Package 'chopthin'

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Type Package

Title The Chopthin Resampler

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Description Resampling is a standard step in particle filtering and in
sequential Monte Carlo. This package implements the chopthin resampler, which
keeps a bound on the ratio between the largest and the smallest weights after
resampling.

License GPL-3

Imports Rcpp (>= 0.11.2)

LinkingTo Rcpp

Suggests testthat

RoxygenNote 6.0.1

NeedsCompilation yes

Repository CRAN

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R topics documented:

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chopthin   *The Chopthin Resampler*

Description

A fast implementation of the Chopthin resampler. Can be used as the resampling step in particle filters and in sequential Monte Carlo.

Usage

```
chopthin(w, N, eta = 5.828427, normalise = TRUE, checks = TRUE)
```

Arguments

w	a vector of weights
N	target number of particles
eta	upper bound on the ratio between the weights. Must be >=4. If eta=Inf then only thinnig is performed, requiring the number of weights to be at least N.
normalise	Flag for controlling if the returned weights should be normalised. If TRUE (default) then the sum of the returned weights will sum to N. If FALSE then the returned weights have the same sum as the original weights (within the numerical precision).
checks	Flag controlling if checks on the input and the result should be performed. Default TRUE.

Value

A list with two elements: new weights and indices of the ancestors of the new particles. The weights are normalised to add up to N.

References

A Gandy and F. D-H Lau. The chopthin algorithm for resampling. IEEE Transactions on Signal Processing, 64(16):4273–4281, 2016

Examples

```
chopthin(runif(10),N=10)
chopthin(runif(10),N=20,4)
chopthin(runif(10),N=5)
chopthin(runif(10),N=1)
```

Index

chopthin,