">par</a> ). |

**Details**

The function loops [plot.ijroi](#) plotting function over all elements in x. See [plot.ijroi](#) for further details.

**Author(s)**

Mikko Vihtakari, David Sterratt

**See Also**

[read.ijzip](#), [plot.ijroi](#)

**Examples**

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
plot(x)
```

---

print.ijroi

*Print ijroi objects*


---

**Description**

Print ijroi objects

**Usage**

```
## S3 method for class 'ijroi'
print(x, all = FALSE, ...)
```

**Arguments**

x ijroi object to be printed.  
all logical indicating whether to print all information from ijroi object as opposed to a subset of relevant information. Defaults to FALSE.  
... further arguments passed to [print](#).

**Author(s)**

Mikko Vihtakari, David Sterratt

**See Also**

[read.ijroi](#)

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|            |                                |
|------------|--------------------------------|
| read.ijroi | <i>Read an ImageJ ROI file</i> |
|------------|--------------------------------|

---

**Description**

Read an ImageJ ROI file. This returns a structure containing the ImageJ data.

**Usage**

```
read.ijroi(file, verbose = FALSE)
```

**Arguments**

file Name of ImageJ ROI file to read  
verbose Whether to report information

**Value**

A structure of class `ijroi` containing the ROI information

**Author(s)**

David Sterratt

**See Also**

[plot.ijroi](#) for plotting single ROI objects.  
[read.ijzip](#) for reading several ROI objects from .zip files.

## Examples

```
library(png)
path <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi")
im <- as.raster(readPNG(file.path(path, "imagej-logo.png")))
plot(NA, NA, xlim=c(0, ncol(im)), ylim=c(nrow(im), 0), asp=1)
rasterImage(im, 0, nrow(im), ncol(im), 0, interpolate=FALSE)
r <- read.ijroi(file.path(path, "rect.roi"))
plot(r, TRUE)
r <- read.ijroi(file.path(path, "polygon.roi"))
plot(r, TRUE)
r <- read.ijroi(file.path(path, "oval.roi"))
plot(r, TRUE)
```

---

read.ijzip

*Read ImageJ zip file containing several ROI files*

---

## Description

A wrapper function, which reads a zip file containing ImageJ ROI files using [read.ijroi](#) function.

## Usage

```
read.ijzip(file, names = TRUE, list.files = FALSE, verbose = FALSE)
```

## Arguments

|                         |   |
|-------------------------|---|
| <code>file</code>       | zip file containing a collection of ImageJ ROI files  |
| <code>names</code>      | Logical, indicating whether the ROI file names should be used as names for the elements in the list (see Return). If FALSE a sequence of names specifying the type of ROI is automatically generated. |
| <code>list.files</code> | logical, indicating whether a data.frame of ROI files in file should be returned instead of a list of results. Defaults to FALSE. If TRUE equals to <code>unzip(file, list = TRUE)</code> .           |
| <code>verbose</code>    | Whether to report information (see <a href="#">read.ijroi</a> ).  |

## Value

An object of class `ijzip` containing a list of the coordinates and types of ImageJ ROIs. Each element is named after option specified in `names`.

## Author(s)

Mikko Vihtakari

## See Also

[read.ijroi](#), [plot.ijzip](#).

**Examples**

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
plot(x)
```

---

RImageJROI

*Read ImageJ Region of Interest (ROI) files*

---

**Description**

Provides functions to read ImageJ (<http://imagej.nih.gov/ij/>) Region of Interest (ROI) files, to plot the ROIs and to convert them as spatstat (<http://spatstat.org/>) spatial patterns.

**Details**

ImageJ ROI objects can be read to R using `read.ijroi` and `read.ijzip` functions. The objects can be plotted using generic `plot` command and converted to `spatstat.geom` spatial patterns by using `ij2spatstat` function.

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