Package 'marklpp'

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Type Functions for marked point patterns on linear networks.

Title Functions for marked point patterns on linear networks.

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Description Functions for marked point patterns on linear networks.

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Imports stats

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`fmarkcorr.lpp` *Functional mark correlation function for point patterns over a linear network*

Description

Functional mark correlation function for point patterns over a linear network

Usage

```
fmarkcorr.lpp(
  X,
  r = NULL,
  normalise = FALSE,
  f = function(m1, m2) {
     m1 * m2
 },
  ftype = c("corr", "vario", "rcorr", "schlather", "Beisbart"),
  method = c("density", "loess"),
  ...
)
```

Arguments

X	an object of class lpp
r	Optional. Numeric vector. The values of the argument r at which the mark correlation function should be evaluated.
normalise	If normalise=FALSE, compute only the numerator of the expression for the mark correlation.
f	Optional. Test function f used in the definition of the mark correlation function. An R function with at least two arguments. There is a sensible default.
ftype	type of test function used in argument f. Currently any selection of the options "corr","vario","rcorr","schlather","equ","Beisbart"
method	type of smoothing, either density or loess.

Value

a data.frame which shows mark correlation functions evaluated at each time as well as the overall values.

Author(s)

Mehdi Moradi <m2.moradi@yahoo.com> and Matthias Eckardt

References

Eckardt, M., Mateu, J., and Moradi, M. (2023) Point processes on linear networks with function-valued marks.

Examples

```
L <- spiders$domain
X <- runiflpp(150,L=L)
m <- t(replicate(150,runif(513)))
marks(X) <- as.data.frame(m)
Fcor <- fmarkcorr.linnet(X,r, ftype = "corr", method = "density" ,normalise = TRUE)
plot(Fcor$r,Fcor$gw,type = "l")
```

`linearinhommarkk.lpp` *Mark-Weighted inhomogeneous K Function for point patterns over a linear network*

Description

Mark-Weighted inhomogeneous K Function for point patterns over a linear network

Usage

```
linearinhommarkk.lpp(X, r = r, lambda = lambda, normalize = FALSE, ...)
```

Arguments

`X`	an object of class lpp
`r`	Optional. Numeric vector. The values of the argument r at which the mark correlation function should be evaluated.
`lambda`	Intensity values at data points.
`normalize`	Logical.

Value

a numeric vector.

Author(s)

Mehdi Moradi <m2.moradi@yahoo.com> and Matthias Eckardt

References

Eckardt, M., and Moradi, M. (2023) Marked point processes on linear networks.

Examples

```
X <- rpoislpp(10,simplenet)
r <- seq(0,boundingradius(simplenet),length.out=513)
dx <- densityQuick.lpp(X,at = "points")
linearinhommarkk.lpp(X,r=r,lambda=dx)
```

linearmarkk.lpp — *Mark-Weighted homogeneous K Function for point patterns over a linear network*

Description

Mark-Weighted homogeneous K Function for point patterns over a linear network

Usage

```
linearmarkk.lpp(X, r = r)
```

Arguments

X	an object of class lpp
r	Optional. Numeric vector. The values of the argument r at which the mark correlation function should be evaluated.

Value

a numeric vector.

Author(s)

Mehdi Moradi <m2.moradi@yahoo.com> and Matthias Eckardt

References

Eckardt, M., and Moradi, M. (2023) Marked point processes on linear networks.

Examples

```
X <- rpoislpp(10,simplenet)
r <- seq(0,boundingradius(simplenet),length.out=513)
linearmarkk.lpp(X,r=r)
```

markcorr.lpp — *Mark correlation function for point patterns over a linear network*

Description

Mark correlation function for point patterns over a linear network

Usage

```
markcorr.lpp(
  X,
  r = NULL,
  normalise = TRUE,
  f = function(m1, m2) {
     m1 * m2
 },
  ftype = c("corr", "vario", "rcorr", "schlather", "equ", "Beisbart"),
  method = c("density", "loess"),
  ...
)
```

Arguments

X	an object of class lpp
r	Optional. Numeric vector. The values of the argument r at which the mark correlation function should be evaluated.
normalise	If normalise=FALSE, compute only the numerator of the expression for the mark correlation.
f	Optional. Test function f used in the definition of the mark correlation function. An R function with at least two arguments. There is a sensible default.
ftype	type of test function used in argument f. Currently any selection of the options "corr","vario","rcorr","schlather","equ","Beisbart"
method	type of smoothing, either density or loess.

Value

a data.frame which gives the empirical mark correlation function and the distance vector r where the mark correlation finction is evaluated.

Author(s)

Mehdi Moradi <m2.moradi@yahoo.com> and Matthias Eckardt

References

Eckardt, M., and Moradi, M. (2023) Marked point processes on linear networks.

Examples

```
X <- rpoislpp(10,simplenet)
marks(X) <- runif(npoints(X),10,11)
markcorr.lpp(X,r=r,ftype = "corr",f=function(m1,m2){m1*m2})
```

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