

# Package: Rpolyhedra (via r-universe)

December 9, 2024

**Type** Package

**Title** Polyhedra Database

**Version** 0.5.6

**Language** en-US

**Maintainer** Alejandro Baranek <abaranek@dc.uba.ar>

**Description** A polyhedra database scraped from various sources as R6 objects and 'rgl' visualizing capabilities.

**License** MIT + file LICENSE

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.3.2

**VignetteBuilder** knitr

**Depends** R (>= 3.5.0)

**Imports** R6, geometry, rgl, stringr, XML, digest, lgr, dplyr, jsonlite

**Suggests** testthat, knitr, pkgdown, rmarkdown, covr, codemeter

**Collate** 'Rpolyhedra-package.R' 'polyhedra-lib.R' 'ledger-lib.R' 'db-lib.R' 'env-lib.R' 'package-lib.R' 'serialization-lib.R' 'public-lib.R' 'test-lib.R' 'zzz.R'

**BugReports** <https://github.com/ropensci/Rpolyhedra/issues>

**URL** <https://docs.ropensci.org/Rpolyhedra/>,  
<https://github.com/ropensci/Rpolyhedra>

**StagedInstall** TRUE

**Config/pak/sysreqs** libfreetype6-dev libglu1-mesa-dev make libicu-dev libpng-dev libxml2-dev libgl1-mesa-dev zlib1g-dev

**Repository** <https://ropensci.r-universe.dev>

**RemoteUrl** <https://github.com/ropensci/Rpolyhedra>

**RemoteRef** master

**RemoteSha** d90b1987191e0bcc14af4f0ab23b9d9ce6602f70

## Contents

Rpolyhedra-package . . . . .	2
genLogger . . . . .	3
getAvailablePolyhedra . . . . .	4
getAvailableSources . . . . .	5
getLogger . . . . .	5
getPolyhedraObject . . . . .	6
getPolyhedron . . . . .	6
loggerSetupFile . . . . .	7
mutate_cond . . . . .	8
PolyhedraDatabase . . . . .	8
Polyhedron . . . . .	14
PolyhedronState . . . . .	17
PolyhedronStateDefined . . . . .	19
PolyhedronStateDeserializer . . . . .	24
PolyhedronStateDmccooyScraper . . . . .	25
PolyhedronStateNetlibScraper . . . . .	28
polyhedronToXML . . . . .	31
scrapePolyhedra . . . . .	31
scrapePolyhedraSources . . . . .	32
switchToFullDatabase . . . . .	33

<b>Index</b>	<b>34</b>
--------------	-----------

---

Rpolyhedra-package      *Rpolyhedra: Polyhedra Database*

---

## Description

A polyhedra database scraped from various sources as R6 objects and 'rgl' visualizing capabilities.

## Details

A polyhedra database scraped from:

- <http://paulbourke.net/dataformats/phd/>: PHD files as R6 objects and 'rgl' visualizing capabilities. The PHD format was created to describe the geometric polyhedra definitions derived mathematically <<https://netlib.org/polyhedra/>> by Andrew Hume and by the Kaleido program of Zvi Har'El.
- <http://dmccooy.com/Polyhedra/>: Polyhedra text datafiles.

### Author(s)

**Maintainer:** Alejandro Baranek <abarane@dc.uba.ar> [compiler, copyright holder]

Authors:

- Leonardo Belen <leobelen@gmail.com> [compiler, copyright holder]

Other contributors:

- qbotics <qbotics6@gmail.com> [copyright holder]
- Barret Schloerke <schloerke@gmail.com> [reviewer]
- Lijia Yu <yu@lijiayu.net> [reviewer]

### See Also

Useful links:

- <https://docs.ropensci.org/Rpolyhedra/>
- <https://github.com/ropensci/Rpolyhedra>
- Report bugs at <https://github.com/ropensci/Rpolyhedra/issues>

---

genLogger

*genLogger*

---

### Description

Returns a configured logger with threshold according r6 object. This function is usually called in class constructors

### Usage

```
genLogger(r6.object)
```

### Arguments

r6.object      an r6.object

### Author(s)

ken4rab

---

getAvailablePolyhedra *Get available polyhedra*

---

### Description

Gets the list of names of available polyhedra and its status in the polyhedra database, which can be later called with getPolyhedron

### Usage

```
getAvailablePolyhedra(sources, search.string)
```

### Arguments

sources            A string vector containing the source, which can be obtained from getAvailableSources().

search.string    A search string

### Value

polyhedra names vector

### See Also

getAvailableSources

### Examples

```
# gets all polyhedra in the database
available.polyhedra <- getAvailablePolyhedra()

# returns all polyhedra from a given source, in this case, netlib
available.netlib.polyhedra <- getAvailablePolyhedra(sources = "netlib")

# search within the polyhedron names

cube <- getAvailablePolyhedra(sources = "netlib", search.string = "cube")
cube
```

---

getAvailableSources     *Get available sources*

---

**Description**

Gets the list of names of available sources in database to be used later as references to the package.

**Usage**

```
getAvailableSources()
```

**Value**

sources string vector, which can be obtained from getAvailableSources()

**See Also**

getAvailablePolyhedra, getPolyhedron

**Examples**

```
# gets all sources in the database
available.sources <- getAvailableSources()

# returns all polyhedra from all sources
available.polyhedra <- getAvailablePolyhedra(sources = available.sources)

# search within the polyhedron names from all sources
cubes <- getAvailablePolyhedra(
  sources = available.sources,
  search.string = "cube"
)
cubes
```

---

getLogger     *getLogger*

---

**Description**

Returns the configured lgr of an r6 object. If the object don't have a lgr or is not initialized returns an error

**Usage**

```
getLogger(r6.object)
```

**Arguments**

`r6.object`      an `r6.object`

**Author(s)**

ken4rab

---

`getPolyhedraObject`      *Get a polyhedra object*

---

**Description**

Return the polyhedra database handler.

**Usage**

```
getPolyhedraObject()
```

**Value**

.polyhedra

**See Also**

PolyhedraDatabase

---

`getPolyhedron`      *Get polyhedron*

---

**Description**

Gets a polyhedron from the database. It returns an R6 Class with all its characteristics and functions. The object returned, of type `Polyhedron`, allows to the user to get access to all the functionality provided.

**Usage**

```
getPolyhedron(source = "netlib", polyhedron.name)
```

**Arguments**

`source`      string vector, which can be obtained from `getAvailableSources()`

`polyhedron.name`

a valid name of a polyhedron in the database. Current names can be found with `getAvailablePolyhedra()`

**Value**

polyhedron R6 object

**See Also**

getAvailablePolyhedra, getAvailableSources

**Examples**

```
tetrahedron <- getPolyhedron(  
  source = "netlib",  
  polyhedron.name = "tetrahedron"  
)  
  
# returns name of polyhedra  
tetrahedron$getName()  
  
# polyhedron state  
tetrahedron.state <- tetrahedron$getState()  
  
# Johnson symbol and Schlafli symbol  
tetrahedron.state$getSymbol()  
  
# vertex data.frame  
tetrahedron.state$getVertices()  
  
# List of faces of solid representation (3D)  
tetrahedron.state$getSolid()  
  
# List of faces of net representation (2D)  
tetrahedron.state$getNet()
```

---

loggerSetupFile	<i>loggerSetupFile</i>
-----------------	------------------------

---

**Description**

loggerSetupFile

**Usage**

```
loggerSetupFile(log.file, default.threshold = "info", append = TRUE)
```

**Arguments**

log.file	log path for logging file
default.threshold	threshold for setting root. Default = "info"
append	if set to FALSE, cleanup all previous logs

**Author(s)**

kenarab

---

mutate_cond	<i>mutate_cond</i>
-------------	--------------------

---

**Description**

mutate\_cond

**Usage**

```
mutate_cond(.data, condition, ..., envir = parent.frame())
```

**Arguments**

.data	data frame to apply the mutate
condition	condition to conditionally apply mutate
...	mutation function
envir	environment to apply condition

---

PolyhedraDatabase	<i>Polyhedra database</i>
-------------------	---------------------------

---

**Description**

Scrapes all polyhedra in data folder to save a representation which is accessible by the final users upon call to getPolyhedron().

**Public fields**

version	version of database file
polyhedra.rds.file	path of rds database file
sources.config	Sources configuration for scraping different sources
ledger	rr ledger of scraping process
logger	class logger



## Methods

### Public methods:

- `PolyhedraDatabase$new()`
- `PolyhedraDatabase$getVersion()`
- `PolyhedraDatabase$configPolyhedraRDSPath()`
- `PolyhedraDatabase$existsSource()`
- `PolyhedraDatabase$addSourceConfig()`
- `PolyhedraDatabase$existsPolyhedron()`
- `PolyhedraDatabase$getPolyhedraSourceDir()`
- `PolyhedraDatabase$getPolyhedronFilename()`
- `PolyhedraDatabase$getPolyhedron()`
- `PolyhedraDatabase$addPolyhedron()`
- `PolyhedraDatabase$configPolyhedraSource()`
- `PolyhedraDatabase$saveRDS()`
- `PolyhedraDatabase$cover()`
- `PolyhedraDatabase$scrape()`
- `PolyhedraDatabase$testRR()`
- `PolyhedraDatabase$generateTestTasks()`
- `PolyhedraDatabase$schedulePolyhedraSources()`
- `PolyhedraDatabase$getAvailableSources()`
- `PolyhedraDatabase$getAvailablePolyhedra()`
- `PolyhedraDatabase$clone()`

**Method** `new()`: Create a new `PolyhedraDatabase` object.

*Usage:*

```
PolyhedraDatabase$new()
```

*Returns:* A new 'PolyhedraDatabase' object.

**Method** `getVersion()`: get the version of the current object.

*Usage:*

```
PolyhedraDatabase$getVersion()
```

*Returns:* Database version

**Method** `configPolyhedraRDSPath()`: sets the path of the RDS object

*Usage:*

```
PolyhedraDatabase$configPolyhedraRDSPath()
```

*Returns:* Database version

**Method** `existsSource()`: Determines if the source exists on the database

*Usage:*

```
PolyhedraDatabase$existsSource(source)
```

*Arguments:*

source source description

*Returns:* boolean value

**Method** addSourceConfig(): add source.config to the database

*Usage:*

```
PolyhedraDatabase$addSourceConfig(source.config)
```

*Arguments:*

source.config SourceConfig object able to scrape source polyhedra definitions

*Returns:* PolyhedraDatabase object

**Method** existsPolyhedron(): Determines if the database includes a polyhedron which name matches the parameter value

*Usage:*

```
PolyhedraDatabase$existsPolyhedron(source = "netlib", polyhedron.name)
```

*Arguments:*

source source description

polyhedron.name polyhedron description

*Returns:* boolean value

**Method** getPolyhedraSourceDir(): gets polyhedra sources folder

*Usage:*

```
PolyhedraDatabase$getPolyhedraSourceDir(source, create.dir = TRUE)
```

*Arguments:*

source source description

create.dir if dir does not exists, create it

*Returns:* string with polyhedra sources path

**Method** getPolyhedronFilename(): gets the filename of the polyhedron matching parameter.

*Usage:*

```
PolyhedraDatabase$getPolyhedronFilename(source, polyhedron.name, extension)
```

*Arguments:*

source source description

polyhedron.name polyhedron description

extension extension of the polyhedron filename

*Returns:* string with polyhedron filename

**Method** getPolyhedron(): gets polyhedron object which name matches the parameter value

*Usage:*

```
PolyhedraDatabase$getPolyhedron(
  source = "netlib",
  polyhedron.name,
  strict = FALSE
)
```

*Arguments:*

source source description  
 polyhedron.name polyhedron description  
 strict halts execution if polyhedron not found

*Returns:* Polyhedron object

**Method** addPolyhedron(): add polyhedron object to the database

*Usage:*

```
PolyhedraDatabase$addPolyhedron(
  source = "netlib",
  source.filename,
  polyhedron,
  overwrite = FALSE,
  save.on.change = FALSE
)
```

*Arguments:*

source source description  
 source.filename filename of the polyhedron source definition  
 polyhedron polyhedron object  
 overwrite overwrite exiting definition  
 save.on.change saves Database state after operation

*Returns:* Polyhedron object

**Method** configPolyhedraSource(): Process parameter filenames using source.config parameter

*Usage:*

```
PolyhedraDatabase$configPolyhedraSource(
  source.config,
  source.filenames = NULL,
  max.quant = 0,
  save.on.change = FALSE
)
```

*Arguments:*

source.config source configuration for scraping files  
 source.filenames filenames of the polyhedron source definition  
 max.quant maximum filenames to process  
 save.on.change saves Database state after operation

*Returns:* Modified 'PolyhedraDatabase' object.

**Method** saveRDS(): saveRDS

*Usage:*

```
PolyhedraDatabase$saveRDS(save.on.change = TRUE)
```

*Arguments:*

save.on.change saves Database state after operation

*Returns:* saveRDS return status

**Method** cover(): Cover objects and applies covering.code parameter

*Usage:*

```
PolyhedraDatabase$cover(
  mode,
  sources = names(self$sources.config),
  covering.code,
  polyhedra.names = NULL,
  max.quant = 0,
  save.on.change = FALSE,
  seed = NULL
)
```

*Arguments:*

mode covering mode. Available values are "scrape.queued", "scrape.retry", "skipped", "test"

sources sources names

covering.code code for applying in covering

polyhedra.names polyhedra names to cover (optional)

max.quant maximum numbers of polyhedra to cover

save.on.change saves Database state after operation

seed seed for deterministic random generator

*Returns:* A list with resulting objects covered

**Method** scrape(): Scrape polyhedra queued sources

*Usage:*

```
PolyhedraDatabase$scrape(
  mode = "scrape.queued",
  sources = names(self$sources.config),
  max.quant = 0,
  time2scrape.source = 30,
  save.on.change = FALSE,
  skip.still.queued = FALSE
)
```

*Arguments:*

mode covering mode. Available values are "scrape.queued", "scrape.retry", "skipped", "test"

sources sources names

max.quant maximum numbers of polyhedra to cover

time2scrape.source maximum time to spend scraping each source

save.on.change saves Database state after operation

skip.still.queued Flag unscraped files with status 'skipped'

covering.code code for applying in covering

polyhedra.names polyhedra names to cover (optional)

*Returns:* A list with resulting objects covered

**Method** testRR(): testRR*Usage:*

```
PolyhedraDatabase$testRR(sources = names(self$sources.config), max.quant = 0)
```

*Arguments:*

sources sources names

max.quant maximum numbers of polyhedra to cover

*Returns:* A list with resulting objects tested

**Method** generateTestTasks(): generate Test tasks for selected polyhedra*Usage:*

```
PolyhedraDatabase$generateTestTasks(
  sources = names(self$sources.config),
  polyhedra.names = NULL,
  TestTaskClass,
  max.quant = 0
)
```

*Arguments:*

sources sources names

polyhedra.names polyhedra names to cover (optional)

TestTaskClass an R6 TestTaskClass class

max.quant maximum numbers of polyhedra to cover

*Returns:* A list with resulting TestTasks generated

**Method** schedulePolyhedraSources(): Schedules polyhedra sources for scraping*Usage:*

```
PolyhedraDatabase$schedulePolyhedraSources(
  sources.config = getPackageEnvir(".available.sources"),
  source.filenames = NULL,
  max.quant = 0,
  save.on.change = FALSE
)
```

*Arguments:*

sources.config sources configurations for scraping files

source.filenames filenames of the polyhedron source definition

max.quant maximum filenames to process

save.on.change saves Database state after operation

*Returns:* Modified 'PolyhedraDatabase' object.

**Method** getAvailableSources(): Returns available sources in current database*Usage:*

```
PolyhedraDatabase$getAvailableSources()
```

*Returns:* A vector with names of available sources

**Method** `getAvailablePolyhedra()`: Retrieves all polyhedron within the source those names match with `search.string`

*Usage:*

```
PolyhedraDatabase$getAvailablePolyhedra(
  sources = self$getAvailableSources(),
  search.string = NULL,
  ignore.case = TRUE
)
```

*Arguments:*

`sources` sources names  
`search.string` string for matching polyhedron names  
`ignore.case` ignore case in search string

*Returns:* A list with resulting objects covered

**Method** `clone()`: The objects of this class are cloneable with this method.

*Usage:*

```
PolyhedraDatabase$clone(deep = FALSE)
```

*Arguments:*

`deep` Whether to make a deep clone.

---

Polyhedron

*Polyhedron*

---

## Description

Polyhedron container class, which is accessible by the final users upon call

## Public fields

`file.id` Polyhedron file.id  
`state` Polyhedron state  
`logger` class logger

## Methods

### Public methods:

- [Polyhedron\\$new\(\)](#)
- [Polyhedron\\$scrapeNetlib\(\)](#)
- [Polyhedron\\$scrapeDmccoey\(\)](#)
- [Polyhedron\\$deserialize\(\)](#)
- [Polyhedron\\$getName\(\)](#)
- [Polyhedron\\$getState\(\)](#)
- [Polyhedron\\$getSolid\(\)](#)

- [Polyhedron\\$isChecked\(\)](#)
- [Polyhedron\\$getRGLModel\(\)](#)
- [Polyhedron\\$exportToXML\(\)](#)
- [Polyhedron\\$getErrors\(\)](#)
- [Polyhedron\\$checkProperties\(\)](#)
- [Polyhedron\\$clone\(\)](#)

**Method** `new()`: Create a polyhedronState object

*Usage:*

```
Polyhedron$new(file.id, state = NULL)
```

*Arguments:*

`file.id` the file id

`state` polyhedron state object

*Returns:* A new Polyhedron object.

**Method** `scrapeNetlib()`: scrape Netlib polyhedron definition

*Usage:*

```
Polyhedron$scrapeNetlib(netlib.p3.lines)
```

*Arguments:*

`netlib.p3.lines` vector with netlib definition lines

*Returns:* A new PolyhedronStateDefined object.

**Method** `scrapeDmccoey()`: scrape Dmccoey polyhedron definition

*Usage:*

```
Polyhedron$scrapeDmccoey(polyhedra.dmccoey.lines)
```

*Arguments:*

`polyhedra.dmccoey.lines` vector with Dmccoey definition lines

*Returns:* A new PolyhedronStateDefined object.

**Method** `deserialize()`: deserialize a polyhedron state definition

*Usage:*

```
Polyhedron$deserialize(serialized.polyhedron)
```

*Arguments:*

`serialized.polyhedron` a serialized version of a polyhedron state

*Returns:* A new PolyhedronStateDefined object.

**Method** `getName()`: get Polyhedron name

*Usage:*

```
Polyhedron$getName()
```

*Returns:* string with polyhedron name

**Method** `getState()`: Gets polyhedron state

*Usage:*

Polyhedron\$getState()

*Returns:* A new PolyhedronState object.

**Method** getSolid(): Gets a solid definition

*Usage:*

Polyhedron\$getSolid()

*Returns:* A list of vertex vectors composing polyhedron faces.

**Method** isChecked(): checks Edges consistency

*Usage:*

Polyhedron\$isChecked()

*Returns:* A boolean value

**Method** getRGLModel(): Return an 'rgl' model with an optional transformation described by transformation.matrix parameter

*Usage:*

Polyhedron\$getRGLModel(transformation.matrix = NULL)

*Arguments:*

transformation.matrix transformation matrix parameter

*Returns:* An tmesh3d object

**Method** exportToXML(): exports an XML definition of current polyhedron

*Usage:*

Polyhedron\$exportToXML()

*Returns:* A character object with the XML definition

**Method** getErrors(): returns the errors found when processing current polyhedron

*Usage:*

Polyhedron\$getErrors()

*Returns:* a data.frame with polyhedron errors

**Method** checkProperties(): check properties of current polyhedron

*Usage:*

Polyhedron\$checkProperties(expected.vertices, expected.faces)

*Arguments:*

expected.vertices expected vertices number

expected.faces expected faces number

*Returns:* Unmodified polyhedron object

**Method** clone(): The objects of this class are cloneable with this method.

*Usage:*

Polyhedron\$clone(deep = FALSE)

*Arguments:*

deep Whether to make a deep clone.



**Author(s)**

ken4rab

---

PolyhedronState	<i>PolyhedronState</i>
-----------------	------------------------

---

**Description**

This abstract class provide the basis from which every polyhedron state class derivate.

**Public fields**

source polyhedron definition source

file.id polyhedron file id

errors Errors string

logger class logger

**Methods****Public methods:**

- [PolyhedronState\\$new\(\)](#)
- [PolyhedronState\\$addError\(\)](#)
- [PolyhedronState\\$scrape\(\)](#)
- [PolyhedronState\\$getName\(\)](#)
- [PolyhedronState\\$getSolid\(\)](#)
- [PolyhedronState\\$checkEdgesConsistency\(\)](#)
- [PolyhedronState\\$applyTransformationMatrix\(\)](#)
- [PolyhedronState\\$buildRGL\(\)](#)
- [PolyhedronState\\$exportToXML\(\)](#)
- [PolyhedronState\\$clone\(\)](#)

**Method** new(): Create a polyhedronState object

*Usage:*

PolyhedronState\$new(source, file.id)

*Arguments:*

source the source file

file.id the file id

*Returns:* A new PolyhedronState object. `@description` Adds an error to the error string and log it as info

**Method** addError():

*Usage:*

PolyhedronState\$error(current.error)

*Arguments:*

current.error the error to add

**Method** scrape(): Scrapes the polyhedra folder files

*Usage:*

PolyhedronState\$.scrape()

**Method** getName(): Get Polyhedron name

*Usage:*

PolyhedronState\$.getName()

*Returns:* string with polyhedron name

**Method** getSolid(): Returns the object corresponding to the solid

*Usage:*

PolyhedronState\$.getSolid()

**Method** checkEdgesConsistency(): Checks edge consistency

*Usage:*

PolyhedronState\$.checkEdgesConsistency()

**Method** applyTransformationMatrix(): Apply transformation matrix to polyhedron

*Usage:*

PolyhedronState\$.applyTransformationMatrix(transformation.matrix)

*Arguments:*

transformation.matrix the transformation matrix to apply to the polyhedron

**Method** buildRGL(): Creates a 'rgl' representation of the object

*Usage:*

PolyhedronState\$.buildRGL(transformation.matrix)

*Arguments:*

transformation.matrix the transformation matrix to apply to the polyhedron

**Method** exportToXML(): Gets an XML representation out of the polyhedron object

*Usage:*

PolyhedronState\$.exportToXML()

**Method** clone(): The objects of this class are cloneable with this method.

*Usage:*

PolyhedronState\$.clone(deep = FALSE)

*Arguments:*

deep Whether to make a deep clone.

**Author(s)**

ken4rab

---

 PolyhedronStateDefined

*PolyhedronStateDefined*


---

## Description

Polyhedron State scraped and defined

## Super class

[Rpolyhedra::PolyhedronState](#) -> PolyhedronStateDefined

## Public fields

file.id polyhedron filename in original

source polyhedron definition source (netlibdmccoey)

name polyhedron name (netlibdmccoey)

symbol the eqn(1) input for two symbols separated by a tab; the Johnson symbol, and the Schläfli symbol (netlib)

dual the name of the dual polyhedron optionally followed by a horizontal tab and the number of the dual (netlib)

sfaces polyhedron solid face list (netlib)

svertices polyhedron solid vertices list (netlib)

vertices Polyhedron vertices list (netlibdmccoey)

vertices.centered centered vertices for applying transformation matrices

net polyhedron 2D net model with vertices defined for a planar representation (netlib)

solid polyhedron list of edges which generate a solid (netlibdmccoey)

hinges Polyhedron hinge list (netlib)

dih Dih attribute (netlib)

edges polyhedron edges (netlibdmccoey)

transformation.matrix transformation matrix for calculations and visualizing polyhedron

## Methods

### Public methods:

- [PolyhedronStateDefined\\$new\(\)](#)
- [PolyhedronStateDefined\\$scrape\(\)](#)
- [PolyhedronStateDefined\\$saveToJson\(\)](#)
- [PolyhedronStateDefined\\$getName\(\)](#)
- [PolyhedronStateDefined\\$getSymbol\(\)](#)
- [PolyhedronStateDefined\\$adjustVertices\(\)](#)

- PolyhedronStateDefined\$getVertices()
- PolyhedronStateDefined\$getNet()
- PolyhedronStateDefined\$getSolid()
- PolyhedronStateDefined\$inferEdges()
- PolyhedronStateDefined\$checkEdgesConsistency()
- PolyhedronStateDefined\$triangulate()
- PolyhedronStateDefined\$getConvHull()
- PolyhedronStateDefined\$calculateMassCenter()
- PolyhedronStateDefined\$getNormalizedSize()
- PolyhedronStateDefined\$getTransformedVertices()
- PolyhedronStateDefined\$resetTransformationMatrix()
- PolyhedronStateDefined\$applyTransformationMatrix()
- PolyhedronStateDefined\$buildRGL()
- PolyhedronStateDefined\$exportToXML()
- PolyhedronStateDefined\$expectEqual()
- PolyhedronStateDefined\$serialize()
- PolyhedronStateDefined\$clone()

**Method new():** object initialization routine

*Usage:*

```
PolyhedronStateDefined$new(
  source,
  file.id,
  name,
  vertices,
  solid,
  net = NULL,
  symbol = "",
  dual = NULL,
  sfaces = NULL,
  svertices = NULL,
  hinges = NULL,
  dih = NULL,
  normalize.size = TRUE
)
```

*Arguments:*

source the library to use  
file.id identifier of the definition file.  
name the polyhedron name  
vertices the vertices  
solid the solid object  
net the net  
symbol the symbol  
dual whether it is dual or not

`sfaces` the solid faces  
`svertices` the solid vertices  
`hinges` the hinges  
`dih` the dih  
`normalize.size` whether it has to normalize the size or not  
*Returns:* A new PolyhedronStateDefined object.

**Method** `scrape()`: scrape polyhedron. As the state is defined this functions do nothing

*Usage:*  
`PolyhedronStateDefined$scrape()`  
*Returns:* current object

**Method** `saveToJson()`: saves the state to a JSON file

*Usage:*  
`PolyhedronStateDefined$saveToJson(pretty = FALSE)`  
*Arguments:*  
`pretty` whether json output is pretty or not  
*Returns:* a json object

**Method** `getName()`: get Polyhedron name

*Usage:*  
`PolyhedronStateDefined$getName()`  
*Returns:* string with polyhedron name

**Method** `getSymbol()`: get Polyhedron symbol

*Usage:*  
`PolyhedronStateDefined$getSymbol()`  
*Returns:* string with polyhedron symbol

**Method** `adjustVertices()`: adjust polyhedron Vertices

*Usage:*  
`PolyhedronStateDefined$adjustVertices(normalize.size = TRUE)`  
*Arguments:*  
`normalize.size` whether it has to normalize the size or not  
*Returns:* modified PolyhedronStateDefined object.

**Method** `getVertices()`: Get the polyhedron state

*Usage:*  
`PolyhedronStateDefined$getVertices(solid = FALSE)`  
*Arguments:*  
`solid` toggles the production of solid vertices.

**Method** `getNet()`: Gets the net property

*Usage:*

```
PolyhedronStateDefined$getNet()
```

**Method** `getSolid()`: Gets the solid property

*Usage:*

```
PolyhedronStateDefined$getSolid()
```

**Method** `inferEdges()`: Infer edges

*Usage:*

```
PolyhedronStateDefined$inferEdges(force.recalculation = FALSE)
```

*Arguments:*

`force.recalculation` forces the recalculation of the edges

**Method** `checkEdgesConsistency()`: Checks edges consistency

*Usage:*

```
PolyhedronStateDefined$checkEdgesConsistency()
```

**Method** `triangulate()`: Triangulates the polyhedron

*Usage:*

```
PolyhedronStateDefined$triangulate(force = FALSE)
```

*Arguments:*

`force` forces the triangulation.

**Method** `getConvHull()`: Gets the convex hull

*Usage:*

```
PolyhedronStateDefined$getConvHull(
  transformation.matrix = self$transformation.matrix,
  vertices.id.3d = private$vertices.id.3d
)
```

*Arguments:*

`transformation.matrix` the transformation matrix

`vertices.id.3d` the vertices ids

*Returns:* the convex hull

**Method** `calculateMassCenter()`: Calculates the center of mass.

*Usage:*

```
PolyhedronStateDefined$calculateMassCenter(
  vertices.id.3d = private$vertices.id.3d,
  applyTransformation = TRUE
)
```

*Arguments:*

`vertices.id.3d` the vertices ids

applyTransformation does it need to apply transformations?

**Method** getNormalizedSize(): Gets the normalized size

*Usage:*

```
PolyhedronStateDefined$getNormalizedSize(size)
```

*Arguments:*

size the object's size

**Method** getTransformedVertices(): Gets the transformed vertices

*Usage:*

```
PolyhedronStateDefined$getTransformedVertices(  
  vertices = self$vertices.centered,  
  transformation.matrix = self$transformation.matrix  
)
```

*Arguments:*

vertices input vertices

transformation.matrix the transformation matrix

**Method** resetTransformationMatrix(): Resets the transformation matrix

*Usage:*

```
PolyhedronStateDefined$resetTransformationMatrix()
```

**Method** applyTransformationMatrix(): Apply transformation matrix to polyhedron

*Usage:*

```
PolyhedronStateDefined$applyTransformationMatrix(transformation.matrix)
```

*Arguments:*

transformation.matrix the transformation matrix to apply to the polyhedron

*Returns:* an applied transformation.matrix

**Method** buildRGL(): Build 'rgl'

*Usage:*

```
PolyhedronStateDefined$buildRGL(transformation.matrix = NULL)
```

*Arguments:*

transformation.matrix the transformation matrix

**Method** exportToXML(): Exports the object to XML format

*Usage:*

```
PolyhedronStateDefined$exportToXML()
```

**Method** expectEqual(): Determines if a polyhedron is equal to this one.

*Usage:*

```
PolyhedronStateDefined$expectEqual(polyhedron)
```

*Arguments:*

polyhedron the polyhedron to compare to.

**Method** `serialize()`: Serialize the object.

*Usage:*

`PolyhedronStateDefined$serialize()`

**Method** `clone()`: The objects of this class are cloneable with this method.

*Usage:*

`PolyhedronStateDefined$clone(deep = FALSE)`

*Arguments:*

`deep` Whether to make a deep clone.

### Author(s)

ken4rab

---

PolyhedronStateDeserializer

*PolyhedronStateDeserializer*

---

### Description

Polyhedron state for deserialize from database

### Super class

[Rpolyhedra::PolyhedronState](#) -> PolyhedronStateDeserializer

### Public fields

`serialized.polyhedron` polyhedron definition serialized

### Methods

#### Public methods:

- [PolyhedronStateDeserializer\\$new\(\)](#)
- [PolyhedronStateDeserializer\\$scrape\(\)](#)
- [PolyhedronStateDeserializer\\$clone\(\)](#)

**Method** `new()`: Initialize PolyhedronStateDeserializer object

*Usage:*

`PolyhedronStateDeserializer$new(serialized.polyhedron)`

*Arguments:*

`serialized.polyhedron` a serialized polyhedron

*Returns:* A new PolyhedronStateDeserializer object.



**Method** `scrape()`: Generates a PolyhedronStateDefined from a serialized polyhedron

*Usage:*

`PolyhedronStateDeserializer$.scrape()`

*Returns:* A new PolyhedronStateDefined object.

**Method** `clone()`: The objects of this class are cloneable with this method.

*Usage:*

`PolyhedronStateDeserializer$.clone(deep = FALSE)`

*Arguments:*

`deep` Whether to make a deep clone.

### Author(s)

ken4rab

---

PolyhedronStateDmccooleyScraper

*PolyhedronStateDmccooleyScraper*

---

### Description

Scrapes polyhedra from a dmccooley file format

### Super class

[Rpolyhedra::PolyhedronState](#) -> PolyhedronStateDmccooleyScraper

### Public fields

`regexp.values.names` regexp for scraping values names

`regexp.rn` regexp for scraping real numbers

`regexp.values` regexp for scraping values

`regexp.vertex` regexp for scraping vertices

`regexp.faces` regexp for scraping faces

`polyhedra.dmccooley.lines` dmccooley polyhedra definition lines

`labels.map` labels map where values are

`values` labels map where values are

`vertices` specification

`vertices.replaced` 3D values

`faces` definition

## Methods

### Public methods:

- [PolyhedronStateDmccooleyScraper\\$new\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$setupRegexp\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$scrapeValues\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$scrapeVertices\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$scrapeFaces\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$scrape\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$getName\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$applyTransformationMatrix\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$buildRGL\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$exportToXML\(\)](#)
- [PolyhedronStateDmccooleyScraper\\$clone\(\)](#)

**Method** `new()`: Initialize Dmccooley scraper

*Usage:*

```
PolyhedronStateDmccooleyScraper$new(file.id, polyhedra.dmccooley.lines)
```

*Arguments:*

`file.id` identifier of the definition file.

`polyhedra.dmccooley.lines` raw Dmccooley definition file lines

*Returns:* A new PolyhedronStateDmccooleyScraper object.

**Method** `setupRegexp()`: setupRegexp for Dmccooley definition

*Usage:*

```
PolyhedronStateDmccooleyScraper$setupRegexp()
```

*Returns:* This PolyhedronStateDmccooleyScraper object with regexp defined.

**Method** `scrapeValues()`: scrape values from Dmccooley definition

*Usage:*

```
PolyhedronStateDmccooleyScraper$scrapeValues(values.lines)
```

*Arguments:*

`values.lines` values definitions in Dmccooley source

*Returns:* This PolyhedronStateDmccooleyScraper object with values defined.

**Method** `scrapeVertices()`: scrape polyhedron vertices from definition

*Usage:*

```
PolyhedronStateDmccooleyScraper$scrapeVertices(vertices.lines)
```

*Arguments:*

`vertices.lines` vertices definitions in Dmccooley source

*Returns:* This PolyhedronStateDmccooleyScraper object with faces defined.

**Method** `scrapeFaces()`: scrape polyhedron faces from definition

*Usage:*

```
PolyhedronStateDmccoeyScraper$scrapeFaces(faces.lines)
```

*Arguments:*

```
faces.lines face
```

*Returns:* This PolyhedronStateDmccoeyScraper object with faces defined.

**Method** scrape(): scrape Dmccoey polyhedron definition

*Usage:*

```
PolyhedronStateDmccoeyScraper$scrape()
```

*Returns:* A new PolyhedronStateDefined object.

**Method** getName(): get Polyhedron name

*Usage:*

```
PolyhedronStateDmccoeyScraper$getName()
```

*Returns:* string with polyhedron name

**Method** applyTransformationMatrix(): Apply transformation matrix to polyhedron

*Usage:*

```
PolyhedronStateDmccoeyScraper$applyTransformationMatrix(transformation.matrix)
```

*Arguments:*

```
transformation.matrix the transformation matrix to apply to the polyhedron
```

**Method** buildRGL(): Creates a 'rgl' representation of the object

*Usage:*

```
PolyhedronStateDmccoeyScraper$buildRGL(transformation.matrix)
```

*Arguments:*

```
transformation.matrix the transformation matrix to apply to the polyhedron
```

**Method** exportToXML(): serializes object in XML

*Usage:*

```
PolyhedronStateDmccoeyScraper$exportToXML()
```

**Method** clone(): The objects of this class are cloneable with this method.

*Usage:*

```
PolyhedronStateDmccoeyScraper$clone(deep = FALSE)
```

*Arguments:*

```
deep Whether to make a deep clone.
```

**Author(s)**

ken4rab

---

PolyhedronStateNetlibScraper  
*PolyhedronStateNetlibScraper*

---

## Description

Scrapes polyhedra from a PHD file format.

## Super class

[Rpolyhedra::PolyhedronState](#) -> PolyhedronStateNetlibScraper

## Public fields

netlib.p3.lines The path to the PHD files  
 labels.rows Labels - row of appearance  
 labels.map Labels - Map of content  
 errors the errors found

## Methods

### Public methods:

- [PolyhedronStateNetlibScraper\\$new\(\)](#)
- [PolyhedronStateNetlibScraper\\$extractRowsFromLabel\(\)](#)
- [PolyhedronStateNetlibScraper\\$getLabels\(\)](#)
- [PolyhedronStateNetlibScraper\\$scrapeNet\(\)](#)
- [PolyhedronStateNetlibScraper\\$extractCFOutBrackets\(\)](#)
- [PolyhedronStateNetlibScraper\\$scrapeVertices\(\)](#)
- [PolyhedronStateNetlibScraper\\$setupLabelsOrder\(\)](#)
- [PolyhedronStateNetlibScraper\\$getDataFromLabel\(\)](#)
- [PolyhedronStateNetlibScraper\\$getName\(\)](#)
- [PolyhedronStateNetlibScraper\\$scrape\(\)](#)
- [PolyhedronStateNetlibScraper\\$applyTransformationMatrix\(\)](#)
- [PolyhedronStateNetlibScraper\\$buildRGL\(\)](#)
- [PolyhedronStateNetlibScraper\\$exportToXML\(\)](#)
- [PolyhedronStateNetlibScraper\\$clone\(\)](#)

**Method** `new()`: Initializes the object, taking the file.id and PDH file as parameters

*Usage:*

```
PolyhedronStateNetlibScraper$new(file.id, netlib.p3.lines)
```

*Arguments:*

file.id the file id

netlib.p3.lines the lines to add

*Returns:* A new PolyhedronStateNetlibScraper object.

**Method** `extractRowsFromLabel()`: Extracts data from the label, taking the label number and the expected label as parameters

*Usage:*

```
PolyhedronStateNetlibScraper$extractRowsFromLabel(label.number, expected.label)
```

*Arguments:*

`label.number` the label number

`expected.label` the expected label

**Method** `getLabels()`: get Labels from current netlib file description

*Usage:*

```
PolyhedronStateNetlibScraper$getLabels()
```

*Returns:* a list containing labels from netlib file description

**Method** `scrapeNet()`: scrape Net Model from netlib format

*Usage:*

```
PolyhedronStateNetlibScraper$scrapeNet(net.txt, offset = 0)
```

*Arguments:*

`net.txt` a vector containing net model in netlib format

`offset` in numbering vertices

*Returns:* a list containing a net model

**Method** `extractCFOutBrackets()`: Remove brackets for current field content

*Usage:*

```
PolyhedronStateNetlibScraper$extractCFOutBrackets(x)
```

*Arguments:*

`x` a string containing brackets

*Returns:* value

**Method** `scrapeVertices()`: scrape vertices described in netlib format

*Usage:*

```
PolyhedronStateNetlibScraper$scrapeVertices(vertices.txt)
```

*Arguments:*

`vertices.txt` vector containing netlib format vertices

*Returns:* data.frame containing netlib vertices

**Method** `setupLabelsOrder()`: setupLabelsOrder

*Usage:*

```
PolyhedronStateNetlibScraper$setupLabelsOrder()
```

*Arguments:*

`vertices.txt` vector containing netlib format vertices

*Returns:* data.frame containing netlib vertices

**Method** `getDataFromLabel()`: Get data from label specified as parameter

*Usage:*

```
PolyhedronStateNetlibScraper$getDataFromLabel(label)
```

*Arguments:*

`label` the label to get data from

*Returns:* value

**Method** `getName()`: get Polyhedron name

*Usage:*

```
PolyhedronStateNetlibScraper$getName()
```

*Returns:* string with polyhedron name

**Method** `scrape()`: scrape Netlib polyhedron definition

*Usage:*

```
PolyhedronStateNetlibScraper$scrape()
```

*Returns:* A new PolyhedronStateDefined object.

**Method** `applyTransformationMatrix()`: Apply transformation matrix to polyhedron

*Usage:*

```
PolyhedronStateNetlibScraper$applyTransformationMatrix(transformation.matrix)
```

*Arguments:*

`transformation.matrix` the transformation matrix to apply to the polyhedron

**Method** `buildRGL()`: Creates a 'rgl' representation of the object

*Usage:*

```
PolyhedronStateNetlibScraper$buildRGL(transformation.matrix)
```

*Arguments:*

`transformation.matrix` the transformation matrix to apply to the polyhedron

**Method** `exportToXML()`: serializes object in XML

*Usage:*

```
PolyhedronStateNetlibScraper$exportToXML()
```

**Method** `clone()`: The objects of this class are cloneable with this method.

*Usage:*

```
PolyhedronStateNetlibScraper$clone(deep = FALSE)
```

*Arguments:*

`deep` Whether to make a deep clone.

**Author(s)**

ken4rab

---

polyhedronToXML      *Polyhedron to XML*

---

**Description**

Gets an XML representation out of the polyhedron object

**Usage**

```
polyhedronToXML(polyhedron.state.defined, is.transformed.vertices = TRUE)
```

**Arguments**

```
polyhedron.state.defined
    the polyhedron to get a representation from
is.transformed.vertices
    flag which states if vertices are in original position or transformationMatrix applied
```

**Value**

an XML document, ready to be converted to String with XML::saveXML()

**Examples**

```
# get the representation of a cube (netlib library)
XML::saveXML(polyhedronToXML(getPolyhedron("netlib", "cube")$state))
```

---

scrapePolyhedra      *Scrape polyhedra objects*

---

**Description**

Gets polyhedra objects from text files of different sources, scheduling and scraping using predefined configurations.

**Usage**

```
scrapePolyhedra(
  scrape.config,
  source.fileNames = NULL,
  sources.config = getUserEnvir(".available.sources"),
  logger = lgr
)
```

**Arguments**

`scrape.config` predefined configuration for scraping  
`source_filenames`  
                   if not null specify which source filenames to scrape  
`sources.config` the sources that will be used by the function  
`logger`          logger for inheriting threshold from calling class/function

**Value**

polyhedra db object

---

scrapePolyhedraSources

*Scrape polyhedra sources*

---

**Description**

Scrapes polyhedra objects from text files of different sources, in order to make them available to the package.

**Usage**

```

scrapePolyhedraSources(sources.config =
  getUserEnvir(".available.sources"),
  max.quant.config.schedule = 0,
  max.quant.scrape = 0, time2scrape.source = 30,
  source_filenames = NULL, retry.scrape = FALSE,
  logger = lgr)
  
```

**Arguments**

`sources.config` the sources that will be used by the function  
`max.quant.config.schedule`  
                   number of files to schedule  
`max.quant.scrape`  
                   number of files scrape  
`time2scrape.source`  
                   time applied to scrape source  
`source_filenames`  
                   if not null specify which source filenames to scrape  
`retry.scrape`    should it retry scrape?  
`logger`          logger for inheriting threshold from calling class/function

**Value**

polyhedra db object



---

switchToFullDatabase *Switch to full database*

---

**Description**

Prompts user for changing database to fulldb in user filespace. Also, allows the user to switch back to the package database, which is a minimal one for testing purposes.

**Usage**

```
switchToFullDatabase(env = NA, logger = lgr)
```

**Arguments**

env	The environment to run on, can be PACKAGE,
logger	logger for inheriting threshold from calling class/function HOME or NA. If NA, it asks the user for a an Environment.

**Value**

.data.env

# Index

genLogger, [3](#)  
getAvailablePolyhedra, [4](#)  
getAvailableSources, [5](#)  
getLogger, [5](#)  
getPolyhedraObject, [6](#)  
getPolyhedron, [6](#)  
  
loggerSetupFile, [7](#)  
  
mutate\_cond, [8](#)  
  
PolyhedraDatabase, [8](#)  
Polyhedron, [14](#)  
PolyhedronState, [17](#)  
PolyhedronStateDefined, [19](#)  
PolyhedronStateDeserializer, [24](#)  
PolyhedronStateDmccooeyScraper, [25](#)  
PolyhedronStateNetlibScraper, [28](#)  
polyhedronToXML, [31](#)  
  
Rpolyhedra (Rpolyhedra-package), [2](#)  
Rpolyhedra-package, [2](#)  
Rpolyhedra::PolyhedronState, [19](#), [24](#), [25](#),  
[28](#)  
  
scrapePolyhedra, [31](#)  
scrapePolyhedraSources, [32](#)  
switchToFullDatabase, [33](#)