

# Package ‘SyncRNG’

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**Title** A Synchronized Tausworthe RNG for R and Python

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**Depends** R (>= 3.0.0)

**Description** Random number generation designed for cross-language usage.

**License** GPL-2

**Imports** methods

**Suggests** testthat

**RoxygenNote** 5.0.1

**NeedsCompilation** yes

**Repository** CRAN

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syncrng-package	<i>SyncRNG - Synchronized Random Numbers in R and Python</i>
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## Description

The SyncRNG package provides a random number generator implemented in C and linked to both R and Python. This way, you can generate the same random number sequence in both languages by using the same seed.

The package implements a Tausworthe LSFR RNG (more details at <https://gertjanvandenburg.com/blog/syncrng/>). This is a very fast pseudo-random number generator.

## Usage

There are two ways to use this package in R. It can be used as a reference class, where a SyncRNG object is used to keep the state of the generator and numbers are generated using the object methods. It can also be used as a user-defined random number generator using the strategy outlined in `.Random.user`. See the examples section below.

## Author(s)

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## References

URL: <https://github.com/GjjvdBurg/SyncRNG>

## Examples

```
library(SyncRNG)

# As user defined RNG:

set.seed(0, 'user', 'user')
runif(2)
# [1] 3.666952e-04 6.257184e-05
set.seed(0, 'user', 'user')
rnorm(2)
# [1] 0.01006027 0.42889422

# As class:

s <- SyncRNG(seed=0)
s$rand()
# [1] 0.0003666952
s$rand()
# [1] 6.257184e-05
```

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SyncRNG-class

*A Reference Class for SyncRNG*

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## Description

See [syncrng-package](#) for package documentation.

## Fields

`seed` The seed for the random number generator  
`state` The current state of the RNG, should not be modified by the user

**Methods**

`initialize(..., seed = 0)` Initialize the RNG using the C function `R_syncrng_seed`  
`rand()` Generate a single random float in the range `[0, 1)`  
`randbelow(n)` Generate a random integer below a given number  
`randi()` Generate a single random 32-bit integer  
`shuffle(x)` Randomly shuffle a provided array of values

**Examples**

```
s <- SyncRNG(seed=123456)
for (i in 1:10)
  cat(s$randi(), '\n')
```

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