

Package ‘RLumSTARR’

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Type Package

Title Spatially Resolved Radiofluorescence Analysis

Version 0.1.0.9000-29

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Description Analysing spatially resolved radiofluorescence data using ImageJ. A collection of functions to support early work on the subject.

License GPL-3

Depends R (>= 3.5.0),
utils,
methods

Imports Luminescence (>= 0.9.8),
rjags (>= 4-8),
coda (>= 0.19-1)

Encoding UTF-8

Language en-GB

LazyData true

RoxygenNote 7.1.1

R topics documented:

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RLumSTARR-package	<i>SpaTiAlly Resolved Radiofluorescence</i>
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Description

A collection of functions to analyse spatially resolved radiofluorescence data

Details

Funding

- Sebastian Kreutzer received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 844457.

Author(s)

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References

##TODO

create_RFCurveArray	<i>Create Multidimensional Curve Arrays from File input</i>
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Description

Helper function to create a multidimensional curve array to prepare the Bayesian process

Usage

```
create_RFCurveArray(files)
```

Arguments

files [list \(required\)](#): list of .rf files to be imported

Value

Returns a list with two arrays for the RF_nat and the RF_reg curve

Function version

0.1.0

How to cite

Kreutzer, S., 2020. create_RFCurveArray(): Create Multidimensional Curve Arrays from File input. Function version 0.1.0. In: Kreutzer, S., Mittelstrass, D., 2020. RLumSTARR: Spatially Resolved Radiofluorescence Analysis. R package version 0.1.0.9000-29.

Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom) ,
RLum Developer Team

Examples

```
##TODO
```

extract_TRUELight	<i>Extract True Light from the Camera measurements using a Bayesian Approach</i>
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Description

Run the Bayesian model to extract the true light from a ROI

Usage

```
extract_TRUELight(data, ROI = 1, method_control = list())
```

Arguments

`data` [array \(required\)](#): curve array created by [create_RFCurveArray](#)
`ROI` [numeric \(with default\)](#): ROI to be analysed
`method_control` [list \(optional\)](#): parameter to be passed to `rjags`. Supported are `n.chain`, `n.iter`, `thin`, `variable.names`, `model`

Value

Returns a list with an [Luminescence::RLum.Data.Curve](#) object (the RF curve with the true light) and the [rjags::coda.samples](#) output for further processing. *Note: Regardless the observed variable, the parameter `alpha` will be always be used to create the curve*

Function version

0.1.0

How to cite

Kreutzer, S., 2020. `extract_TRUELight()`: Extract True Light from the Camera measurements using a Bayesian Approach. Function version 0.1.0. In: Kreutzer, S., Mittelstrass, D., 2020. RLum-STARR: Spatially Resolved Radiofluorescence Analysis. R package version 0.1.0.9000-29.

Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom) ,
RLum Developer Team

Examples

```
##TODO
```

run_ImageJ

Run ImageJ SR-RF macro

Description

The script runs the SR-RF ImageJ macro in batch mode out of R

Usage

```
run_ImageJ(
  path,
  RF_nat = "default",
  RF_reg = "default",
  bg_rm = "take_from_RF_reg",
  image_group_size = 5,
  image_alignment = TRUE,
  first_slices_rm = FALSE,
  noise_tolerance = 10,
  ROI_size = 10,
  center_x = 0.5,
  center_y = 0.5,
  diameter = 0.9,
  use_predefined_ROIs = FALSE,
  channel_time = 5,
  save_workflow_images = FALSE,
  save_additional_results = FALSE,
  save_signal_decay_videos = FALSE,
  offset_time = 0,
  .ImageJ = "/Applications/Fiji.app/Contents/MacOS/ImageJ-macosx"
)
```

Arguments

path	character (required) : path to files to be analysed
RF_nat	character (default) : name of the RF_nat file
RF_reg	character (default) : name of the RF_reg file
bg_rm	character (with default) : background subtraction options. Allowed are none (no background subtraction), take_from_RF_reg (takes the last 100 channels from the RF_reg signal: dangerous) or <your file name> (this does not work in batch mode)
image_group_size	numeric (with default) : grouping value for running median to remove outliers
image_alignment	logical (with default) : enable/disable image alignment
first_slices_rm	logical (with default) : remove first slice of each curve set
noise_tolerance	numeric (with default) : noise tolerance parameter
ROI_size	numeric (with default) : ROI size in pixel

center_x **numeric** (*with default*): aliquot ROI centre x-coordinate
 center_y **numeric** (*with default*): aliquot ROI centre y-coordinate
 diameter **numeric** (*with default*): relative diameter aliquot ROI
 use_predefined_ROIs **logical** (*with default*): use pre-defined ROIs imported from a file ROIs.zip found in the same folder as the files
 channel_time **numeric** (*with default*): channel time, this parameter was set the moment the sequence was written
 save_workflow_images **logical** (*with default*): enable/disable writing of additional workflow images
 save_additional_results **logical** (*with default*): enable/disable writing of additional workflow images
 save_signal_decay_videos **logical** (*with default*): enable/disable writing of additional workflow videos
 offset_time **numeric** (*with default*): offset time for the time axis
 .ImageJ **numeric** (*with default*): Path to ImageJ (the macro is shipped with the package)

Value

This functions returns the path of the analysed data

Function version

0.1.0

How to cite

Kreutzer, S., 2020. run_ImageJ(): Run ImageJ SR-RF macro. Function version 0.1.0. In: Kreutzer, S., Mittelstrass, D., 2020. RLumSTARR: Spatially Resolved Radiofluorescence Analysis. R package version 0.1.0.9000-29.

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