

# Package ‘zeitgebr’

December 15, 2017

**Title** Analyse and Visualise Circadian Behaviours

**Date** 2017-09-06

**Version** 0.0.0.9000

**Description** Use behavioural variables to compute period, rhythmicity and other circadian parameters.

**Depends** R (>= 3.00),  
behavr

**Imports** data.table,  
lomb,  
ggplot2

**Suggests** testthat,  
covr,  
knitr

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**URL** <https://github.com/rethomics/zeitgebr>

**BugReports** <https://github.com/rethomics/zeitgebr/issues>

**RoxygenNote** 6.0.1

**Roxygen** list(markdown = TRUE)

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dams_sample	<i>A behavr table with approximatly ten days of DAM2 recording for 32 fruit flies. The first 10, the following 11 and the last 11 animals have long, short and wild type period, respectively (see meta(dams_sample)). Raw data stored at <a href="https://github.com/rethomics/zeitgebr/tree/master/raw_data">https://github.com/rethomics/zeitgebr/tree/master/raw_data</a></i>
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### Description

A behavr table with approximatly ten days of DAM2 recording for 32 fruit flies. The first 10, the following 11 and the last 11 animals have long, short and wild type period, respectively (see meta(dams\_sample)). Raw data stored at [https://github.com/rethomics/zeitgebr/tree/master/raw\\_data](https://github.com/rethomics/zeitgebr/tree/master/raw_data)

### Usage

```
dams_sample
```

### Format

An object of class behavr (inherits from data.table, data.frame) with 415040 rows and 3 columns.

### Author(s)

Maite Ogueta

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periodogram	<i>Computes periodograms</i>
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### Description

This function builds peroidograms, with one of several methods, for each individual of [behavr](#) table

### Usage

```
periodogram(var, data, period_range = c(hours(16), hours(32)),
  resample_rate = 1/mins(1), alpha = 0.05, FUN = chi_sq_periodogram, ...)
```

### Arguments

var	variable to analyse
data	<a href="#">behavr</a> table
period_range	vector of size 2 defining minimal and maximal range of period to study (in seconds)
resample_rate	frequency to resample (up or down) the data at (in hertz)

alpha	significance level
FUN	function used to compute periodogram (see <a href="#">periodogram_methods</a> )
...	additional arguments to be passed to FUN

**Value**

a [behavr](#) table with the

**Examples**

```
data(dams_sample)
pdt <- periodogram(activity, dams_sample, FUN=ls_periodogram, oversampling = 4)
pdt <- periodogram(activity, dams_sample, FUN=chi_sq_periodogram)
```

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periodogram_methods	<i>Methods For Computing Periodograms</i>
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**Description**

These functions provides a series of methods to assess periodicity of circadian processes.

**Usage**

```
chi_sq_periodogram(x, period_range = c(hours(16), hours(32)),
  sampling_rate = 1/mins(1), alpha = 0.05, time_resolution = hours(0.1))

fourier_periodogram(x, period_range = c(hours(16), hours(32)),
  sampling_rate = 1/mins(1), alpha = 0.05)

ls_periodogram(x, period_range = c(hours(16), hours(32)),
  sampling_rate = 1/mins(1), alpha = 0.05, oversampling = 8)
```

**Arguments**

x	numeric vector
period_range	vector of size 2 defining minimal and maximal range of period to study (in seconds)
sampling_rate	the – implicitly regular – sampling rate of x (in hertz)
alpha	significance level
time_resolution	the resolution of periods to scan
oversampling	the oversampling factor

**Details**

TODO

**Value**

a [data.table](#) with the columns:

- `period` – the period (in s)
- `power` – the power (or equivalent) for a given period
- `signif_threshold` – the significance threshold of the power (at alpha)

**See Also**

- [lomb::lsp](#) the original function for `ls_periodogram`
- [xsp::chiSqPeriodogram](#) (code derived from)

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