

# Package ‘flexiblas’

May 8, 2026

**Type** Package

**Title** 'FlexiBLAS' API Interface

**Version** 3.4.0

**Description** Provides functions to switch the 'BLAS'/LAPACK' optimized backend and change the number of threads without leaving the R session, which needs to be linked against the 'FlexiBLAS' wrapper library  
<<https://www.mpi-magdeburg.mpg.de/projects/flexiblas>>.

**License** LGPL (>= 3)

**Encoding** UTF-8

**OS\_type** unix

**URL** <https://github.com/Enchufa2/r-flexiblas>

**BugReports** <https://github.com/Enchufa2/r-flexiblas/issues>

**Suggests** tinytest

**RoxygenNote** 7.1.1

**NeedsCompilation** yes

**Author** Iñaki Ucar [aut, cph, cre] (ORCID:  
<<https://orcid.org/0000-0001-6403-5550>>),  
Martin Koehler [aut, cph] (ORCID:  
<<https://orcid.org/0000-0003-2338-9904>>)

**Maintainer** Iñaki Ucar <iucar@fedoraproject.org>

**Repository** CRAN

**Date/Publication** 2024-01-11 10:00:09 UTC

## Contents

flexiblas-package . . . . .	2
flexiblas-backends . . . . .	2
flexiblas-threads . . . . .	4
flexiblas_avail . . . . .	5
flexiblas_version . . . . .	5

<b>Index</b>	<b>6</b>
--------------	----------

flexiblas-package      **flexiblas:** *FlexiBLAS API Interface for R*

---

### Description

Provides functions to switch the BLAS/LAPACK optimized backend and change the number of threads without leaving the R session, which needs to be linked against the FlexiBLAS wrapper library.

### Author(s)

Martin Koehler, Iñaki Ucar

### References

Koehler M., Saak J. (2020). "FlexiBLAS - A BLAS and LAPACK wrapper library with runtime exchangeable backends." [doi:10.5281/zenodo.3909214](https://doi.org/10.5281/zenodo.3909214).

---

flexiblas-backends      *Handle Backends*

---

### Description

Get current backend, list available ones, load and switch between backends.

### Usage

```
flexiblas_current_backend()
```

```
flexiblas_list()
```

```
flexiblas_list_loaded()
```

```
flexiblas_load_backend(name)
```

```
flexiblas_switch(n)
```

### Arguments

name                    character vector of backend names or paths (case insensitive).

n                        loaded backend index.

**Value**

`flexiblas_current_backend` and `flexiblas_list*` return a character vector of backend names or paths.

`flexiblas_load_backend` and `flexiblas_switch` return the indices of the loaded backends if the operation was successful, or fail otherwise.

**See Also**

[flexiblas\\_avail](#), [flexiblas\\_version](#), [flexiblas-threads](#)

**Examples**

```
n <- 2000
runs <- 10
ignore <- "__FALLBACK__"

A <- matrix(runif(n*n), nrow=n)
B <- matrix(runif(n*n), nrow=n)

# load backends
backends <- setdiff(flexiblas_list(), ignore)
idx <- flexiblas_load_backend(backends)

# benchmark
timings <- sapply(idx, function(i) {
  flexiblas_switch(i)

  # warm-up
  C <- A[1:100, 1:100] %*% B[1:100, 1:100]

  unname(system.time({
    for (j in seq_len(runs))
      C <- A %*% B
  })[3])
})

if (length(timings)) {
  results <- data.frame(
    backend = backends,
    `timing [s]` = timings,
    `performance [GFlops]` = (2 * (n / 1000)^3) / timings,
    check.names = FALSE)

  results[order(results$performance),]
}
```

---

flexiblas-threads      *Get/Set Number of Threads*

---

### Description

Get or set the number of threads for the BLAS backend.

### Usage

```
flexiblas_get_num_threads()
```

```
flexiblas_set_num_threads(n)
```

### Arguments

n                    number of threads.

### Value

flexiblas\_get\_num\_threads returns the number of threads.

flexiblas\_set\_num\_threads returns nothing.

### See Also

[flexiblas\\_avail](#), [flexiblas\\_version](#), [flexiblas-backends](#)

### Examples

```
max_threads <- 4
n <- 2000
runs <- 10

A <- matrix(runif(n*n), nrow=n)
B <- matrix(runif(n*n), nrow=n)

for (i in seq_len(max_threads)) {
  message("Set number of threads to: ", i)
  flexiblas_set_num_threads(i)

  print(system.time({
    for (j in seq_len(runs))
      C <- A %*% B
  })))
}
```

---

`flexiblas_avail`      *Check Availability*

---

**Description**

Check whether FlexiBLAS is available.

**Usage**

```
flexiblas_avail()
```

**Value**

A boolean.

**See Also**

[flexiblas\\_version](#), [flexiblas-backends](#), [flexiblas-threads](#)

---

`flexiblas_version`      *Get Version*

---

**Description**

Get current version of FlexiBLAS.

**Usage**

```
flexiblas_version()
```

**Value**

A [package\\_version](#) object.

**See Also**

[flexiblas\\_avail](#), [flexiblas-backends](#), [flexiblas-threads](#)

# Index

flexiblas-backends, [2](#), [4](#), [5](#)  
flexiblas-package, [2](#)  
flexiblas-threads, [3](#), [4](#), [5](#)  
flexiblas\_avail, [3-5](#), [5](#)  
flexiblas\_current\_backend  
    (flexiblas-backends), [2](#)  
flexiblas\_get\_num\_threads  
    (flexiblas-threads), [4](#)  
flexiblas\_list (flexiblas-backends), [2](#)  
flexiblas\_list\_loaded  
    (flexiblas-backends), [2](#)  
flexiblas\_load\_backend  
    (flexiblas-backends), [2](#)  
flexiblas\_set\_num\_threads  
    (flexiblas-threads), [4](#)  
flexiblas\_switch (flexiblas-backends), [2](#)  
flexiblas\_version, [3-5](#), [5](#)  
  
package\_version, [5](#)