

codata

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NAME**codata** - Command line for codata**SYNOPSIS****codata** [*OPTIONS*] [*REGEX_PATTERN* ...]**DESCRIPTION****codata** is a command line interface which prints all the **codata** constants.

The current values are from 2022. Older values can be retrieved if needed and the output can be filtered with REGEX PATTERNS.

OPTIONS**o --year, -y**Year of the **codata** constants: 2022, 2018, 2014, 2010.**o --value, -a**

Show only the value.

o --error, -e

Show only the uncertainty.

o --usage

Show usage text and exit.

o --help

Show help text and exit.

o --verbose

Display additional information when available.

o --version

Show version information and exit.

EXAMPLE

Minimal example

```
codata
codata -y 2018 molar electron
codata -y 2014 'molar.*gas' 'electron.*eV'
codata '[B,b]oltzmann.*eV'
```

SEE ALSO**codata(3)**

NAME

codata - library for fundamental physical constants

LIBRARY

Codata (-libcodata, -lcodata)

SYNOPSIS

```
use codata
include "codata.h"
import pycodata

character(len=:), pointer function get_version()()
char** codata_get_version(void)
pycodata.__version__
```

DESCRIPTION

codata is a Fortran library providing the fundamental physical constants according to CODATA <https://www.nist.gov/programs-projects/codata-values-fundamental-physical-constants>. A C API allows usage from C, or can be used as a basis for other wrappers. Python wrapper allows easy usage from Python.

The latest *codata* constants 2022 <https://pml.nist.gov/cuu/Constants> were integrated in stdlib <https://github.com/fortran-lang/stdlib/releases/tag/v0.7.0>. The constants are implemented as derived type which carries the name, the value, the uncertainty and the unit. This library is complementary to the constants defined in the stdlib by providing older values for the constants. The latest values (2022) do not have the year as a suffix in their name. Older values can be used and they feature the year as a suffix in their name.

All *codata* (physical) constants are defined as a derived type codata_constant_type. All the *codata* constants are provided as double precision reals. The names are quite long and can be aliased with shorter names. The derived type codata_constant_type defines 4 members and 2 procedures.

```
type, public :: codata_constant_type
  !! Derived type for representing a Codata constant.
  character(len=64) :: name ! Name of the constant
  real(dp) :: value          ! Value of the constant
  real(dp) :: uncertainty    ! Uncertainty of the constant
  character(len=32) :: unit ! Unit of the constant
contains
  procedure :: print
  procedure :: to_real_sp
  procedure :: to_real_dp
  generic :: to_real => to_real_sp, to_real_dp
end type

interface to_real ! Get the constant value or uncertainty.
  module procedure to_real_sp
  module procedure to_real_dp
end interface
```

A module level interface to_real is available for getting the constant value or uncertainty of a constant.

The C API exposes a structure codata_constant_ttype that defines the same members as in Fortran.

```
typedef struct codata_constant_type{
  char name[65];
  double value;
  double uncertainty;
```

```
    char unit[33];
} cct;
```

The Python wrapper encapsulates the members in a dictionary.

NOTES

To use codata within your fpm <https://github.com/fortran-lang/fpm> project, add the following lines to your file:

```
[dependencies]
codata = { git="https://github.com/MilanSkocic/codata.git" }
```

EXAMPLE

Example in Fortran

```
program example_in_f
use iso_fortran_env
use codata
implicit none

print '(A)', '# ##### EXAMPLE IN FORTRAN #####'

print '(A)', '# VERSION'
print *, "version = ", get_version()

print '(A)', '# CONSTANTS'
print *, "c = ", SPEED_OF_LIGHT_IN_VACUUM%value

print '(A)', '# UNCERTAINTY'
print *, "u(c) = ", SPEED_OF_LIGHT_IN_VACUUM%uncertainty

print '(A)', '# OLDER VALUES'
print '(A, F23.16)', "Mu_2022(latest) = ", MOLAR_MASS_CONSTANT%value
print '(A, F23.16)', "Mu_2018 = ", MOLAR_MASS_CONSTANT_2018%value
print '(A, F23.16)', "Mu_2014 = ", MOLAR_MASS_CONSTANT_2014%value
print '(A, F23.16)', "Mu_2010 = ", MOLAR_MASS_CONSTANT_2010%value
end program
```

Example in C:

```
#include <stdio.h>
#include "codata.h"

int main(void){

printf("##### EXAMPLE IN C #####\n");

printf("%s0,# VERSION");
printf("version = %s0, codata_get_version());

printf("%s0,# CONSTANTS");
printf("c = %f0, SPEED_OF_LIGHT_IN_VACUUM.value);

printf("%s0,# UNCERTAINTY");
printf("u(c) = %f0, SPEED_OF_LIGHT_IN_VACUUM.uncertainty);
```

```

printf("%s0, "# OLDER VALUES");
printf("Mu_2022(latest) = %23.16f0, MOLAR_MASS_CONSTANT.value);
printf("Mu_2018 = %23.16f0, MOLAR_MASS_CONSTANT_2018.value);
printf("Mu_2014 = %23.16f0, MOLAR_MASS_CONSTANT_2014.value);
printf("Mu_2010 = %23.16f0, MOLAR_MASS_CONSTANT_2010.value);

return 0;
}

```

Example in Python:

```

import pycodata

print("##### EXAMPLE IN PYTHON #####")
print("# VERSION")
print(f"version = {pycodata.__version__}")

print("# Constants")
print(f"c = ", pycodata.SPEED_OF_LIGHT_IN_VACUUM["value"])

print("# UNCERTAINTY")
print(f"u(c) = ", pycodata.SPEED_OF_LIGHT_IN_VACUUM["uncertainty"])

print("# OLDER VALUES")
print(f"Mu_2022 = ", pycodata.MOLAR_MASS_CONSTANT["value"])
print(f"Mu_2018 = ", pycodata.MOLAR_MASS_CONSTANT_2018["value"])
print(f"Mu_2014 = ", pycodata.MOLAR_MASS_CONSTANT_2014["value"])
print(f"Mu_2010 = ", pycodata.MOLAR_MASS_CONSTANT_2010["value"])

```

SEE ALSO

[gsl\(3\)](#), [codata\(1\)](#)

CODATA 2022

- ALPHA_PARTICLE_ELECTRON_MASS_RATIO
- ALPHA_PARTICLE_MASS
- ALPHA_PARTICLE_MASS_ENERGY_EQUIVALENT
- ALPHA_PARTICLE_MASS_ENERGY_EQUIVALENT_IN_MEV
- ALPHA_PARTICLE_MASS_IN_U
- ALPHA_PARTICLE_MOLAR_MASS
- ALPHA_PARTICLE_PROTON_MASS_RATIO
- ALPHA_PARTICLE_RELATIVE_ATOMIC_MASS
- ALPHA_PARTICLE_RMS_CHARGE_RADIUS
- ANGSTROM_STAR
- ATOMIC_MASS_CONSTANT
- ATOMIC_MASS_CONSTANT_ENERGY_EQUIVALENT
- ATOMIC_MASS_CONSTANT_ENERGY_EQUIVALENT_IN_MEV
- ATOMIC_MASS_UNIT_ELECTRON_VOLT_RELATIONSHIP
- ATOMIC_MASS_UNIT_HARTREE_RELATIONSHIP

- ATOMIC_UNIT_OF_ACTION
- ATOMIC_UNIT_OF_CHARGE
- ATOMIC_UNIT_OF_CHARGE_DENSITY
- ATOMIC_UNIT_OF_CURRENT
- ATOMIC_UNIT_OF_ELECTRIC_DIPOLE_MOM
- ATOMIC_UNIT_OF_ELECTRIC_FIELD
- ATOMIC_UNIT_OF_ELECTRIC_FIELD_GRADIENT
- ATOMIC_UNIT_OF_ELECTRIC_POLARIZABILITY
- ATOMIC_UNIT_OF_ELECTRIC_POTENTIAL
- ATOMIC_UNIT_OF_ELECTRIC_QUADRUPOLE_MOM
- ATOMIC_UNIT_OF_ENERGY
- ATOMIC_UNIT_OF_FORCE
- ATOMIC_UNIT_OF_LENGTH
- ATOMIC_UNIT_OF_MAG_DIPOLE_MOM
- ATOMIC_UNIT_OF_MAG_FLUX_DENSITY
- ATOMIC_UNIT_OF_MAGNETIZABILITY
- ATOMIC_UNIT_OF_MASS
- ATOMIC_UNIT_OF_MOMENTUM
- ATOMIC_UNIT_OF_PERMITTIVITY
- ATOMIC_UNIT_OF_TIME
- ATOMIC_UNIT_OF_VELOCITY
- AVOGADRO_CONSTANT
- BOHR_MAGNETON
- BOHR_MAGNETON_IN_EV_T
- BOHR_MAGNETON_IN_HZ_T
- BOHR_MAGNETON_IN_INVERSE_METER_PER_TESLA
- BOHR_MAGNETON_IN_K_T
- BOHR_RADIUS
- BOLTZMANN_CONSTANT
- BOLTZMANN_CONSTANT_IN_EV_K
- BOLTZMANN_CONSTANT_IN_HZ_K

- BOLTZMANN_CONSTANT_INVERSE_METER_PER_KELVIN
- CHARACTERISTIC_IMPEDANCE_OF_VACUUM
- CLASSICAL_ELECTRON_RADIUS
- COMPTON_WAVELENGTH
- CONDUCTANCE_QUANTUM
- CONVENTIONAL_VALUE_OF_AMPERE_90
- CONVENTIONAL_VALUE_OF_COULOMB_90
- CONVENTIONAL_VALUE_OF_FARAD_90
- CONVENTIONAL_VALUE_OF_HENRY_90
- CONVENTIONAL_VALUE_OF_JOSEPHSON_CONSTANT
- CONVENTIONAL_VALUE_OF_OHM_90
- CONVENTIONAL_VALUE_OF_VOLT_90
- CONVENTIONAL_VALUE_OF_VON_KLITZING_CONSTANT
- CONVENTIONAL_VALUE_OF_WATT_90
- COPPER_X_UNIT
- DEUTERON_ELECTRON_MAG_MOM_RATIO
- DEUTERON_ELECTRON_MASS_RATIO
- DEUTERON_G_FACTOR
- DEUTERON_MAG_MOM
- DEUTERON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- DEUTERON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- DEUTERON_MASS
- DEUTERON_MASS_ENERGY_EQUIVALENT
- DEUTERON_MASS_ENERGY_EQUIVALENT_IN_MEV
- DEUTERON_MASS_IN_U
- DEUTERON_MOLAR_MASS
- DEUTERON_NEUTRON_MAG_MOM_RATIO
- DEUTERON_PROTON_MAG_MOM_RATIO
- DEUTERON_PROTON_MASS_RATIO
- DEUTERON_RELATIVE_ATOMIC_MASS
- DEUTERON_RMS_CHARGE_RADIUS
- ELECTRON_CHARGE_TO_MASS_QUOTIENT
- ELECTRON_DEUTERON_MAG_MOM_RATIO
- ELECTRON_DEUTERON_MASS_RATIO
- ELECTRON_G_FACTOR
- ELECTRON_GYROMAG_RATIO
- ELECTRON_GYROMAG_RATIO_IN_MHZ_T
- ELECTRON_HELIUM_MASS_RATIO

- ELECTRON_MAG_MOM
- ELECTRON_MAG_MOM_ANOMALY
- ELECTRON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- ELECTRON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- ELECTRON_MASS
- ELECTRON_MASS_ENERGY_EQUIVALENT
- ELECTRON_MASS_ENERGY_EQUIVALENT_IN_MEV
- ELECTRON_MASS_IN_U
- ELECTRON_MOLAR_MASS
- ELECTRON_MUON_MAG_MOM_RATIO
- ELECTRON_MUON_MASS_RATIO
- ELECTRON_NEUTRON_MAG_MOM_RATIO
- ELECTRON_NEUTRON_MASS_RATIO
- ELECTRON_PROTON_MAG_MOM_RATIO
- ELECTRON_PROTON_MASS_RATIO
- ELECTRON_RELATIVE_ATOMIC_MASS
- ELECTRON_TAU_MASS_RATIO
- ELECTRON_TO_ALPHA_PARTICLE_MASS_RATIO
- ELECTRON_TO_SHIELDED_HELIUM_MAG_MOM_RATIO
- ELECTRON_TO_SHIELDED_PROTON_MAG_MOM_RATIO
- ELECTRON_TRITON_MASS_RATIO
- ELECTRON_VOLT
- ELECTRON_VOLT_ATOMIC_MASS_UNIT_RELATIONSHIP
- ELECTRON_VOLT_HARTREE_RELATIONSHIP
- ELECTRON_VOLT_HERTZ_RELATIONSHIP
- ELECTRON_VOLT_INVERSE_METER_RELATIONSHIP
- ELECTRON_VOLT_JOULE_RELATIONSHIP
- ELECTRON_VOLT_KELVIN_RELATIONSHIP
- ELECTRON_VOLT_KILOGRAM_RELATIONSHIP
- ELEMENTARY_CHARGE
- ELEMENTARY_CHARGE_OVER_H_BAR
- FARADAY_CONSTANT
- FERMI_COUPLING_CONSTANT
- FINE_STRUCTURE_CONSTANT
- FIRST_RADIATION_CONSTANT
- FIRST_RADIATION_CONSTANT_FOR_SPECTRAL_RADIANCEx
- HARTREE_ATOMIC_MASS_UNIT_RELATIONSHIP
- HARTREE_ELECTRON_VOLT_RELATIONSHIP

- HARTREE_ENERGY
- HARTREE_ENERGY_IN_EV
- HARTREE_HERTZ_RELATIONSHIP
- HARTREE_INVERSE_METER_RELATIONSHIP
- HARTREE_JOULE_RELATIONSHIP
- HARTREE_KELVIN_RELATIONSHIP
- HARTREE_KILOGRAM_RELATIONSHIP
- HELION_ELECTRON_MASS_RATIO
- HELION_G_FACTOR
- HELION_MAG_MOM
- HELION_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- HELION_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- HELION_MASS
- HELION_MASS_ENERGY_EQUIVALENT
- HELION_MASS_ENERGY_EQUIVALENT_IN_MEV
- HELION_MASS_IN_U
- HELION_MOLAR_MASS
- HELION_PROTON_MASS_RATIO
- HELION_RELATIVE_ATOMIC_MASS
- HELION_SHIELDING_SHIFT
- HERTZ_ATOMIC_MASS_UNIT_RELATIONSHIP
- HERTZ_ELECTRON_VOLT_RELATIONSHIP
- HERTZ_HARTREE_RELATIONSHIP
- HERTZ_INVERSE_METER_RELATIONSHIP
- HERTZ_JOULE_RELATIONSHIP
- HERTZ_KELVIN_RELATIONSHIP
- HERTZ_KILOGRAM_RELATIONSHIP
- HYPERFINE_TRANSITION_FREQUENCY_OF_CS_133
- INVERSE_FINE_STRUCTURE_CONSTANT
- INVERSE_METER_ATOMIC_MASS_UNIT_RELATIONSHIP
- INVERSE_METER_ELECTRON_VOLT_RELATIONSHIP
- INVERSE_METER_HARTREE_RELATIONSHIP
- INVERSE_METER_HERTZ_RELATIONSHIP
- INVERSE_METER_JOULE_RELATIONSHIP
- INVERSE_METER_KELVIN_RELATIONSHIP
- INVERSE_METER_KILOGRAM_RELATIONSHIP
- INVERSE_OF_CONDUCTANCE_QUANTUM
- JOSEPHSON_CONSTANT

- JOULE_ATOMIC_MASS_UNIT_RELATIONSHIP
- JOULE_ELECTRON_VOLT_RELATIONSHIP
- JOULE_HARTREE_RELATIONSHIP
- JOULE_HERTZ_RELATIONSHIP
- JOULE_INVERSE_METER_RELATIONSHIP
- JOULE_KELVIN_RELATIONSHIP
- JOULE_KILOGRAM_RELATIONSHIP
- KELVIN_ATOMIC_MASS_UNIT_RELATIONSHIP
- KELVIN_ELECTRON_VOLT_RELATIONSHIP
- KELVIN_HARTREE_RELATIONSHIP
- KELVIN_HERTZ_RELATIONSHIP
- KELVIN_INVERSE_METER_RELATIONSHIP
- KELVIN_JOULE_RELATIONSHIP
- KELVIN_KILOGRAM_RELATIONSHIP
- KILOGRAM_ATOMIC_MASS_UNIT_RELATIONSHIP
- KILOGRAM_ELECTRON_VOLT_RELATIONSHIP
- KILOGRAM_HARTREE_RELATIONSHIP
- KILOGRAM_HERTZ_RELATIONSHIP
- KILOGRAM_INVERSE_METER_RELATIONSHIP
- KILOGRAM_JOULE_RELATIONSHIP
- KILOGRAM_KELVIN_RELATIONSHIP
- LATTICE_PARAMETER_OF_SIICON
- LATTICE_SPACING_OF_IDEAL_SI_220
- LOSCHMIDT_CONSTANT_273_15_K_100_KPA
- LOSCHMIDT_CONSTANT_273_15_K_101_325_KPA
- LUMINOUS_EFFICACY
- MAG_FLUX_QUANTUM
- MOLAR_GAS_CONSTANT
- MOLAR_MASS_CONSTANT
- MOLAR_MASS_OF_CARBON_12
- MOLAR_PLANCK_CONSTANT
- MOLAR_VOLUME_OF_IDEAL_GAS_273_15_K_100_KPA
- MOLAR_VOLUME_OF_IDEAL_GAS_273_15_K_101_325_KPA
- MOLAR_VOLUME_OF_SIICON
- MOLYBDENUM_X_UNIT
- MUON_COMPTON_WAVELENGTH
- MUON_ELECTRON_MASS_RATIO
- MUON_G_FACTOR

- MUON_MAG_MOM
- MUON_MAG_MOM_ANOMALY
- MUON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- MUON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- MUON_MASS
- MUON_MASS_ENERGY_EQUIVALENT
- MUON_MASS_ENERGY_EQUIVALENT_IN_MEV
- MUON_MASS_IN_U
- MUON_MOLAR_MASS
- MUON_NEUTRON_MASS_RATIO
- MUON_PROTON_MAG_MOM_RATIO
- MUON_PROTON_MASS_RATIO
- MUON_TAU_MASS_RATIO
- NATURAL_UNIT_OF_ACTION
- NATURAL_UNIT_OF_ACTION_IN_EV_S
- NATURAL_UNIT_OF_ENERGY
- NATURAL_UNIT_OF_ENERGY_IN_MEV
- NATURAL_UNIT_OF_LENGTH
- NATURAL_UNIT_OF_MASS
- NATURAL_UNIT_OF_MOMENTUM
- NATURAL_UNIT_OF_MOMENTUM_IN_MEV_C
- NATURAL_UNIT_OF_TIME
- NATURAL_UNIT_OF_VELOCITY
- NEUTRON_COMPTON_WAVELENGTH
- NEUTRON_ELECTRON_MAG_MOM_RATIO
- NEUTRON_ELECTRON_MASS_RATIO
- NEUTRON_G_FACTOR
- NEUTRON_GYROMAG_RATIO
- NEUTRON_GYROMAG_RATIO_IN_MHZ_T
- NEUTRON_MAG_MOM
- NEUTRON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- NEUTRON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- NEUTRON_MASS
- NEUTRON_MASS_ENERGY_EQUIVALENT
- NEUTRON_MASS_ENERGY_EQUIVALENT_IN_MEV
- NEUTRON_MASS_IN_U
- NEUTRON_MOLAR_MASS
- NEUTRON_MUON_MASS_RATIO

- NEUTRON_PROTON_MAG_MOM_RATIO
- NEUTRON_PROTON_MASS_DIFFERENCE
- NEUTRON_PROTON_MASS_DIFFERENCE_ENERGY_EQUIVALENT
- NEUTRON_PROTON_MASS_DIFFERENCE_ENERGY_EQUIVALENT_IN_MEV
- NEUTRON_PROTON_MASS_DIFFERENCE_IN_U
- NEUTRON_PROTON_MASS_RATIO
- NEUTRON_RELATIVE_ATOMIC_MASS
- NEUTRON_TAU_MASS_RATIO
- NEUTRON_TO_SHIELDED_PROTON_MAG_MOM_RATIO
- NEWTONIAN_CONSTANT_OF_GRAVITATION
- NEWTONIAN_CONSTANT_OF_GRAVITATION_OVER_H_BAR_C
- NUCLEAR_MAGNETON
- NUCLEAR_MAGNETON_IN_EV_T
- NUCLEAR_MAGNETON_IN_INVERSE_METER_PER_TESLA
- NUCLEAR_MAGNETON_IN_K_T
- NUCLEAR_MAGNETON_IN_MHZ_T
- PLANCK_CONSTANT
- PLANCK_CONSTANT_IN_EV_HZ
- PLANCK_LENGTH
- PLANCK_MASS
- PLANCK_MASS_ENERGY_EQUIVALENT_IN_GEV
- PLANCK_TEMPERATURE
- PLANCK_TIME
- PROTON_CHARGE_TO_MASS_QUOTIENT
- PROTON_COMPTON_WAVELENGTH
- PROTON_ELECTRON_MASS_RATIO
- PROTON_G_FACTOR
- PROTON_GYROMAG_RATIO
- PROTON_GYROMAG_RATIO_IN_MHZ_T
- PROTON_MAG_MOM
- PROTON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- PROTON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- PROTON_MAG_SHIELDING_CORRECTION
- PROTON_MASS
- PROTON_MASS_ENERGY_EQUIVALENT
- PROTON_MASS_ENERGY_EQUIVALENT_IN_MEV
- PROTON_MASS_IN_U
- PROTON_MOLAR_MASS

- PROTON_MUON_MASS_RATIO
- PROTON_NEUTRON_MAG_MOM_RATIO
- PROTON_NEUTRON_MASS_RATIO
- PROTON_RELATIVE_ATOMIC_MASS
- PROTON_RMS_CHARGE_RADIUS
- PROTON_TAU_MASS_RATIO
- QUANTUM_OF_CIRCULATION
- QUANTUM_OF_CIRCULATION_TIMES_2
- REDUCED_COMPTON_WAVELENGTH
- REDUCED_MUON_COMPTON_WAVELENGTH
- REDUCED_NEUTRON_COMPTON_WAVELENGTH
- REDUCED_PLANCK_CONSTANT
- REDUCED_PLANCK_CONSTANT_IN_EV_S
- REDUCED_PLANCK_CONSTANT_TIMES_C_IN_MEV_FM
- REDUCED_PROTON_COMPTON_WAVELENGTH
- REDUCED_TAU_COMPTON_WAVELENGTH
- RYDBERG_CONSTANT
- RYDBERG_CONSTANT_TIMES_C_IN_HZ
- RYDBERG_CONSTANT_TIMES_HC_IN_EV
- RYDBERG_CONSTANT_TIMES_HC_IN_J
- SACKUR_TETRODE_CONSTANT_1_K_100_KPA
- SACKUR_TETRODE_CONSTANT_1_K_101_325_KPA
- SECOND_RADIATION_CONSTANT
- SHIELDED_HELIION_GYROMAG_RATIO
- SHIELDED_HELIION_GYROMAG_RATIO_IN_MHZ_T
- SHIELDED_HELIION_MAG_MOM
- SHIELDED_HELIION_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- SHIELDED_HELIION_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- SHIELDED_HELIION_TO_PROTON_MAG_MOM_RATIO
- SHIELDED_HELIION_TO_SHIELDED_PROTON_MAG_MOM_RATIO
- SHIELDED_PROTON_GYROMAG_RATIO
- SHIELDED_PROTON_GYROMAG_RATIO_IN_MHZ_T
- SHIELDED_PROTON_MAG_MOM
- SHIELDED_PROTON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- SHIELDED_PROTON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- SHIELDING_DIFFERENCE_OF_D_AND_P_IN_HD
- SHIELDING_DIFFERENCE_OF_T_AND_P_IN_HT
- SPEED_OF_LIGHT_IN_VACUUM

- STANDARD_ACCELERATION_OF_GRAVITY
- STANDARD_ATMOSPHERE
- STANDARD_STATE_PRESSURE
- STEFAN_BOLTZMANN_CONSTANT
- TAU_COMPTON_WAVELENGTH
- TAU_ELECTRON_MASS_RATIO
- TAU_ENERGY_EQUIVALENT
- TAU_MASS
- TAU_MASS_ENERGY_EQUIVALENT
- TAU_MASS_IN_U
- TAU_MOLAR_MASS
- TAU_MUON_MASS_RATIO
- TAU_NEUTRON_MASS_RATIO
- TAU_PROTON_MASS_RATIO
- THOMSON_CROSS_SECTION
- TRITON_ELECTRON_MASS_RATIO
- TRITON_G_FACTOR
- TRITON_MAG_MOM
- TRITON_MAG_MOM_TO_BOHR_MAGNETON_RATIO
- TRITON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO
- TRITON_MASS
- TRITON_MASS_ENERGY_EQUIVALENT
- TRITON_MASS_ENERGY_EQUIVALENT_IN_MEV
- TRITON_MASS_IN_U
- TRITON_MOLAR_MASS
- TRITON_PROTON_MASS_RATIO
- TRITON_RELATIVE_ATOMIC_MASS
- TRITON_TO_PROTON_MAG_MOM_RATIO
- UNIFIED_ATOMIC_MASS_UNIT
- VACUUM_ELECTRIC_PERMITTIVITY
- VACUUM_MAG_PERMEABILITY
- VON_KLITZING_CONSTANT
- WEAK_MIXING_ANGLE
- WIEN_FREQUENCY_DISPLACEMENT_LAW_CONSTANT
- WIEN_WAVELENGTH_DISPLACEMENT_LAW_CONSTANT
- W_TO_Z_MASS_RATIO

CODATA 2018

- ALPHA_PARTICLE_ELECTRON_MASS_RATIO_2018

- ALPHA_PARTICLE_MASS_2018
- ALPHA_PARTICLE_MASS_ENERGY_EQUIVALENT_2018
- ALPHA_PARTICLE_MASS_ENERGY_EQUIVALENT_IN_MEV_2018
- ALPHA_PARTICLE_MASS_IN_U_2018
- ALPHA_PARTICLE_MOLAR_MASS_2018
- ALPHA_PARTICLE_PROTON_MASS_RATIO_2018
- ALPHA_PARTICLE_RELATIVE_ATOMIC_MASS_2018
- ANGSTROM_STAR_2018
- ATOMIC_MASS_CONSTANT_2018
- ATOMIC_MASS_CONSTANT_ENERGY_EQUIVALENT_2018
- ATOMIC_MASS_CONSTANT_ENERGY_EQUIVALENT_IN_MEV_2018
- ATOMIC_MASS_UNIT_ELECTRON_VOLT_RELATIONSHIP_2018
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- ATOMIC_UNIT_OF_CURRENT_2018
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- ATOMIC_UNIT_OF_LENGTH_2018
- ATOMIC_UNIT_OF_MAG_DIPOLE_MOM_2018
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- ATOMIC_UNIT_OF_MOMENTUM_2018

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- BOHR_MAGNETON_IN_HZ_T_2018
- BOHR_MAGNETON_IN_INVERSE_METER_PER_TESLA_2018
- BOHR_MAGNETON_IN_K_T_2018
- BOHR_RADIUS_2018
- BOLTZMANN_CONSTANT_2018
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- MUON_MOLAR_MASS_2018
- MUON_NEUTRON_MASS_RATIO_2018
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- SHIELDED_HELIUM_MAG_MOM_2018
- SHIELDED_HELIUM_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2018
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- SHIELDED_HELIUM_TO_PROTON_MAG_MOM_RATIO_2018
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- SHIELDED_PROTON_MAG_MOM_2018
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- KILOGRAM_KELVIN_RELATIONSHIP_2010
- LATTICE_PARAMETER_OF_SILICON_2010
- LOSCHMIDT_CONSTANT_273_15_K_100_KPA_2010
- LOSCHMIDT_CONSTANT_273_15_K_101_325_KPA_2010
- MAG_CONSTANT_2010
- MAG_FLUX_QUANTUM_2010
- MOLAR_GAS_CONSTANT_2010

- MOLAR_MASS_CONSTANT_2010
- MOLAR_MASS_OF_CARBON_12_2010
- MOLAR_PLANCK_CONSTANT_2010
- MOLAR_PLANCK_CONSTANT_TIMES_C_2010
- MOLAR_VOLUME_OF_IDEAL_GAS_273_15_K_100_KPA_2010
- MOLAR_VOLUME_OF_IDEAL_GAS_273_15_K_101_325_KPA_2010
- MOLAR_VOLUME_OF_SILICON_2010
- MO_X_UNIT_2010
- MUON_COMPTON_WAVELENGTH_2010
- MUON_COMPTON_WAVELENGTH_OVER_2_PI_2010
- MUON_ELECTRON_MASS_RATIO_2010
- MUON_G_FACTOR_2010
- MUON_MAG_MOM_2010
- MUON_MAG_MOM_ANOMALY_2010
- MUON_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- MUON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- MUON_MASS_2010
- MUON_MASS_ENERGY_EQUIVALENT_2010
- MUON_MASS_ENERGY_EQUIVALENT_IN_MEV_2010
- MUON_MASS_IN_U_2010
- MUON_MOLAR_MASS_2010
- MUON_NEUTRON_MASS_RATIO_2010
- MUON_PROTON_MAG_MOM_RATIO_2010
- MUON_PROTON_MASS_RATIO_2010
- MUON_TAU_MASS_RATIO_2010
- NATURAL_UNIT_OF_ACTION_2010
- NATURAL_UNIT_OF_ACTION_IN_EV_S_2010
- NATURAL_UNIT_OF_ENERGY_2010
- NATURAL_UNIT_OF_ENERGY_IN_MEV_2010
- NATURAL_UNIT_OF_LENGTH_2010
- NATURAL_UNIT_OF_MASS_2010
- NATURAL_UNIT_OF_MOMUM_2010
- NATURAL_UNIT_OF_MOMUM_IN_MEV_C_2010
- NATURAL_UNIT_OF_TIME_2010
- NATURAL_UNIT_OF_VELOCITY_2010
- NEUTRON_COMPTON_WAVELENGTH_2010
- NEUTRON_COMPTON_WAVELENGTH_OVER_2_PI_2010
- NEUTRON_ELECTRON_MAG_MOM_RATIO_2010

- NEUTRON_ELECTRON_MASS_RATIO_2010
- NEUTRON_G_FACTOR_2010
- NEUTRON_GYROMAG_RATIO_2010
- NEUTRON_GYROMAG_RATIO_OVER_2_PI_2010
- NEUTRON_MAG_MOM_2010
- NEUTRON_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- NEUTRON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- NEUTRON_MASS_2010
- NEUTRON_MASS_ENERGY_EQUIVALENT_2010
- NEUTRON_MASS_ENERGY_EQUIVALENT_IN_MEV_2010
- NEUTRON_MASS_IN_U_2010
- NEUTRON_MOLAR_MASS_2010
- NEUTRON_MUON_MASS_RATIO_2010
- NEUTRON_PROTON_MAG_MOM_RATIO_2010
- NEUTRON_PROTON_MASS_DIFFERENCE_2010
- NEUTRON_PROTON_MASS_DIFFERENCE_ENERGY_EQUIVALENT_2010
- NEUTRON_PROTON_MASS_DIFFERENCE_ENERGY_EQUIVALENT_IN_MEV_2010
- NEUTRON_PROTON_MASS_DIFFERENCE_IN_U_2010
- NEUTRON_PROTON_MASS_RATIO_2010
- NEUTRON_TAU_MASS_RATIO_2010
- NEUTRON_TO_SHIELDED_PROTON_MAG_MOM_RATIO_2010
- NEWTONIAN_CONSTANT_OF_GRAVITATION_2010
- NEWTONIAN_CONSTANT_OF_GRAVITATION_OVER_H_BAR_C_2010
- NUCLEAR_MAGNETON_2010
- NUCLEAR_MAGNETON_IN_EV_T_2010
- NUCLEAR_MAGNETON_IN_INVERSE_METERS_PER_TESLA_2010
- NUCLEAR_MAGNETON_IN_K_T_2010
- NUCLEAR_MAGNETON_IN_MHZ_T_2010
- PLANCK_CONSTANT_2010
- PLANCK_CONSTANT_IN_EV_S_2010
- PLANCK_CONSTANT_OVER_2_PI_2010
- PLANCK_CONSTANT_OVER_2_PI_IN_EV_S_2010
- PLANCK_CONSTANT_OVER_2_PI_TIMES_C_IN_MEV_FM_2010
- PLANCK_LENGTH_2010
- PLANCK_MASS_2010
- PLANCK_MASS_ENERGY_EQUIVALENT_IN_GEV_2010
- PLANCK_TEMPERATURE_2010
- PLANCK_TIME_2010

- PROTON_CHARGE_TO_MASS_QUOTIENT_2010
- PROTON_COMPTON_WAVELENGTH_2010
- PROTON_COMPTON_WAVELENGTH_OVER_2_PI_2010
- PROTON_ELECTRON_MASS_RATIO_2010
- PROTON_G_FACTOR_2010
- PROTON_GYROMAG_RATIO_2010
- PROTON_GYROMAG_RATIO_OVER_2_PI_2010
- PROTON_MAG_MOM_2010
- PROTON_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- PROTON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- PROTON_MAG_SHIELDING_CORRECTION_2010
- PROTON_MASS_2010
- PROTON_MASS_ENERGY_EQUIVALENT_2010
- PROTON_MASS_ENERGY_EQUIVALENT_IN_MEV_2010
- PROTON_MASS_IN_U_2010
- PROTON_MOLAR_MASS_2010
- PROTON_MUON_MASS_RATIO_2010
- PROTON_NEUTRON_MAG_MOM_RATIO_2010
- PROTON_NEUTRON_MASS_RATIO_2010
- PROTON_RMS_CHARGE_RADIUS_2010
- PROTON_TAU_MASS_RATIO_2010
- QUANTUM_OF_CIRCULATION_2010
- QUANTUM_OF_CIRCULATION_TIMES_2_2010
- RYDBERG_CONSTANT_2010
- RYDBERG_CONSTANT_TIMES_C_IN_HZ_2010
- RYDBERG_CONSTANT_TIMES_HC_IN_EV_2010
- RYDBERG_CONSTANT_TIMES_HC_IN_J_2010
- SACKUR_TETRODE_CONSTANT_1_K_100_KPA_2010
- SACKUR_TETRODE_CONSTANT_1_K_101_325_KPA_2010
- SECOND_RADIATION_CONSTANT_2010
- SHIELDED_HELIUM_GYROMAG_RATIO_2010
- SHIELDED_HELIUM_GYROMAG_RATIO_OVER_2_PI_2010
- SHIELDED_HELIUM_MAG_MOM_2010
- SHIELDED_HELIUM_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- SHIELDED_HELIUM_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- SHIELDED_HELIUM_TO_PROTON_MAG_MOM_RATIO_2010
- SHIELDED_HELIUM_TO_SHIELDED_PROTON_MAG_MOM_RATIO_2010
- SHIELDED_PROTON_GYROMAG_RATIO_2010

- SHIELDED_PROTON_GYROMAG_RATIO_OVER_2_PI_2010
- SHIELDED_PROTON_MAG_MOM_2010
- SHIELDED_PROTON_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- SHIELDED_PROTON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- SPEED_OF_LIGHT_IN_VACUUM_2010
- STANDARD_ACCELERATION_OF_GRAVITY_2010
- STANDARD_ATMOSPHERE_2010
- STANDARD_STATE_PRESSURE_2010
- STEFAN_BOLTZMANN_CONSTANT_2010
- TAU_COMPTON_WAVELENGTH_2010
- TAU_COMPTON_WAVELENGTH_OVER_2_PI_2010
- TAU_ELECTRON_MASS_RATIO_2010
- TAU_MASS_2010
- TAU_MASS_ENERGY_EQUIVALENT_2010
- TAU_MASS_ENERGY_EQUIVALENT_IN_MEV_2010
- TAU_MASS_IN_U_2010
- TAU_MOLAR_MASS_2010
- TAU_MUON_MASS_RATIO_2010
- TAU_NEUTRON_MASS_RATIO_2010
- TAU_PROTON_MASS_RATIO_2010
- THOMSON_CROSS_SECTION_2010
- TRITON_ELECTRON_MASS_RATIO_2010
- TRITON_G_FACTOR_2010
- TRITON_MAG_MOM_2010
- TRITON_MAG_MOM_TO_BOHR_MAGNETON_RATIO_2010
- TRITON_MAG_MOM_TO_NUCLEAR_MAGNETON_RATIO_2010
- TRITON_MASS_2010
- TRITON_MASS_ENERGY_EQUIVALENT_2010
- TRITON_MASS_ENERGY_EQUIVALENT_IN_MEV_2010
- TRITON_MASS_IN_U_2010
- TRITON_MOLAR_MASS_2010
- TRITON_PROTON_MASS_RATIO_2010
- UNIFIED_ATOMIC_MASS_UNIT_2010
- VON_KLITZING_CONSTANT_2010
- WEAK_MIXING_ANGLE_2010
- WIEN_FREQUENCY_DISPLACEMENT_LAW_CONSTANT_2010
- WIEN_WAVELENGTH_DISPLACEMENT_LAW_CONSTANT_2010