

# Package ‘constants’

January 8, 2018

**Type** Package

**Title** Reference on Constants, Units and Uncertainty

**Version** 0.0.2

**Description** CODATA internationally recommended values of the fundamental physical constants, provided as symbols for direct use within the R language. Optionally, the values with errors and/or the values with units are also provided if the 'errors' and/or the 'units' packages are installed. The Committee on Data for Science and Technology (CODATA) is an interdisciplinary committee of the International Council for Science which periodically provides the internationally accepted set of values of the fundamental physical constants. This package contains the ``2014 CODATA" version, published on 25 June 2015: Mohr, P. J., Newell, D. B. and Taylor, B. N. (2016) <DOI:10.1103/RevModPhys.88.035009>, <DOI:10.1063/1.4954402>.

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**Encoding** UTF-8

**LazyData** true

**URL** <https://github.com/r-quantities/constants>

**BugReports** <https://github.com/r-quantities/constants/issues>

**Depends** R (>= 3.0.0)

**Imports** utils

**Suggests** errors, units, testthat

**ByteCompile** yes

**RoxygenNote** 6.0.1

**NeedsCompilation** no

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**Repository** CRAN

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codata	<i>CODATA Recommended Values of the Fundamental Physical Constants: 2014</i>
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### Description

The Committee on Data for Science and Technology (CODATA) is an interdisciplinary committee of the International Council for Science. The Task Group on Fundamental Constants periodically provides the internationally accepted set of values of the fundamental physical constants. This dataset contains the "2014 CODATA" version, published on 25 June 2015.

### Usage

codata

### Format

codata is a data frame with ... cases (rows) and 6 variables (columns) named quantity, symbol, value, unit, rel\_uncertainty, and type.

### Source

Mohr, P. J., Newell, D. B. and Taylor, B. N. (2016). CODATA recommended values of the fundamental physical constants: 2014. *Rev. Mod. Phys.*, 88, 035009. doi: [10.1103/RevModPhys.88.035009](https://doi.org/10.1103/RevModPhys.88.035009).

Mohr, P. J., Newell, D. B. and Taylor, B. N. (2016). CODATA recommended values of the fundamental physical constants: 2014. *J. Phys. Chem. Ref. Data*, 45, 043102. doi: [10.1063/1.4954402](https://doi.org/10.1063/1.4954402).

### See Also

[syms](#), [lookup](#).

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constants

**constants:** *Reference on Constants, Units and Uncertainty*

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### Description

This package provides the 2014 version of the CODATA internationally recommended values of the fundamental physical constants for their use within the R language.

### Author(s)

Iñaki Ucar

### References

Mohr, P. J., Newell, D. B. and Taylor, B. N. (2016). CODATA recommended values of the fundamental physical constants: 2014. *Rev. Mod. Phys.*, 88, 035009. doi: [10.1103/RevModPhys.88.035009](https://doi.org/10.1103/RevModPhys.88.035009).

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### See Also

[codata](#), [syms](#), [lookup](#).

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lookup

*Lookup for Fundamental Physical Constants*

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### Description

A simple wrapper around [grep](#) for exploring the CODATA dataset.

### Usage

```
lookup(pattern, cols = c("quantity", "symbol", "type"), ...)
```

### Arguments

pattern	character string containing a regular expression to be matched (see <a href="#">grep</a> ).
cols	columns to perform pattern matching (see <a href="#">codata</a> ).
...	additional arguments for <a href="#">grep</a> .

### See Also

[codata](#), [syms](#).

### Examples

```
lookup("planck", ignore.case=TRUE)
```

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syms

*Lists Containing All Symbols.*

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### Description

These lists contain the named values for all the fundamental physical constants.

### Usage

syms

syms\_with\_errors

syms\_with\_units

### Format

An object of class list or NULL (if not available).

### Details

syms contains plain numeric values. syms\_with\_errors contains objects of type errors, which encloses values with absolute errors and enables automatic error propagation (only available if the errors package is installed; see the documentation of that package for further information). syms\_with\_units contains objects of type units, which encloses values with units and enables automatic conversion, derivation and simplification (only available if the units package is installed; see the documentation of that package for further information).

### See Also

[codata](#), [lookup](#).

### Examples

```
# the speed of light
with(syms, c0)

# the Planck constant
attach(syms)
hbar

detach(syms); attach(syms_with_errors)
hbar

detach(syms_with_errors); attach(syms_with_units)
hbar
```

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