

Package ‘RDieHarder’

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Title R interface to the dieharder RNG test suite

Description The RDieHarder packages provides an R interface to the dieharder suite of random number generators and tests that was developed by Robert G. Brown, extending earlier work by George Marsaglia and others.

Depends R (>= 2.5.0)

SystemRequirements DieHarder library (>= 2.8.1) from
<http://www.phy.duke.edu/~rgb/General/dieharder.php>, GNU GSL for the GSL random-number generators

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URL <http://code.google.com/p/rdieharder/>

Repository CRAN

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dieharder

*Random numebr generator test suite***Description**

The random package provides an interface to the dieharder suite of random number generators.

Usage

```
## Default S3 method:
dieharder(rng="mt19937", test="runs", psamples=100,
          seed=0, verbose=FALSE, inputfile="", ntuple=5)
## S3 method for class 'dieharder':
print(x, ...)
## S3 method for class 'dieharder':
summary(object, ...)
## S3 method for class 'dieharder':
plot(x, ...)
dieharderGenerators()
dieharderTests()
```

Arguments

rng	Either a single character vector, or an integer index, selecting a random-number generator to be tested.
test	Either a single character vector, or an integer index, selecting a dieharder test to be used.
psamples	An integer for the number of probability values samples underlying the main Kolomogorov-Smirnov test.
seed	An integer seed that is to be used for the dieharder rng; if 0, a new random seed is generated.
verbose	A switch selecting verbose or silent operation.
inputfile	File to read rng draws from for the <code>file_input</code> and <code>file_input_raw</code> generators.
ntuple	A integer selecting the ntuple length for tests on short bit strings that permit varying length such as RGB bitdist.
x	A dieharder object.
object	A dieharder object.
...	Other arguments passed on.

Details

The current list of generators can be generated dynamically using the `dieharderGenerators()` function. Entries with `id` below 200 are from the GNU Scientific Library, entries with `id` greater or equal to 200 and less than 400 are from Dieharder itself, entries with `id` greater or equal to 400 and less than 500 are from GNU R, entries with `id` greater or equal to 500 and less than 600 are hardware-based (which is system-dependent), and entries with `id` greater or equal to 600 are user-contributed.

The current list of tests can be generated dynamically using the `dieharderTests()` function.

Value

An object of class `dieharder`, which inherits from the class `htest` commonly used for test statistics is returned. It contains the members

<code>p.value</code>	for the (Kuiper variant) of the Kolmogorov-Smirnov test of the null of a uniform distribution of test values generated by <code>psamples</code> tests of <code>test</code> using draws from <code>rng</code>
<code>data</code>	the vector of test statistics used for the Kolmogorov-Smirnov test
<code>method</code>	the test method as returned by the <code>dieharder</code> library
<code>data.name</code>	a character vector describing the data
<code>generator</code>	a text description of the generator as returned by the <code>dieharder</code> library

Author(s)

Dirk Eddelbuettel (edd@debian.org) for the R interface and the port of the R RNGs to DieHarder; Robert G. Brown for everything else in `dieharder`.

References

The `dieharder` source code and website at <http://www.phy.duke.edu/~rgb/General/dieharder.php>.

Examples

```
## need to set this for the example to pass the R CMD check test
.dieharder.generators <- dieharderGenerators()
dh <- dieharder("randu", "runs", seed=12345)
dh
summary(dh)
plot(dh)
```

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