

Package ‘KDEmcmc’

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Type Package
Title Kernel Density Estimation with a Markov Chain Monte Carlo Sample
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Description Provides methods for selecting the optimal bandwidth in kernel density estimation for dependent samples, such as those generated by Markov chain Monte Carlo (MCMC). Implements a modified biased cross-validation (mBCV) approach that accounts for sample dependence, improving the accuracy of estimated density functions.
License GPL (>= 3)
Depends R (>= 3.5.0)
Imports Rcpp, methods
LinkingTo Rcpp, RcppArmadillo
LazyData true
RcppModules cKDEmodule
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cKDE

*RCPPE Implementation of the Library***Description**[Rcpp_cKDE-class](#)**Value**

No return value

mBCV

*Calculate Optimal Bandwidth in Kernel Density Estimation***Description**

Calculate the optimal bandwidth for the kernel density estimator with a Markov chain Monte Carlo sample using modified biased cross-validation method.

Usage

```
mBCV(Y_in)

## S3 method for class 'mBCV_obj'
print(x, ...)
```

Arguments

<code>Y_in</code>	data from which the estimate is to be computed.
<code>x</code>	object of class <code>mBCV_obj</code> ; result of a call to <code>mBCV()</code> .
<code>...</code>	further arguments passed to or from other methods.

Value

mBCV returns a list of the following components:

<code>bw</code>	optimal bandwidth.
<code>IACF</code>	integrated autocorrelation time.
<code>Y_in</code>	input data.

Examples

```
res = mBCV(simMCMC)
den = density(res$Y_in, bw=res$bw)
hist(res$Y_in, xlim=range(den$x), freq=FALSE,
     main="Histogram and Density Estimates", xlab="")
lines(den$x, den$y, col='blue', lwd=2)
```

plot.mBCV_obj	<i>Plot Kernel Density Result from mBCV_obj</i>
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Description

draw a histogram and density curve of the results.

Usage

```
## S3 method for class 'mBCV_obj'  
plot(x, main=NULL, xlab="", ...)
```

Arguments

x	mBCV_obj object.
main	title of plot.
xlab	title for the x axis.
...	arguments to be paseed to methods.

Value

No return value. Called for its side effects (generates a plot).

simMCMC	<i>Simulated Markov Chain Monte Carlo Sample</i>
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Description

a simulated data from the Gibbs sampler.

Usage

```
data("simMCMC")
```

Format

a numeric vector of length 1000.

Examples

```
data(simMCMC)
```

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* **datasets**

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