Package 'somebm'

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Title some Brownian motions simulation functions

Description some Brownian motions simulation functions

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R topics documented:

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bm *Generate a time series of Brownian motion.*

Description

This function generatea a time series of one dimension Brownian motion, adapted from http://cos.name/wp-content/uploads/2008/12/stochastic-differential-equation-with-r.pdf .

Usage

```
bm(x0 = 0, t0 = 0, t = 1, n = 100)
```

Arguments

x0	the start value, with the default value 0
t0	the start time point, with the default value 0
t	the end time point, with the default value 1
n	the number of points between t0 and t that will be generated, with the default value 100

Examples

```
bm()
plot(bm())
a <- bm(x0=1, t0=1, t=2, n=1000)
plot(a)
```

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fbm *Generate a time series of fractional Brownian motion.*

Description

This function generatea a time series of one dimension fractional Brownian motion. adapted from http://www.mathworks.com.au/matlabcentral/fileexchange/38935-fractional-brownian-motion-generator .

Usage

```
fbm(hurst = 0.7, n = 100)
```

Arguments

hurst	the hurst index, with the default value 0.71
n	the number of points between 0 and 1 that will be generated, with the default value 100

Examples

```
fbm()
plot(fbm())
d <- fbm(hurst=0.2, n=1000)
plot(d)
```

gbm *Generate a time series of geometric Brownian motion.*

Description

This function generatea a time series of one dimension geometric Brownian motion. adapted from http://cos.name/wp-content/uploads/2008/12/stochastic-differential-equation-with-r.pdf .

Usage

```
gbm(x0 = 1, mu = 0, sigma = 1, t0 = 0, t = 1, n = 100)
```

Arguments

x0	the start value, with the default value 1
mu	the interest rate, with the default value 0
sigma	the diffusion coefficient, with the default value 1
t0	the start time point, with the default value 0
t	the end time point, with the default value 1
n	the number of points between t0 and t that will be generated, with the default value 100

Examples

```
gbm()
plot(gbm())
b <- gbm(x0=1, mu=1, sigma=0.5, t0=1, t=2, n=1000)
plot(b)
```

somebm *Some functions to generate the time series of Brownian motions.*

Description

This package provides some functions to generate the time series of Brownian motions, including (regular) Brownian motion (bm), geometric Brownian motion (gbm), and fractional Brownian motion (fbm). They can help users simulate the process of one-dimension Brownian motions.

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