

Package: cubs (via r-universe)

October 13, 2024

Version 0.1.0

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Title Cubature on the 2-sphere

Description Cubature methods for numerical integration over the sphere, such as angular averaging over the full solid angle

URL <https://github.com/nano-optics/cubs>

Type Package

Encoding UTF-8

LazyData true

LazyDataCompression gzip

LazyLoad yes

VignetteBuilder knitr

Suggests ggplot2, testthat, knitr, scales, rmarkdown, dplyr, tidyr, purrr, glue, gridExtra, Ryacas

Imports statmod, randtoolbox

RoxygenNote 7.1.2

Depends R (>= 3.5.0)

Repository <https://nano-optics.r-universe.dev>

RemoteUrl <https://github.com/nano-optics/cubs>

RemoteRef HEAD

RemoteSha 2526947b07b8c86266c4971b1d78e340c7dda492

Contents

cubs-package	2
cubs	2
is_valid_GL	3
lebedev	3
lebedev_table	4
sphericaldesigns	5

Index**6**

cubs-package	<i>cubs</i>
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Description

Cubature methods for orientation averaging.

Details

Cubature methods for orientation averaging.

Author(s)

baptiste Auguie

cubs	<i>cubature_sphere</i>
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Description

cubature points on a sphere

Usage

```
cubs(
  N = 30,
  cubature = c("lebedev", "sphericaldesigns", "gl", "fibonacci", "grid", "qmc",
              "random")
)
```

Arguments

N	number of integration points
cubature	method: one of 'lebedev', 'sphericaldesigns', 'gl', 'fibonacci', 'grid', 'qmc', 'random'

Details

Numerical integration points for angular averaging

Author(s)

baptiste Auguie

is_valid_GL	<i>is_valid_GL</i>
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Description

cubature points on a sphere

Usage

is_valid_GL(N)

is_valid_grid(N)

is_valid_fibonacci(N)

Arguments

N number of integration points

Details

Tests if a number of points is valid

Author(s)

baptiste Auguie

lebedev	<i>lebedev</i>
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Description

Nodes and weights of Lebedev cubatures

Usage

lebedev

Format

data.frame with 3 columns

phi azimuth

theta polar angle

weight weight

Source

https://people.sc.fsu.edu/~jburkardt/c_src/sphere_lebedev_rule/sphere_lebedev_rule.html

lebedev_table	<i>lebedev_table</i>
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Description

nodes and weights
 nodes and weights
 valid numbers
 valid numbers
 valid numbers
 valid numbers
 valid numbers

Usage

lebedev_table
 sphericaldesigns_table
 gl_table
 grid_table
 qmc_table
 random_table
 fibonacci_table

Format

data.frame with 2 columns

degree

N

data.frame with 2 columns

degree

N

vector
vector
vector
vector
vector

Source

https://people.sc.fsu.edu/~jburkardt/c_src/sphere_lebedev_rule/sphere_lebedev_rule.html
https://people.sc.fsu.edu/~jburkardt/c_src/sphere_lebedev_rule/sphere_lebedev_rule.html

sphericaldesigns *spherical designs*

Description

Nodes and weights of spherical t-designs

Usage

sphericaldesigns

Format

data.frame with 3 columns

phi azimuth

theta polar angle

weight weight

Source

<https://web.maths.unsw.edu.au/~rsw/Sphere/EffSphDes/>

Index

- * **datasets**
 - lebedev, 3
 - lebedev_table, 4
 - sphericaldesigns, 5
- * **low_level cubature**
 - cubs, 2
- * **low_level**
 - is_valid_GL, 3
- * **packagelibrary**
 - cubs-package, 2
- * **package**
 - cubs-package, 2

cubs, 2
cubs-package, 2

fibonacci_table (lebedev_table), 4

gl_table (lebedev_table), 4
grid_table (lebedev_table), 4

is_valid_fibonacci (is_valid_GL), 3
is_valid_GL, 3
is_valid_grid (is_valid_GL), 3

lebedev, 3
lebedev_table, 4

qmc_table (lebedev_table), 4

random_table (lebedev_table), 4

sphericaldesigns, 5
sphericaldesigns_table (lebedev_table),
4