

Package ‘xsp’

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Type Package

Title The Chi-Square Periodogram

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Description The circadian period of a time series data is predicted and the statistical significance of the periodicity are calculated using the chi-square periodogram.

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Suggests testthat

Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

Imports ggplot2, reshape2

NeedsCompilation no

Repository CRAN

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calcQp	<i>calculate Qp</i>
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Description

calculate Qp

Usage

```
calcQp(values, varPer)
```

Arguments

values	activity values (each value represents the measured activity in a minute)
varPer	a period at which the chi-squared statistics is to be calculated

Value

a numeric of the calculated chi-squared statistics at the given varPer

chiSqPeriodogram	<i>Calculate chi-square periodogram</i>
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Description

Calculate chi-square periodogram

Usage

```
chiSqPeriodogram(activityDF, res = 0.1)
```

Arguments

activityDF	data frame containing time and activity values
res	time resolution for calculating chi-squared statistics

Value

data frame of two columns (dateTime (min), Qp value)

chiSqPeriodogramPlot *Draw a graph of chi-square periodogram*

Description

Draw a graph of chi-square periodogram

Usage

```
chiSqPeriodogramPlot(chiSqPrdgmDF)
```

Arguments

chiSqPrdgmDF data frame containing three column (testPerVec, Qp.act, Qp.sig)

Value

ggplot object

Examples

```
oscillation <- sin(seq(0, 2 * pi * 10, by = 2 * pi / 1440))
oscillation.df <- data.frame(dateTime = 1:length(oscillation), value = oscillation)
chiSqPeriodogramPlot(chiSqPeriodogram(oscillation.df))
```

getPeak *find the peak value from chi-squared periodogram*

Description

find the peak value from chi-squared periodogram

Usage

```
getPeak(x, y, z, p)
```

Arguments

x	times at which each chi-squared statistics is calculated
y	chi-squared statistics calculated from an activity data
z	chi-squared statistics calculated from a null-hypothesis
p	number of points to be used for fitting a quadratic function

Value

data frame with five numerics

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