codata

Release 2.3.2dev0

Milan Skocic

Dec 24, 2025

CONTENTS

CHAPTER

ONE

APIS

1.1 Fortran

1.1.1 codata

Description

Main module for the Codata library.

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.

Needed modules

- *codata__constants_2022*: ! Codata Constants - Autogenerated
- *codata__constants_2018*: ! Codata Constants - Autogenerated
- *codata__constants_2014*: ! Codata Constants - Autogenerated
- *codata__constants_2010*: ! Codata Constants - Autogenerated
- *codata__constants_type*: ! Codata constant type
- codata__constants_2022_capi: ! Codata Constants - C API Autogenerated
- codata__constants_2018_capi: ! Codata Constants - C API Autogenerated
- codata__constants_2014_capi: ! Codata Constants - C API Autogenerated
- codata__constants_2010_capi: ! Codata Constants - C API Autogenerated
- codata__constants_type_capi: ! Codata constant type: C API.
- *codata__api*: API.
- codata__capi: C API.

1.1.2 API

Description

API.

Quick access

Variables
version_f

Routines
get_version()

Needed modules

- codata__version (version())

Variables

- **version_f** *[character,private/target/allocatable]*
  Version

Subroutines and functions

function get_version()
Get the version.

Return
fptr *[character,pointer]* :: Fortran pointer to a string indicating the version.

Called from
capi_get_version()

1.1.3 Type

Description

! Codata constant type

Quick access

Types
codata_constant_type

Variables
codata_constant_type, *print*, *to_real*, *to_real_dp*, *to_real_sp*

Needed modules

- stdlib_kinds (sp(), dp())
- stdlib_io (fmt_real_dp())
- stdlib_optval (optval())

Types

- **type codata_constant_type**

  Type fields

  - **% name** *[character]*
  - **% uncertainty** *[real]*
  - **% unit** *[character]*

- **% value** *[real]*

Variables

- **codata_constant_type** *[real,public]*
- **print** *[real,private]*
- **to_real** *[real,public]*
- **to_real_dp** *[real,private]*
- **to_real_sp** *[real,private]*

1.1.4 2010

Description

! Codata Constants - Autogenerated

Quick access

Variables

alpha_particle_electron_mass_ratio_2010, *alpha_particle_mass_2010*, *alpha_particle_mass_energy_equivalent_2010*, *alpha_particle_mass_energy_equivalent_in_mev_2010*, *alpha_particle_mass_in_u_2010*, *alpha_particle_molar_mass_2010*, *alpha_particle_proton_mass_ratio_2010*, *angstrom_star_2010*, *atomic_mass_constant_2010*, *atomic_mass_constant_energy_equivalent_2010*, *atomic_mass_constant_energy_equivalent_in_mev_2010*, *atomic_mass_unit_electron_volt_relationship_2010*, *atomic_mass_unit_hartree_relationship_2010*, *atomic_mass_unit_hertz_relationship_2010*, *atomic_mass_unit_inverse_meter_relationship_2010*, *atomic_mass_unit_joule_relationship_2010*, *atomic_mass_unit_kelvin_relationship_2010*, *atomic_mass_unit_kilogram_relationship_2010*, *atomic_unit_of_1st_hyperpolarizability_2010*, *atomic_unit_of_2nd_hyperpolarizability_2010*, *atomic_unit_of_action_2010*, *atomic_unit_of_charge_2010*, *atomic_unit_of_charge_density_2010*, *atomic_unit_of_current_2010*, *atomic_unit_of_electric_dipole_mom_2010*, *atomic_unit_of_electric_field_2010*, *atomic_unit_of_electric_field_gradient_2010*, *atomic_unit_of_electric_polarizability_2010*, *atomic_unit_of_electric_potential_2010*, *atomic_unit_of_electric_quadrupole_mom_2010*, *atomic_unit_of_energy_2010*, *atomic_unit_of_force_2010*, *atomic_unit_of_length_2010*, *atomic_unit_of_mag_dipole_mom_2010*, *atomic_unit_of_mag_flux_density_2010*, *atomic_unit_of_magnetizability_2010*, *atomic_unit_of_mass_2010*, *atomic_unit_of_momum_2010*, *atomic_unit_of_permittivity_2010*, *atomic_unit_of_time_2010*, *atomic_unit_of_velocity_2010*, *avogadro_constant_2010*, *bohr_magneton_2010*, *bohr_magneton_in_ev_t_2010*, *bohr_magneton_in_hz_t_2010*, *bohr_magneton_in_inverse_meters_per_tesla_2010*, *bohr_magneton_in_k_t_2010*, *bohr_radius_2010*, *boltzmann_constant_2010*, *boltzmann_constant_in_ev_k_2010*, *boltzmann_constant_in_hz_k_2010*, *boltzmann_constant_in_inverse_meters_per_kelvin_2010*, *characteristic_impedance_of_vacuum_2010*, *classical_electron_radius_2010*, *compton_wavelength_2010*, *compton_wavelength_over_2_pi_2010*, *conductance_quantum_2010*, *conventional_value_of_josephson_constant_2010*, *conventional_value_of_von_klitzing_constant_2010*, *cu_x_unit_2010*, *deuteron_electron_mag_mom_ratio_2010*, *deuteron_electron_mass_ratio_2010*, *deuteron_g_factor_2010*, *deuteron_mag_mom_2010*, *deuteron_mag_mom_to_bohr_magneton_ratio_2010*, *deuteron_mag_mom_to_nuclear_magneton_ratio_2010*, *deuteron_mass_2010*, *deuteron_mass_energy_equivalent_2010*, *deuteron_mass_energy_equivalent_in_mev_2010*,

deuteron_mass_in_u_2010, deuteron_molar_mass_2010, deuteron_neutron_mag_mom_ratio_2010,
deuteron_proton_mag_mom_ratio_2010, deuteron_proton_mass_ratio_2010,
deuteron_rms_charge_radius_2010, electric_constant_2010,
electron_charge_to_mass_quotient_2010, electron_deuteron_mag_mom_ratio_2010,
electron_deuteron_mass_ratio_2010, electron_g_factor_2010,
electron_gyromag_ratio_2010, electron_gyromag_ratio_over_2_pi_2010,
electron_helion_mass_ratio_2010, electron_mag_mom_2010,
electron_mag_mom_anomaly_2010, electron_mag_mom_to_bohr_magneton_ratio_2010,
electron_mag_mom_to_nuclear_magneton_ratio_2010, electron_mass_2010,
electron_mass_energy_equivalent_2010, electron_mass_energy_equivalent_in_mev_2010,
electron_mass_in_u_2010, electron_molar_mass_2010, electron_muon_mag_mom_ratio_2010,
electron_muon_mass_ratio_2010, electron_neutron_mag_mom_ratio_2010,
electron_neutron_mass_ratio_2010, electron_proton_mag_mom_ratio_2010,
electron_proton_mass_ratio_2010, electron_tau_mass_ratio_2010,
electron_to_alpha_particle_mass_ratio_2010, electron_to_shielded_helion_mag_mom_ratio_2010,
electron_to_shielded_proton_mag_mom_ratio_2010, electron_triton_mass_ratio_2010,
electron_volt_2010, electron_volt_atomic_mass_unit_relationship_2010,
electron_volt_hartree_relationship_2010, electron_volt_hertz_relationship_2010,
electron_volt_inverse_meter_relationship_2010, electron_volt_joule_relationship_2010,
electron_volt_kelvin_relationship_2010, electron_volt_kilogram_relationship_2010,
elementary_charge_2010, elementary_charge_over_h_2010, faraday_constant_2010,
faraday_constant_for_conventional_electric_current_2010,
fermi_coupling_constant_2010, fine_structure_constant_2010,
first_radiation_constant_2010, first_radiation_constant_for_spectral_radiance_2010,
hartree_atomic_mass_unit_relationship_2010, hartree_electron_volt_relationship_2010,
hartree_energy_2010, hartree_energy_in_ev_2010, hartree_hertz_relationship_2010,
hartree_inverse_meter_relationship_2010, hartree_joule_relationship_2010,
hartree_kelvin_relationship_2010, hartree_kilogram_relationship_2010,
helion_electron_mass_ratio_2010, helion_g_factor_2010,
helion_mag_mom_2010, helion_mag_mom_to_bohr_magneton_ratio_2010,
helion_mag_mom_to_nuclear_magneton_ratio_2010, helion_mass_2010,
helion_mass_energy_equivalent_2010, helion_mass_energy_equivalent_in_mev_2010,
helion_mass_in_u_2010, helion_molar_mass_2010, helion_proton_mass_ratio_2010,
hertz_atomic_mass_unit_relationship_2010, hertz_electron_volt_relationship_2010,
hertz_hartree_relationship_2010, hertz_inverse_meter_relationship_2010,
hertz_joule_relationship_2010, hertz_kelvin_relationship_2010,
hertz_kilogram_relationship_2010, inverse_fine_structure_constant_2010,
inverse_meter_atomic_mass_unit_relationship_2010, inverse_meter_electron_volt_relationship_2010,
inverse_meter_hartree_relationship_2010, inverse_meter_hertz_relationship_2010,
inverse_meter_joule_relationship_2010, inverse_meter_kelvin_relationship_2010,
inverse_meter_kilogram_relationship_2010, inverse_of_conductance_quantum_2010,
josephson_constant_2010, joule_atomic_mass_unit_relationship_2010,
joule_electron_volt_relationship_2010, joule_hartree_relationship_2010,
joule_hertz_relationship_2010, joule_inverse_meter_relationship_2010,
joule_kelvin_relationship_2010, joule_kilogram_relationship_2010,
kelvin_atomic_mass_unit_relationship_2010, kelvin_electron_volt_relationship_2010,
kelvin_hartree_relationship_2010, kelvin_hertz_relationship_2010,
kelvin_inverse_meter_relationship_2010, kelvin_joule_relationship_2010,
kelvin_kilogram_relationship_2010, kilogram_atomic_mass_unit_relationship_2010,
kilogram_electron_volt_relationship_2010, kilogram_hartree_relationship_2010,
kilogram_hertz_relationship_2010, kilogram_inverse_meter_relationship_2010,
kilogram_joule_relationship_2010, kilogram_kelvin_relationship_2010,
lattice_parameter_of_silicon_2010, lattice_spacing_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, mo_x_unit_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_
molar_volume_of_silicon_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_helion_gyromag_ratio_2010,
shielded_helion_gyromag_ratio_over_2_pi_2010, shielded_helion_mag_mom_2010,
shielded_helion_mag_mom_to_bohr_magneton_ratio_2010,

shielded_helion_mag_mom_to_nuclear_magneton_ratio_2010, shielded_helion_to_proton_mag_mom_ratio_2010, shielded_helion_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, year_2010

Needed modules

- stdlib_kinds (dp(), int32())
- codata__constants_type: ! Codata constant type

Variables

- **alpha_particle_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-electron mass ratio",7294.2995361_dp,0.0000029_dp,"")]

- **alpha_particle_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass",6.64465675e-27_dp,0.00000029e-27_dp,"kg")]

- **alpha_particle_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent",5.97191967e-10_dp,0.00000026e-10_dp,"j")]

- **alpha_particle_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent in mev",3727.379240_dp,0.000082_dp,"mev")]

- **alpha_particle_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass in u",4.001506179125_dp,0.000000000062_dp,"u")]

- **alpha_particle_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle molar mass",4.001506179125e-3_dp,0.000000000062e-3_dp,"kg mol^-1")]

- **alpha_particle_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-proton mass ratio",3.97259968933_dp,0.00000000036_dp,"")]

- **angstrom_star_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("angstrom star",1.00001495e-10_dp,0.00000090e-10_dp,"m")]

- **atomic_mass_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant",1.660538921e-27_dp,0.000000073e-27_dp,"kg")]

- **atomic_mass_constant_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent",1.492417954e-10_dp,0.000000066e-10_dp,"j")]

- **atomic_mass_constant_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent in mev",931.494061_dp,0.000021_dp,"mev")]

- **atomic_mass_unit_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-electron volt relationship",931.494061e6_dp,0.000021e6_dp,"ev")]

- **atomic_mass_unit_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hartree relationship",3.4231776845e7_dp,0.0000000024e7_dp,"e_h")]

- **atomic_mass_unit_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hertz relationship",2.2523427168e23_dp,0.0000000016e23_dp,"hz")]

- **atomic_mass_unit_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-inverse meter relationship",7.5130066042e14_dp,0.0000000053e14_dp,"m^-1")]

- **atomic_mass_unit_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-joule relationship",1.492417954e-10_dp,0.000000066e-10_dp,"j")]

- **atomic_mass_unit_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kelvin relationship",1.08095408e13_dp,0.00000098e13_dp,"k")]

- **atomic_mass_unit_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kilogram relationship",1.660538921e-27_dp,0.000000073e-27_dp,"kg")]

- **atomic_unit_of_1st_hyperpolarizability_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 1st hyperpolarizability",3.206361449e-53_dp,0.000000071e-53_dp,"c^3 m^3 j^-2")]

- **atomic_unit_of_2nd_hyperpolarizability_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 2nd hyperpolarizability",6.23538054e-65_dp,0.00000028e-65_dp,"c^4 m^4 j^-3")]

- **atomic_unit_of_action_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of action",1.054571726e-34_dp,0.000000047e-34_dp,"j s")]

- **atomic_unit_of_charge_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge",1.602176565e-19_dp,0.000000035e-19_dp,"c")]

- **atomic_unit_of_charge_density_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge density",1.081202338e12_dp,0.000000024e12_dp,"c m^-3")]

- **atomic_unit_of_current_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of current",6.62361795e-3_dp,0.00000015e-3_dp,"a")]

- **atomic_unit_of_electric_dipole_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric dipole mom.",8.47835326e-30_dp,0.00000019e-30_dp,"c m")]

- **atomic_unit_of_electric_field_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field",5.14220652e11_dp,0.00000011e11_dp,"v m^-1")]

- **atomic_unit_of_electric_field_gradient_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field gradient",9.71736200e21_dp,0.00000021e21_dp,"v m^-2")]

- **atomic_unit_of_electric_polarizability_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric polarizability",1.6487772754e-41_dp,0.0000000016e-41_dp,"c^2 m^2 j^-1")]

- **atomic_unit_of_electric_potential_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric potential",27.21138505_dp,0.00000060_dp,"v")]

- **atomic_unit_of_electric_quadrupole_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric quadrupole mom.",4.486551331e-40_dp,0.000000099e-40_dp,"c m^2")]

- **atomic_unit_of_energy_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of energy",4.35974434e-18_dp,0.00000019e-18_dp,"j")]

- **atomic_unit_of_force_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of force",8.23872278e-8_dp,0.00000036e-8_dp,"n")]

- **atomic_unit_of_length_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of length",0.52917721092e-10_dp,0.00000000017e-10_dp,"m")]

- **atomic_unit_of_mag_dipole_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. dipole mom.",1.854801936e-23_dp,0.000000041e-23_dp,"j t^-1")]

- **atomic_unit_of_mag_flux_density_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. flux density",2.350517464e5_dp,0.000000052e5_dp,"t")]

- **atomic_unit_of_magnetizability_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of magnetizability",7.891036607e-29_dp,0.000000013e-29_dp,"j t^-2")]

- **atomic_unit_of_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mass",9.10938291e-31_dp,0.00000040e-31_dp,"kg")]

- **atomic_unit_of_momum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mom.um",1.992851740e-24_dp,0.000000088e-24_dp,"kg m s^-1")]

- **atomic_unit_of_permittivity_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of permittivity",1.112650056e-10_dp,0.0_dp,"f m^-1")]

- **atomic_unit_of_time_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of time",2.418884326502e-17_dp,0.000000000012e-17_dp,"s")]

- **atomic_unit_of_velocity_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of velocity",2.18769126379e6_dp,0.00000000071e6_dp,"m s^-1")]

- **avogadro_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("avogadro constant",6.02214129e23_dp,0.00000027e23_dp,"mol^-1")]

- **bohr_magneton_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton",927.400968e-26_dp,0.000020e-26_dp,"j t^-1")]

- **bohr_magneton_in_ev_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in ev/t",5.7883818066e-5_dp,0.0000000038e-5_dp,"ev t^-1")]

- **bohr_magneton_in_hz_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in hz/t",13.99624555e9_dp,0.00000031e9_dp,"hz t^-1")]

- **bohr_magneton_in_inverse_meters_per_tesla_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in inverse meters per tesla",46.6864498_dp,0.0000010_dp,"m^-1 t^-1")]

- **bohr_magneton_in_k_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in k/t",0.67171388_dp,0.00000061_dp,"k t^-1")]

- **bohr_radius_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr radius",0.52917721092e-10_dp,0.00000000017e-10_dp,"m")]*

- **boltzmann_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant",1.3806488e-23_dp,0.0000013e-23_dp,"j k^-1")]

- **boltzmann_constant_in_ev_k_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in ev/k",8.6173324e-5_dp,0.0000078e-5_dp,"ev k^-1")]

- **boltzmann_constant_in_hz_k_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in hz/k",2.0836618e10_dp,0.0000019e10_dp,"hz k^-1")]

- **boltzmann_constant_in_inverse_meters_per_kelvin_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in inverse meters per kelvin",69.503476_dp,0.000063_dp,"m^-1 k^-1")]

- **characteristic_impedance_of_vacuum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("characteristic impedance of vacuum",376.730313461_dp,0.0_dp,"ohm")]

- **classical_electron_radius_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("classical electron radius",2.8179403267e-15_dp,0.0000000027e-15_dp,"m")]

- **compton_wavelength_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength",2.4263102389e-12_dp,0.0000000016e-12_dp,"m")]

- **compton_wavelength_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength over 2 pi",386.15926800e-15_dp,0.00000025e-15_dp,"m")]

- **conductance_quantum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conductance quantum",7.7480917346e-5_dp,0.0000000025e-5_dp,"s")]

- **conventional_value_of_josephson_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of josephson constant",483597.9e9_dp,0.0_dp,"hz v^-1")]

- **conventional_value_of_von_klitzing_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of von klitzing constant",25812.807_dp,0.0_dp,"ohm")]

- **cu_x_unit_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("cu x unit",1.00207697e-13_dp,0.00000028e-13_dp,"m")]*

- **deuteron_electron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mag. mom. ratio",-4.664345537e-4_dp,0.000000039e-4_dp,"")]

- **deuteron_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mass ratio",3670.4829652_dp,0.0000015_dp,"")]

- **deuteron_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron g factor",0.8574382308_dp,0.0000000072_dp,"")]

- **deuteron_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom.",0.433073489e-26_dp,0.000000010e-26_dp,"j t^-1")]

- **deuteron_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to bohr magneton ratio",0.4669754556e-3_dp,0.0000000039e-3_dp,"")]

- **deuteron_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to nuclear magneton ratio",0.8574382308_dp,0.0000000072_dp,"")]

- **deuteron_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass",3.34358348e-27_dp,0.00000015e-27_dp,"kg")]

- **deuteron_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent",3.00506297e-10_dp,0.00000013e-10_dp,"j")]

- **deuteron_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent in mev",1875.612859_dp,0.000041_dp,"mev")]

- **deuteron_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass in u",2.013553212712_dp,0.000000000077_dp,"u")]

- **deuteron_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron molar mass",2.013553212712e-3_dp,0.000000000077e-3_dp,"kg mol^-1")]

- **deuteron_neutron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-neutron mag. mom. ratio",-0.44820652_dp,0.00000011_dp,"")]

- **deuteron_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mag. mom. ratio",0.3070122070_dp,0.0000000024_dp,"")]

- **deuteron_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mass ratio",1.99900750097_dp,0.00000000018_dp,"")]

- **deuteron_rms_charge_radius_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron rms charge radius",2.1424e-15_dp,0.0021e-15_dp,"m")]

- **electric_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electric constant",8.854187817e-12_dp,0.0_dp,"f m^-1")]

- **electron_charge_to_mass_quotient_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron charge to mass quotient",-1.758820088e11_dp,0.000000039e11_dp,"c kg^-1")]

- **electron_deuteron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mag. mom. ratio",-2143.923498_dp,0.000018_dp,"")]

- **electron_deuteron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mass ratio",2.7244371095e-4_dp,0.0000000011e-4_dp,"")]

- **electron_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron g factor",-2.00231930436153_dp,0.00000000000053_dp,"")]

- **electron_gyromag_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio",1.760859708e11_dp,0.000000039e11_dp,"s^-1 t^-1")]

- **electron_gyromag_ratio_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio over 2 pi",28024.95266_dp,0.00062_dp,"mhz t^-1")]

- **electron_helion_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-helion mass ratio",1.8195430761e-4_dp,0.0000000017e-4_dp,"")]

- **electron_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom.",-928.476430e-26_dp,0.000021e-26_dp,"j t^-1")]

- **electron_mag_mom_anomaly_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. anomaly",1.15965218076e-3_dp,0.00000000027e-3_dp,"")]

- **electron_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to bohr magneton ratio",-1.00115965218076_dp,0.00000000000027_dp,"")]

- **electron_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to nuclear magneton ratio",-1838.28197090_dp,0.00000075_dp,"")]

- **electron_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass",9.10938291e-31_dp,0.00000040e-31_dp,"kg")]

- **electron_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent",8.18710506e-14_dp,0.00000036e-14_dp,"j")]

- **electron_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent in mev",0.510998928_dp,0.000000011_dp,"mev")]

- **electron_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass in u",5.4857990946e-4_dp,0.0000000022e-4_dp,"u")]

- **electron_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron molar mass",5.4857990946e-7_dp,0.0000000022e-7_dp,"kg mol^-1")]

- **electron_muon_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mag. mom. ratio",206.7669896_dp,0.0000052_dp,"")]

- **electron_muon_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mass ratio",4.83633166e-3_dp,0.00000012e-3_dp,"")]

- **electron_neutron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mag. mom. ratio",960.92050_dp,0.00023_dp,"")]

- **electron_neutron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mass ratio",5.4386734461e-4_dp,0.0000000032e-4_dp,"")]

- **electron_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mag. mom. ratio",-658.2106848_dp,0.0000054_dp,"")]

- **electron_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mass ratio",5.4461702178e-4_dp,0.0000000022e-4_dp,"")]

- **electron_tau_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-tau mass ratio",2.87592e-4_dp,0.00026e-4_dp,"")]

- **electron_to_alpha_particle_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to alpha particle mass ratio",1.37093355578e-4_dp,0.00000000055e-4_dp,"")]

- **electron_to_shielded_helion_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded helion mag. mom. ratio",864.058257_dp,0.000010_dp,"")]

- **electron_to_shielded_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded proton mag. mom. ratio",-658.2275971_dp,0.0000072_dp,"")]

- **electron_triton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-triton mass ratio",1.8192000653e-4_dp,0.0000000017e-4_dp,"")]

- **electron_volt_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt",1.602176565e-19_dp,0.000000035e-19_dp,"j")]

- **electron_volt_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-atomic mass unit relationship",1.073544150e-9_dp,0.000000024e-9_dp,"u")]

- **electron_volt_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hartree relationship",3.674932379e-2_dp,0.000000081e-2_dp,"e_h")]

- **electron_volt_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hertz relationship",2.417989348e14_dp,0.000000053e14_dp,"hz")]

- **electron_volt_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-inverse meter relationship",8.06554429e5_dp,0.00000018e5_dp,"m^-1")]

- **electron_volt_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-joule relationship",1.602176565e-19_dp,0.000000035e-19_dp,"j")]

- **electron_volt_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kelvin relationship",1.1604519e4_dp,0.0000011e4_dp,"k")]

- **electron_volt_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kilogram relationship",1.782661845e-36_dp,0.000000039e-36_dp,"kg")]

- **elementary_charge_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge",1.602176565e-19_dp,0.000000035e-19_dp,"c")]

- **elementary_charge_over_h_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge over h",2.417989348e14_dp,0.000000053e14_dp,"a j^-1")]

- **faraday_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant",96485.3365_dp,0.0021_dp,"c mol^-1")]

- **faraday_constant_for_conventional_electric_current_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant for conventional electric current",96485.3321_dp,0.0043_dp,"c_90 mol^-1")]

- **fermi_coupling_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fermi coupling constant",1.166364e-5_dp,0.000005e-5_dp,"gev^-2")]

- **fine_structure_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fine-structure constant",7.2973525698e-3_dp,0.0000000024e-3_dp,"")]

- **first_radiation_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant",3.74177153e-16_dp,0.00000017e-16_dp,"w m^2")]

- **first_radiation_constant_for_spectral_radiance_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant for spectral radiance",1.191042869e-16_dp,0.000000053e-16_dp,"w m^2 sr^-1")]

- **hartree_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-atomic mass unit relationship",2.9212623246e-8_dp,0.0000000021e-8_dp,"u")]

- **hartree_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-electron volt relationship",27.21138505_dp,0.00000060_dp,"ev")]

- **hartree_energy_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy",4.35974434e-18_dp,0.00000019e-18_dp,"j")]

- **hartree_energy_in_ev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy in ev",27.21138505_dp,0.00000060_dp,"ev")]

- **hartree_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-hertz relationship",6.579683920729e15_dp,0.000000000033e15_dp,"hz")]

- **hartree_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-inverse meter relationship",2.194746313708e7_dp,0.000000000011e7_dp,"m^-1")]

- **hartree_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-joule relationship",4.35974434e-18_dp,0.00000019e-18_dp,"j")]

- **hartree_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kelvin relationship",3.1577504e5_dp,0.0000029e5_dp,"k")]

- **hartree_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kilogram relationship",4.85086979e-35_dp,0.00000021e-35_dp,"kg")]

- **helion_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-electron mass ratio",5495.8852754_dp,0.0000050_dp,"")]

- **helion_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion g factor",-4.255250613_dp,0.000000050_dp,"")]

- **helion_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom.",-1.074617486e-26_dp,0.000000027e-26_dp,"j t^-1")]

- **helion_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to bohr magneton ratio",-1.158740958e-3_dp,0.000000014e-3_dp,"")]

- **helion_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to nuclear magneton ratio",-2.127625306_dp,0.000000025_dp,"")]

- **helion_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass",5.00641234e-27_dp,0.00000022e-27_dp,"kg")]*
- **helion_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent",4.49953902e-10_dp,0.00000020e-10_dp,"j")]
- **helion_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent in mev",2808.391482_dp,0.000062_dp,"mev")]
- **helion_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass in u",3.0149322468_dp,0.0000000025_dp,"u")]
- **helion_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion molar mass",3.0149322468e-3_dp,0.0000000025e-3_dp,"kg mol^-1")]
- **helion_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-proton mass ratio",2.9931526707_dp,0.0000000025_dp,"")]
- **hertz_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-atomic mass unit relationship",4.4398216689e-24_dp,0.0000000031e-24_dp,"u")]
- **hertz_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-electron volt relationship",4.135667516e-15_dp,0.000000091e-15_dp,"ev")]
- **hertz_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-hartree relationship",1.5198298460045e-16_dp,0.0000000000076e-16_dp,"e_h")]
- **hertz_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-inverse meter relationship",3.335640951e-9_dp,0.0_dp,"m^-1")]
- **hertz_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-joule relationship",6.62606957e-34_dp,0.00000029e-34_dp,"j")]
- **hertz_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kelvin relationship",4.7992434e-11_dp,0.0000044e-11_dp,"k")]
- **hertz_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kilogram relationship",7.37249668e-51_dp,0.00000033e-51_dp,"kg")]
- **inverse_fine_structure_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse fine-structure constant",137.035999074_dp,0.000000044_dp,"")]

- **inverse_meter_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-atomic mass unit relationship",1.33102505120e-15_dp,0.00000000094e-15_dp,"u")]

- **inverse_meter_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-electron volt relationship",1.239841930e-6_dp,0.000000027e-6_dp,"ev")]

- **inverse_meter_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hartree relationship",4.556335252755e-8_dp,0.000000000023e-8_dp,"e_h")]

- **inverse_meter_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hertz relationship",299792458_dp,0.0_dp,"hz")]

- **inverse_meter_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-joule relationship",1.986445684e-25_dp,0.000000088e-25_dp,"j")]

- **inverse_meter_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kelvin relationship",1.4387770e-2_dp,0.0000013e-2_dp,"k")]

- **inverse_meter_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kilogram relationship",2.210218902e-42_dp,0.000000098e-42_dp,"kg")]

- **inverse_of_conductance_quantum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse of conductance quantum",12906.4037217_dp,0.0000042_dp,"ohm")]

- **josephson_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("josephson constant",483597.870e9_dp,0.011e9_dp,"hz v^-1")]

- **joule_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-atomic mass unit relationship",6.70053585e9_dp,0.00000030e9_dp,"u")]

- **joule_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-electron volt relationship",6.24150934e18_dp,0.00000014e18_dp,"ev")]

- **joule_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hartree relationship",2.29371248e17_dp,0.00000010e17_dp,"e_h")]

- **joule_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hertz relationship",1.509190311e33_dp,0.000000067e33_dp,"hz")]

- **joule_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-inverse meter relationship",5.03411701e24_dp,0.00000022e24_dp,"m^-1")]

- **joule_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kelvin relationship",7.2429716e22_dp,0.0000066e22_dp,"k")]

- **joule_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kilogram relationship",1.112650056e-17_dp,0.0_dp,"kg")]

- **kelvin_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-atomic mass unit relationship",9.2510868e-14_dp,0.0000084e-14_dp,"u")]

- **kelvin_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-electron volt relationship",8.6173324e-5_dp,0.0000078e-5_dp,"ev")]

- **kelvin_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hartree relationship",3.1668114e-6_dp,0.0000029e-6_dp,"e_h")]

- **kelvin_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hertz relationship",2.0836618e10_dp,0.0000019e10_dp,"hz")]

- **kelvin_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-inverse meter relationship",69.503476_dp,0.000063_dp,"m^-1")]

- **kelvin_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-joule relationship",1.3806488e-23_dp,0.0000013e-23_dp,"j")]

- **kelvin_kilogram_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-kilogram relationship",1.5361790e-40_dp,0.0000014e-40_dp,"kg")]

- **kilogram_atomic_mass_unit_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-atomic mass unit relationship",6.02214129e26_dp,0.00000027e26_dp,"u")]

- **kilogram_electron_volt_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-electron volt relationship",5.60958885e35_dp,0.00000012e35_dp,"ev")]

- **kilogram_hartree_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hartree relationship",2.061485968e34_dp,0.000000091e34_dp,"e_h")]

- **kilogram_hertz_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hertz relationship",1.356392608e50_dp,0.000000060e50_dp,"hz")]

- **kilogram_inverse_meter_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-inverse meter relationship",4.52443873e41_dp,0.00000020e41_dp,"m^-1")]

- **kilogram_joule_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-joule relationship",8.987551787e16_dp,0.0_dp,"j")]

- **kilogram_kelvin_relationship_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-kelvin relationship",6.5096582e39_dp,0.0000059e39_dp,"k")]

- **lattice_parameter_of_silicon_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice parameter of silicon",543.1020504e-12_dp,0.0000089e-12_dp,"m")]

- **lattice_spacing_of_silicon_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("{220} lattice spacing of silicon",192.0155714e-12_dp,0.0000032e-12_dp,"m")]

- **loschmidt_constant_273_15_k_100_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,100 kpa)",2.6516462e25_dp,0.0000024e25_dp,"m^-3")]

- **loschmidt_constant_273_15_k_101_325_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,101.325 kpa)",2.6867805e25_dp,0.0000024e25_dp,"m^-3")]

- **mag_constant_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. constant",12.566370614e-7_dp,0.0_dp,"n a^-2")]*

- **mag_flux_quantum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. flux quantum",2.067833758e-15_dp,0.000000046e-15_dp,"wb")]

- **mo_x_unit_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("mo x unit",1.00209952e-13_dp,0.00000053e-13_dp,"m")]*

- **molar_gas_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar gas constant",8.3144621_dp,0.0000075_dp,"j mol^-1 k^-1")]

- **molar_mass_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass constant",1e-3_dp,0.0_dp,"kg mol^-1")]

- **molar_mass_of_carbon_12_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass of carbon-12",12e-3_dp,0.0_dp,"kg mol^-1")]

- **molar_planck_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant",3.9903127176e-10_dp,0.0000000028e-10_dp,"j s mol^-1")]

- **molar_planck_constant_times_c_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant times c",0.119626565779_dp,0.000000000084_dp,"j m mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_100_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,100 kpa)",22.710953e-3_dp,0.000021e-3_dp,"m^3 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_101_325_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,101.325 kpa)",22.413968e-3_dp,0.000020e-3_dp,"m^3 mol^-1")]

- **molar_volume_of_silicon_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of silicon",12.05883301e-6_dp,0.00000080e-6_dp,"m^3 mol^-1")]

- **muon_compton_wavelength_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength",11.73444103e-15_dp,0.00000030e-15_dp,"m")]

- **muon_compton_wavelength_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength over 2 pi",1.867594294e-15_dp,0.000000047e-15_dp,"m")]

- **muon_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-electron mass ratio",206.7682843_dp,0.0000052_dp,"")]

- **muon_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon g factor",-2.0023318418_dp,0.0000000013_dp,"")]

- **muon_mag_mom_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom.",-4.49044807e-26_dp,0.00000015e-26_dp,"j t^-1")]*

- **muon_mag_mom_anomaly_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. anomaly",1.16592091e-3_dp,0.00000063e-3_dp,"")]

- **muon_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to bohr magneton ratio",-4.84197044e-3_dp,0.00000012e-3_dp,"")]

- **muon_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to nuclear magneton ratio",-8.89059697_dp,0.00000022_dp,"")]

- **muon_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass",1.883531475e-28_dp,0.000000096e-28_dp,"kg")]*

- **muon_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent",1.692833667e-11_dp,0.000000086e-11_dp,"j")]

- **muon_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent in mev",105.6583715_dp,0.0000035_dp,"mev")]

- **muon_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass in u",0.1134289267_dp,0.0000000029_dp,"u")]

- **muon_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon molar mass",0.1134289267e-3_dp,0.0000000029e-3_dp,"kg mol^-1")]

- **muon_neutron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-neutron mass ratio",0.1124545177_dp,0.0000000028_dp,"")]

- **muon_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mag. mom. ratio",-3.183345107_dp,0.000000084_dp,"")]

- **muon_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mass ratio",0.1126095272_dp,0.0000000028_dp,"")]

- **muon_tau_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-tau mass ratio",5.94649e-2_dp,0.00054e-2_dp,"")]

- **natural_unit_of_action_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action",1.054571726e-34_dp,0.000000047e-34_dp,"j s")]

- **natural_unit_of_action_in_ev_s_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action in ev s",6.58211928e-16_dp,0.00000015e-16_dp,"ev s")]

- **natural_unit_of_energy_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy",8.18710506e-14_dp,0.00000036e-14_dp,"j")]

- **natural_unit_of_energy_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy in mev",0.510998928_dp,0.000000011_dp,"mev")]

- **natural_unit_of_length_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of length",386.15926800e-15_dp,0.00000025e-15_dp,"m")]

- **natural_unit_of_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mass",9.10938291e-31_dp,0.00000040e-31_dp,"kg")]

- **natural_unit_of_momum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mom.um",2.73092429e-22_dp,0.00000012e-22_dp,"kg m s^-1")]

- **natural_unit_of_momum_in_mev_c_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mom.um in mev/c",0.510998928_dp,0.000000011_dp,"mev/c")]

- **natural_unit_of_time_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of time",1.28808866833e-21_dp,0.00000000083e-21_dp,"s")]

- **natural_unit_of_velocity_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of velocity",299792458_dp,0.0_dp,"m s^-1")]

- **neutron_compton_wavelength_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength",1.3195909068e-15_dp,0.0000000011e-15_dp,"m")]

- **neutron_compton_wavelength_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength over 2 pi",0.21001941568e-15_dp,0.00000000017e-15_dp,"m")]

- **neutron_electron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mag. mom. ratio",1.04066882e-3_dp,0.00000025e-3_dp,"")]

- **neutron_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mass ratio",1838.6836605_dp,0.0000011_dp,"")]

- **neutron_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron g factor",-3.82608545_dp,0.00000090_dp,"")]

- **neutron_gyromag_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio",1.83247179e8_dp,0.00000043e8_dp,"s^-1 t^-1")]

- **neutron_gyromag_ratio_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio over 2 pi",29.1646943_dp,0.0000069_dp,"mhz t^-1")]

- **neutron_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom.",-0.96623647e-26_dp,0.00000023e-26_dp,"j t^-1")]

- **neutron_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to bohr magneton ratio",-1.04187563e-3_dp,0.00000025e-3_dp,"")]

- **neutron_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to nuclear magneton ratio",-1.91304272_dp,0.00000045_dp,"")]

- **neutron_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass",1.674927351e-27_dp,0.000000074e-27_dp,"kg")]

- **neutron_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent",1.505349631e-10_dp,0.000000066e-10_dp,"j")]

- **neutron_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent in mev",939.565379_dp,0.000021_dp,"mev")]

- **neutron_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass in u",1.00866491600_dp,0.00000000043_dp,"u")]

- **neutron_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron molar mass",1.00866491600e-3_dp,0.00000000043e-3_dp,"kg mol^-1")]

- **neutron_muon_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-muon mass ratio",8.89248400_dp,0.00000022_dp,"")]

- **neutron_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mag. mom. ratio",-0.68497934_dp,0.00000016_dp,"")]

- **neutron_proton_mass_difference_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference",2.30557392e-30_dp,0.00000076e-30_dp,"")]

- **neutron_proton_mass_difference_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent",2.07214650e-13_dp,0.00000068e-13_dp,"")]

- **neutron_proton_mass_difference_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent in mev",1.29333217_dp,0.00000042_dp,"")]

- **neutron_proton_mass_difference_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference in u",0.00138844919_dp,0.00000000045_dp,"")]

- **neutron_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass ratio",1.00137841917_dp,0.00000000045_dp,"")]

- **neutron_tau_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-tau mass ratio",0.528790_dp,0.000048_dp,"")]

- **neutron_to_shielded_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron to shielded proton mag. mom. ratio",-0.68499694_dp,0.00000016_dp,"")]

- **newtonian_constant_of_gravitation_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation",6.67384e-11_dp,0.00080e-11_dp,"m^3 kg^-1 s^-2")]

- **newtonian_constant_of_gravitation_over_h_bar_c_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation over h-bar c",6.70837e-39_dp,0.00080e-39_dp,"(gev/c^2)^-2")]

- **nuclear_magneton_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton",5.05078353e-27_dp,0.00000011e-27_dp,"j t^-1")]

- **nuclear_magneton_in_ev_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in ev/t",3.1524512605e-8_dp,0.0000000022e-8_dp,"ev t^-1")]

- **nuclear_magneton_in_inverse_meters_per_tesla_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in inverse meters per tesla",2.542623527e-2_dp,0.000000056e-2_dp,"m^-1 t^-1")]

- **nuclear_magneton_in_k_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in k/t",3.6582682e-4_dp,0.0000033e-4_dp,"k t^-1")]

- **nuclear_magneton_in_mhz_t_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in mhz/t",7.62259357_dp,0.00000017_dp,"mhz t^-1")]

- **planck_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant",6.62606957e-34_dp,0.00000029e-34_dp,"j s")]

- **planck_constant_in_ev_s_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant in ev s",4.135667516e-15_dp,0.000000091e-15_dp,"ev s")]

- **planck_constant_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi",1.054571726e-34_dp,0.000000047e-34_dp,"j s")]

- **planck_constant_over_2_pi_in_ev_s_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi in ev s",6.58211928e-16_dp,0.00000015e-16_dp,"ev s")]

- **planck_constant_over_2_pi_times_c_in_mev_fm_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi times c in mev fm",197.3269718_dp,0.0000044_dp,"mev fm")]

- **planck_length_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck length",1.616199e-35_dp,0.000097e-35_dp,"m")]

- **planck_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass",2.17651e-8_dp,0.00013e-8_dp,"kg")]*

- **planck_mass_energy_equivalent_in_gev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass energy equivalent in gev",1.220932e19_dp,0.000073e19_dp,"gev")]

- **planck_temperature_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck temperature",1.416833e32_dp,0.000085e32_dp,"k")]

- **planck_time_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck time",5.39106e-44_dp,0.00032e-44_dp,"s")]*

- **proton_charge_to_mass_quotient_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton charge to mass quotient",9.57883358e7_dp,0.00000021e7_dp,"c kg^-1")]

- **proton_compton_wavelength_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength",1.32140985623e-15_dp,0.00000000094e-15_dp,"m")]

- **proton_compton_wavelength_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength over 2 pi",0.21030891047e-15_dp,0.00000000015e-15_dp,"m")]

- **proton_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-electron mass ratio",1836.15267245_dp,0.00000075_dp,"")]

- **proton_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton g factor",5.585694713_dp,0.000000046_dp,"")]

- **proton_gyromag_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio",2.675222005e8_dp,0.000000063e8_dp,"s^-1 t^-1")]

- **proton_gyromag_ratio_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio over 2 pi",42.5774806_dp,0.0000010_dp,"mhz t^-1")]

- **proton_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom.",1.410606743e-26_dp,0.000000033e-26_dp,"j t^-1")]

- **proton_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to bohr magneton ratio",1.521032210e-3_dp,0.000000012e-3_dp,"")]

- **proton_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to nuclear magneton ratio",2.792847356_dp,0.000000023_dp,"")]

- **proton_mag_shielding_correction_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. shielding correction",25.694e-6_dp,0.014e-6_dp,"")]

- **proton_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass",1.672621777e-27_dp,0.000000074e-27_dp,"kg")]*

- **proton_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent",1.503277484e-10_dp,0.000000066e-10_dp,"j")]

- **proton_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent in mev",938.272046_dp,0.000021_dp,"mev")]

- **proton_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass in u",1.007276466812_dp,0.000000000090_dp,"u")]

- **proton_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton molar mass",1.007276466812e-3_dp,0.000000000090e-3_dp,"kg mol^-1")]

- **proton_muon_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-muon mass ratio",8.88024331_dp,0.00000022_dp,"")]

- **proton_neutron_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mag. mom. ratio",-1.45989806_dp,0.00000034_dp,"")]

- **proton_neutron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mass ratio",0.99862347826_dp,0.00000000045_dp,"")]

- **proton_rms_charge_radius_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton rms charge radius",0.8775e-15_dp,0.0051e-15_dp,"m")]

- **proton_tau_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-tau mass ratio",0.528063_dp,0.000048_dp,"")]

- **quantum_of_circulation_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation",3.6369475520e-4_dp,0.0000000024e-4_dp,"m^2 s^-1")]

- **quantum_of_circulation_times_2_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation times 2",7.2738951040e-4_dp,0.0000000047e-4_dp,"m^2 s^-1")]

- **rydberg_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant",10973731.568539_dp,0.000055_dp,"m^-1")]

- **rydberg_constant_times_c_in_hz_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times c in hz",3.289841960364e15_dp,0.000000000017e15_dp,"hz")]

- **rydberg_constant_times_hc_in_ev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in ev",13.60569253_dp,0.00000030_dp,"ev")]

- **rydberg_constant_times_hc_in_j_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in j",2.179872171e-18_dp,0.000000096e-18_dp,"j")]

- **sackur_tetrode_constant_1_k_100_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,100 kpa)",-1.1517078_dp,0.0000023_dp,"")]

- **sackur_tetrode_constant_1_k_101_325_kpa_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,101.325 kpa)",-1.1648708_dp,0.0000023_dp,"")]

- **second_radiation_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("second radiation constant",1.4387770e-2_dp,0.0000013e-2_dp,"m k")]

- **shielded_helion_gyromag_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio",2.037894659e8_dp,0.000000051e8_dp,"s^-1 t^-1")]

- **shielded_helion_gyromag_ratio_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio over 2 pi",32.43410084_dp,0.00000081_dp,"mhz t^-1")]

- **shielded_helion_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom.",-1.074553044e-26_dp,0.000000027e-26_dp,"j t^-1")]

- **shielded_helion_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to bohr magneton ratio",-1.158671471e-3_dp,0.000000014e-3_dp,"")]

- **shielded_helion_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to nuclear magneton ratio",-2.127497718_dp,0.000000025_dp,"")]

- **shielded_helion_to_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to proton mag. mom. ratio",-0.761766558_dp,0.000000011_dp,"")]

- **shielded_helion_to_shielded_proton_mag_mom_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to shielded proton mag. mom. ratio",-0.7617861313_dp,0.0000000033_dp,"")]

- **shielded_proton_gyromag_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio",2.675153268e8_dp,0.000000066e8_dp,"s^-1 t^-1")]

- **shielded_proton_gyromag_ratio_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio over 2 pi",42.5763866_dp,0.0000010_dp,"mhz t^-1")]

- **shielded_proton_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom.",1.410570499e-26_dp,0.000000035e-26_dp,"j t^-1")]

- **shielded_proton_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to bohr magneton ratio",1.520993128e-3_dp,0.000000017e-3_dp,"")]

- **shielded_proton_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to nuclear magneton ratio",2.792775598_dp,0.000000030_dp,"")]

- **speed_of_light_in_vacuum_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("speed of light in vacuum",299792458_dp,0.0_dp,"m s^-1")]

- **standard_acceleration_of_gravity_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard acceleration of gravity",9.80665_dp,0.0_dp,"m s^-2")]

- **standard_atmosphere_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard atmosphere",101325_dp,0.0_dp,"pa")]

- **standard_state_pressure_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard-state pressure",100000_dp,0.0_dp,"pa")]

- **stefan_boltzmann_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("stefan-boltzmann constant",5.670373e-8_dp,0.000021e-8_dp,"w m^-2 k^-4")]

- **tau_compton_wavelength_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength",0.697787e-15_dp,0.000063e-15_dp,"m")]

- **tau_compton_wavelength_over_2_pi_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength over 2 pi",0.111056e-15_dp,0.000010e-15_dp,"m")]

- **tau_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-electron mass ratio",3477.15_dp,0.31_dp,"")]

- **tau_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass",3.16747e-27_dp,0.00029e-27_dp,"kg")]*

- **tau_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent",2.84678e-10_dp,0.00026e-10_dp,"j")]

- **tau_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent in mev",1776.82_dp,0.16_dp,"mev")]

- **tau_mass_in_u_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass in u",1.90749_dp,0.00017_dp,"u")]*

- **tau_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau molar mass",1.90749e-3_dp,0.00017e-3_dp,"kg mol^-1")]

- **tau_muon_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-muon mass ratio",16.8167_dp,0.0015_dp,"")]

- **tau_neutron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-neutron mass ratio",1.89111_dp,0.00017_dp,"")]

- **tau_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-proton mass ratio",1.89372_dp,0.00017_dp,"")]

- **thomson_cross_section_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("thomson cross section",0.6652458734e-28_dp,0.0000000013e-28_dp,"m^2")]

- **triton_electron_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-electron mass ratio",5496.9215267_dp,0.0000050_dp,"")]

- **triton_g_factor_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton g factor",5.957924896_dp,0.000000076_dp,"")]

- **triton_mag_mom_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom.",1.504609447e-26_dp,0.000000038e-26_dp,"j t^-1")]

- **triton_mag_mom_to_bohr_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to bohr magneton ratio",1.622393657e-3_dp,0.000000021e-3_dp,"")]

- **triton_mag_mom_to_nuclear_magneton_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to nuclear magneton ratio",2.978962448_dp,0.000000038_dp,"")]

- **triton_mass_2010** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass",5.00735630e-27_dp,0.00000022e-27_dp,"kg")]*

- **triton_mass_energy_equivalent_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent",4.50038741e-10_dp,0.00000020e-10_dp,"j")]

- **triton_mass_energy_equivalent_in_mev_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent in mev",2808.921005_dp,0.000062_dp,"mev")]

- **triton_mass_in_u_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass in u",3.0155007134_dp,0.0000000025_dp,"u")]

- **triton_molar_mass_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton molar mass",3.0155007134e-3_dp,0.0000000025e-3_dp,"kg mol^-1")]

- **triton_proton_mass_ratio_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-proton mass ratio",2.9937170308_dp,0.0000000025_dp,"")]

- **unified_atomic_mass_unit_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("unified atomic mass unit",1.660538921e-27_dp,0.000000073e-27_dp,"kg")]

- **von_klitzing_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("von klitzing constant",25812.8074434_dp,0.0000084_dp,"ohm")]

- **weak_mixing_angle_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("weak mixing angle",0.2223_dp,0.0021_dp,"")]

- **wien_frequency_displacement_law_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien frequency displacement law constant",5.8789254e10_dp,0.0000053e10_dp,"hz k^-1")]

- **wien_wavelength_displacement_law_constant_2010**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien wavelength displacement law constant",2.8977721e-3_dp,0.0000026e-3_dp,"m k")]

- **year_2010** *[integer,public/parameter/optional/default=2010]*
  ! Year of release.

1.1.5 2014

Description

! Codata Constants - Autogenerated

Quick access

Variables

alpha_particle_electron_mass_ratio_2014, *alpha_particle_mass_2014*, *alpha_particle_mass_energy_equivalent_2014*, *alpha_particle_mass_energy_equivalent_in_mev_2014*, *alpha_particle_mass_in_u_2014*, *alpha_particle_molar_mass_2014*, *alpha_particle_proton_mass_ratio_2014*, *angstrom_star_2014*, *atomic_mass_constant_2014*, *atomic_mass_constant_energy_equivalent_2014*, *atomic_mass_constant_energy_equivalent_in_mev_2014*, *atomic_mass_unit_electron_volt_relationship_2014*, *atomic_mass_unit_hartree_relationship_2014*, *atomic_mass_unit_hertz_relationship_2014*, *atomic_mass_unit_inverse_meter_relationship_2014*, *atomic_mass_unit_joule_relationship_2014*, *atomic_mass_unit_kelvin_relationship_2014*, *atomic_mass_unit_kilogram_relationship_2014*, *atomic_unit_of_1st_hyperpolarizability_2014*, *atomic_unit_of_2nd_hyperpolarizability_2014*, *atomic_unit_of_action_2014*, *atomic_unit_of_charge_2014*, *atomic_unit_of_charge_density_2014*, *atomic_unit_of_current_2014*, *atomic_unit_of_electric_dipole_mom_2014*, *atomic_unit_of_electric_field_2014*, *atomic_unit_of_electric_field_gradient_2014*, *atomic_unit_of_electric_polarizability_2014*, *atomic_unit_of_electric_potential_2014*, *atomic_unit_of_electric_quadrupole_mom_2014*, *atomic_unit_of_energy_2014*, *atomic_unit_of_force_2014*, *atomic_unit_of_length_2014*, *atomic_unit_of_mag_dipole_mom_2014*, *atomic_unit_of_mag_flux_density_2014*, *atomic_unit_of_magnetizability_2014*, *atomic_unit_of_mass_2014*, *atomic_unit_of_momum_2014*, *atomic_unit_of_permittivity_2014*, *atomic_unit_of_time_2014*,

atomic_unit_of_velocity_2014, avogadro_constant_2014, bohr_magneton_2014,
bohr_magneton_in_ev_t_2014, bohr_magneton_in_hz_t_2014,
bohr_magneton_in_inverse_meters_per_tesla_2014, bohr_magneton_in_k_t_2014,
bohr_radius_2014, boltzmann_constant_2014, boltzmann_constant_in_ev_k_2014,
boltzmann_constant_in_hz_k_2014, boltzmann_constant_in_inverse_meters_per_kelvin_2014,
characteristic_impedance_of_vacuum_2014, classical_electron_radius_2014,
compton_wavelength_2014, compton_wavelength_over_2_pi_2014,
conductance_quantum_2014, conventional_value_of_josephson_constant_2014,
conventional_value_of_von_klitzing_constant_2014, cu_x_unit_2014,
deuteron_electron_mag_mom_ratio_2014, deuteron_electron_mass_ratio_2014,
deuteron_g_factor_2014, deuteron_mag_mom_2014, deuteron_mag_mom_to_bohr_magneton_ratio_2014,
deuteron_mag_mom_to_nuclear_magneton_ratio_2014, deuteron_mass_2014,
deuteron_mass_energy_equivalent_2014, deuteron_mass_energy_equivalent_in_mev_2014,
deuteron_mass_in_u_2014, deuteron_molar_mass_2014, deuteron_neutron_mag_mom_ratio_2014,
deuteron_proton_mag_mom_ratio_2014, deuteron_proton_mass_ratio_2014,
deuteron_rms_charge_radius_2014, electric_constant_2014,
electron_charge_to_mass_quotient_2014, electron_deuteron_mag_mom_ratio_2014,
electron_deuteron_mass_ratio_2014, electron_g_factor_2014,
electron_gyromag_ratio_2014, electron_gyromag_ratio_over_2_pi_2014,
electron_helion_mass_ratio_2014, electron_mag_mom_2014,
electron_mag_mom_anomaly_2014, electron_mag_mom_to_bohr_magneton_ratio_2014,
electron_mag_mom_to_nuclear_magneton_ratio_2014, electron_mass_2014,
electron_mass_energy_equivalent_2014, electron_mass_energy_equivalent_in_mev_2014,
electron_mass_in_u_2014, electron_molar_mass_2014, electron_muon_mag_mom_ratio_2014,
electron_muon_mass_ratio_2014, electron_neutron_mag_mom_ratio_2014,
electron_neutron_mass_ratio_2014, electron_proton_mag_mom_ratio_2014,
electron_proton_mass_ratio_2014, electron_tau_mass_ratio_2014,
electron_to_alpha_particle_mass_ratio_2014, electron_to_shielded_helion_mag_mom_ratio_2014,
electron_to_shielded_proton_mag_mom_ratio_2014, electron_triton_mass_ratio_2014,
electron_volt_2014, electron_volt_atomic_mass_unit_relationship_2014,
electron_volt_hartree_relationship_2014, electron_volt_hertz_relationship_2014,
electron_volt_inverse_meter_relationship_2014, electron_volt_joule_relationship_2014,
electron_volt_kelvin_relationship_2014, electron_volt_kilogram_relationship_2014,
elementary_charge_2014, elementary_charge_over_h_2014, faraday_constant_2014,
faraday_constant_for_conventional_electric_current_2014,
fermi_coupling_constant_2014, fine_structure_constant_2014,
first_radiation_constant_2014, first_radiation_constant_for_spectral_radiance_2014,
hartree_atomic_mass_unit_relationship_2014, hartree_electron_volt_relationship_2014,
hartree_energy_2014, hartree_energy_in_ev_2014, hartree_hertz_relationship_2014,
hartree_inverse_meter_relationship_2014, hartree_joule_relationship_2014,
hartree_kelvin_relationship_2014, hartree_kilogram_relationship_2014,
helion_electron_mass_ratio_2014, helion_g_factor_2014,
helion_mag_mom_2014, helion_mag_mom_to_bohr_magneton_ratio_2014,
helion_mag_mom_to_nuclear_magneton_ratio_2014, helion_mass_2014,
helion_mass_energy_equivalent_2014, helion_mass_energy_equivalent_in_mev_2014,
helion_mass_in_u_2014, helion_molar_mass_2014, helion_proton_mass_ratio_2014,
hertz_atomic_mass_unit_relationship_2014, hertz_electron_volt_relationship_2014,
hertz_hartree_relationship_2014, hertz_inverse_meter_relationship_2014,
hertz_joule_relationship_2014, hertz_kelvin_relationship_2014,
hertz_kilogram_relationship_2014, inverse_fine_structure_constant_2014,
inverse_meter_atomic_mass_unit_relationship_2014, inverse_meter_electron_volt_relationship_2014,
inverse_meter_hartree_relationship_2014, inverse_meter_hertz_relationship_2014,
inverse_meter_joule_relationship_2014, inverse_meter_kelvin_relationship_2014,
inverse_meter_kilogram_relationship_2014, inverse_of_conductance_quantum_2014,

josephson_constant_2014, joule_atomic_mass_unit_relationship_2014,
joule_electron_volt_relationship_2014, joule_hartree_relationship_2014,
joule_hertz_relationship_2014, joule_inverse_meter_relationship_2014,
joule_kelvin_relationship_2014, joule_kilogram_relationship_2014,
kelvin_atomic_mass_unit_relationship_2014, kelvin_electron_volt_relationship_2014,
kelvin_hartree_relationship_2014, kelvin_hertz_relationship_2014,
kelvin_inverse_meter_relationship_2014, kelvin_joule_relationship_2014,
kelvin_kilogram_relationship_2014, kilogram_atomic_mass_unit_relationship_2014,
kilogram_electron_volt_relationship_2014, kilogram_hartree_relationship_2014,
kilogram_hertz_relationship_2014, kilogram_inverse_meter_relationship_2014,
kilogram_joule_relationship_2014, kilogram_kelvin_relationship_2014,
lattice_parameter_of_silicon_2014, lattice_spacing_of_silicon_2014,
loschmidt_constant_273_15_k_100_kpa_2014, loschmidt_constant_273_15_k_101_325_kpa_2014,
mag_constant_2014, mag_flux_quantum_2014, mo_x_unit_2014,
molar_gas_constant_2014, molar_mass_constant_2014, molar_mass_of_carbon_12_2014,
molar_planck_constant_2014, molar_planck_constant_times_c_2014,
molar_volume_of_ideal_gas_273_15_k_100_kpa_2014, molar_volume_of_ideal_gas_273_15_k_101_325_kpa
molar_volume_of_silicon_2014, muon_compton_wavelength_2014,
muon_compton_wavelength_over_2_pi_2014, muon_electron_mass_ratio_2014,
muon_g_factor_2014, muon_mag_mom_2014, muon_mag_mom_anomaly_2014,
muon_mag_mom_to_bohr_magneton_ratio_2014, muon_mag_mom_to_nuclear_magneton_ratio_2014,
muon_mass_2014, muon_mass_energy_equivalent_2014, muon_mass_energy_equivalent_in_mev_2014,
muon_mass_in_u_2014, muon_molar_mass_2014, muon_neutron_mass_ratio_2014,
muon_proton_mag_mom_ratio_2014, muon_proton_mass_ratio_2014,
muon_tau_mass_ratio_2014, natural_unit_of_action_2014,
natural_unit_of_action_in_ev_s_2014, natural_unit_of_energy_2014,
natural_unit_of_energy_in_mev_2014, natural_unit_of_length_2014,
natural_unit_of_mass_2014, natural_unit_of_momum_2014,
natural_unit_of_momum_in_mev_c_2014, natural_unit_of_time_2014,
natural_unit_of_velocity_2014, neutron_compton_wavelength_2014,
neutron_compton_wavelength_over_2_pi_2014, neutron_electron_mag_mom_ratio_2014,
neutron_electron_mass_ratio_2014, neutron_g_factor_2014,
neutron_gyromag_ratio_2014, neutron_gyromag_ratio_over_2_pi_2014,
neutron_mag_mom_2014, neutron_mag_mom_to_bohr_magneton_ratio_2014,
neutron_mag_mom_to_nuclear_magneton_ratio_2014, neutron_mass_2014,
neutron_mass_energy_equivalent_2014, neutron_mass_energy_equivalent_in_mev_2014,
neutron_mass_in_u_2014, neutron_molar_mass_2014, neutron_muon_mass_ratio_2014,
neutron_proton_mag_mom_ratio_2014, neutron_proton_mass_difference_2014,
neutron_proton_mass_difference_energy_equivalent_2014,
neutron_proton_mass_difference_energy_equivalent_in_mev_2014,
neutron_proton_mass_difference_in_u_2014, neutron_proton_mass_ratio_2014,
neutron_tau_mass_ratio_2014, neutron_to_shielded_proton_mag_mom_ratio_2014,
newtonian_constant_of_gravitation_2014, newtonian_constant_of_gravitation_over_h_bar_c_2014,
nuclear_magneton_2014, nuclear_magneton_in_ev_t_2014,
nuclear_magneton_in_inverse_meters_per_tesla_2014, nuclear_magneton_in_k_t_2014,
nuclear_magneton_in_mhz_t_2014, planck_constant_2014,
planck_constant_in_ev_s_2014, planck_constant_over_2_pi_2014,
planck_constant_over_2_pi_in_ev_s_2014, planck_constant_over_2_pi_times_c_in_mev_fm_2014,
planck_length_2014, planck_mass_2014, planck_mass_energy_equivalent_in_gev_2014,
planck_temperature_2014, planck_time_2014, proton_charge_to_mass_quotient_2014,
proton_compton_wavelength_2014, proton_compton_wavelength_over_2_pi_2014,
proton_electron_mass_ratio_2014, proton_g_factor_2014,
proton_gyromag_ratio_2014, proton_gyromag_ratio_over_2_pi_2014,
proton_mag_mom_2014, proton_mag_mom_to_bohr_magneton_ratio_2014,

proton_mag_mom_to_nuclear_magneton_ratio_2014, proton_mag_shielding_correction_2014, proton_mass_2014, proton_mass_energy_equivalent_2014, proton_mass_energy_equivalent_in_mev_2014, proton_mass_in_u_2014, proton_molar_mass_2014, proton_muon_mass_ratio_2014, proton_neutron_mag_mom_ratio_2014, proton_neutron_mass_ratio_2014, proton_rms_charge_radius_2014, proton_tau_mass_ratio_2014, quantum_of_circulation_2014, quantum_of_circulation_times_2_2014, rydberg_constant_2014, rydberg_constant_times_c_in_hz_2014, rydberg_constant_times_hc_in_ev_2014, rydberg_constant_times_hc_in_j_2014, sackur_tetrode_constant_1_k_100_kpa_2014, sackur_tetrode_constant_1_k_101_325_kpa_2014, second_radiation_constant_2014, shielded_helion_gyromag_ratio_2014, shielded_helion_gyromag_ratio_over_2_pi_2014, shielded_helion_mag_mom_2014, shielded_helion_mag_mom_to_bohr_magneton_ratio_2014, shielded_helion_mag_mom_to_nuclear_magneton_ratio_2014, shielded_helion_to_proton_mag_mom_ratio_2014, shielded_helion_to_shielded_proton_mag_mom_ratio_2 shielded_proton_gyromag_ratio_2014, shielded_proton_gyromag_ratio_over_2_pi_2014, shielded_proton_mag_mom_2014, shielded_proton_mag_mom_to_bohr_magneton_ratio_2014, shielded_proton_mag_mom_to_nuclear_magneton_ratio_2014, speed_of_light_in_vacuum_2014, standard_acceleration_of_gravity_2014, standard_atmosphere_2014, standard_state_pressure_2014, stefan_boltzmann_constant_2014, tau_compton_wavelength_2014, tau_compton_wavelength_over_2_pi_2014, tau_electron_mass_ratio_2014, tau_mass_2014, tau_mass_energy_equivalent_2014, tau_mass_energy_equivalent_in_mev_2014, tau_mass_in_u_2014, tau_molar_mass_2014, tau_muon_mass_ratio_2014, tau_neutron_mass_ratio_2014, tau_proton_mass_ratio_2014, thomson_cross_section_2014, triton_electron_mass_ratio_2014, triton_g_factor_2014, triton_mag_mom_2014, triton_mag_mom_to_bohr_magneton_ratio_2014, triton_mag_mom_to_nuclear_magneton_ratio_2014, triton_mass_2014, triton_mass_energy_equivalent_2014, triton_mass_energy_equivalent_in_mev_2014, triton_mass_in_u_2014, triton_molar_mass_2014, triton_proton_mass_ratio_2014, unified_atomic_mass_unit_2014, von_klitzing_constant_2014, weak_mixing_angle_2014, wien_frequency_displacement_law_constant_2014, wien_wavelength_displacement_law_constant_2014, year_2014

Needed modules

- stdlib_kinds (dp(), int32())
- codata__constants_type: ! Codata constant type

Variables

- **alpha_particle_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-electron mass ratio",7294.29954136_dp,0.00000024_dp,"")]

- **alpha_particle_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass",6.644657230e-27_dp,0.000000082e-27_dp,"kg")]

- **alpha_particle_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent",5.971920097e-10_dp,0.000000073e-10_dp,"j")]

- **alpha_particle_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent in mev",3727.379378_dp,0.000023_dp,"mev")]

- **alpha_particle_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass in u",4.001506179127_dp,0.000000000063_dp,"u")]

- **alpha_particle_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle molar mass",4.001506179127e-3_dp,0.000000000063e-3_dp,"kg mol^-1")]

- **alpha_particle_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-proton mass ratio",3.97259968907_dp,0.00000000036_dp,"")]

- **angstrom_star_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("angstrom star",1.00001495e-10_dp,0.00000090e-10_dp,"m")]

- **atomic_mass_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant",1.660539040e-27_dp,0.000000020e-27_dp,"kg")]

- **atomic_mass_constant_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent",1.492418062e-10_dp,0.000000018e-10_dp,"j")]

- **atomic_mass_constant_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent in mev",931.4940954_dp,0.0000057_dp,"mev")]

- **atomic_mass_unit_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-electron volt relationship",931.4940954e6_dp,0.0000057e6_dp,"ev")]

- **atomic_mass_unit_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hartree relationship",3.4231776902e7_dp,0.0000000016e7_dp,"e_h")]

- **atomic_mass_unit_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hertz relationship",2.2523427206e23_dp,0.0000000010e23_dp,"hz")]

- **atomic_mass_unit_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-inverse meter relationship",7.5130066166e14_dp,0.0000000034e14_dp,"m^-1")]

- **atomic_mass_unit_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-joule relationship",1.492418062e-10_dp,0.000000018e-10_dp,"j")]

- **atomic_mass_unit_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kelvin relationship",1.08095438e13_dp,0.00000062e13_dp,"k")]

- **atomic_mass_unit_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kilogram relationship",1.660539040e-27_dp,0.000000020e-27_dp,"kg")]

- **atomic_unit_of_1st_hyperpolarizability_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 1st hyperpolarizability",3.206361329e-53_dp,0.000000020e-53_dp,"c^3 m^3 j^-2")]

- **atomic_unit_of_2nd_hyperpolarizability_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 2nd hyperpolarizability",6.235380085e-65_dp,0.000000077e-65_dp,"c^4 m^4 j^-3")]

- **atomic_unit_of_action_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of action",1.054571800e-34_dp,0.000000013e-34_dp,"j s")]

- **atomic_unit_of_charge_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge",1.6021766208e-19_dp,0.0000000098e-19_dp,"c")]

- **atomic_unit_of_charge_density_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge density",1.0812023770e12_dp,0.0000000067e12_dp,"c m^-3")]

- **atomic_unit_of_current_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of current",6.623618183e-3_dp,0.000000041e-3_dp,"a")]

- **atomic_unit_of_electric_dipole_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric dipole mom.",8.478353552e-30_dp,0.000000052e-30_dp,"c m")]

- **atomic_unit_of_electric_field_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field",5.142206707e11_dp,0.000000032e11_dp,"v m^-1")]

- **atomic_unit_of_electric_field_gradient_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field gradient",9.717362356e21_dp,0.000000060e21_dp,"v m^-2")]

- **atomic_unit_of_electric_polarizability_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric polarizability",1.6487772731e-41_dp,0.0000000011e-41_dp,"c^2 m^2 j^-1")]

- **atomic_unit_of_electric_potential_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric potential",27.21138602_dp,0.00000017_dp,"v")]

- **atomic_unit_of_electric_quadrupole_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric quadrupole mom.",4.486551484e-40_dp,0.000000028e-40_dp,"c m^2")]

- **atomic_unit_of_energy_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of energy",4.359744650e-18_dp,0.000000054e-18_dp,"j")]

- **atomic_unit_of_force_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of force",8.23872336e-8_dp,0.00000010e-8_dp,"n")]

- **atomic_unit_of_length_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of length",0.52917721067e-10_dp,0.00000000012e-10_dp,"m")]

- **atomic_unit_of_mag_dipole_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. dipole mom.",1.854801999e-23_dp,0.000000011e-23_dp,"j t^-1")]

- **atomic_unit_of_mag_flux_density_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. flux density",2.350517550e5_dp,0.000000014e5_dp,"t")]

- **atomic_unit_of_magnetizability_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of magnetizability",7.8910365886e-29_dp,0.0000000090e-29_dp,"j t^-2")]

- **atomic_unit_of_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mass",9.10938356e-31_dp,0.00000011e-31_dp,"kg")]

- **atomic_unit_of_momum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mom.um",1.992851882e-24_dp,0.000000024e-24_dp,"kg m s^-1")]

- **atomic_unit_of_permittivity_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of permittivity",1.112650056e-10_dp,0.0_dp,"f m^-1")]

- **atomic_unit_of_time_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of time",2.418884326509e-17_dp,0.000000000014e-17_dp,"s")]

- **atomic_unit_of_velocity_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of velocity",2.18769126277e6_dp,0.00000000050e6_dp,"m s^-1")]

- **avogadro_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("avogadro constant",6.022140857e23_dp,0.000000074e23_dp,"mol^-1")]

- **bohr_magneton_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton",927.4009994e-26_dp,0.0000057e-26_dp,"j t^-1")]

- **bohr_magneton_in_ev_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in ev/t",5.7883818012e-5_dp,0.0000000026e-5_dp,"ev t^-1")]

- **bohr_magneton_in_hz_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in hz/t",13.996245042e9_dp,0.000000086e9_dp,"hz t^-1")]

- **bohr_magneton_in_inverse_meters_per_tesla_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in inverse meters per tesla",46.68644814_dp,0.00000029_dp,"m^-1 t^-1")]

- **bohr_magneton_in_k_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in k/t",0.67171405_dp,0.00000039_dp,"k t^-1")]

- **bohr_radius_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr radius",0.52917721067e-10_dp,0.00000000012e-10_dp,"m")]*

- **boltzmann_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant",1.38064852e-23_dp,0.00000079e-23_dp,"j k^-1")]

- **boltzmann_constant_in_ev_k_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in ev/k",8.6173303e-5_dp,0.0000050e-5_dp,"ev k^-1")]

- **boltzmann_constant_in_hz_k_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in hz/k",2.0836612e10_dp,0.0000012e10_dp,"hz k^-1")]

- **boltzmann_constant_in_inverse_meters_per_kelvin_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in inverse meters per kelvin",69.503457_dp,0.000040_dp,"m^-1 k^-1")]

- **characteristic_impedance_of_vacuum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("characteristic impedance of vacuum",376.730313461_dp,0.0_dp,"ohm")]

- **classical_electron_radius_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("classical electron radius",2.8179403227e-15_dp,0.0000000019e-15_dp,"m")]

- **compton_wavelength_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength",2.4263102367e-12_dp,0.0000000011e-12_dp,"m")]

- **compton_wavelength_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength over 2 pi",386.15926764e-15_dp,0.00000018e-15_dp,"m")]

- **conductance_quantum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conductance quantum",7.7480917310e-5_dp,0.0000000018e-5_dp,"s")]

- **conventional_value_of_josephson_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of josephson constant",483597.9e9_dp,0.0_dp,"hz v^-1")]

- **conventional_value_of_von_klitzing_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of von klitzing constant",25812.807_dp,0.0_dp,"ohm")]

- **cu_x_unit_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("cu x unit",1.00207697e-13_dp,0.00000028e-13_dp,"m")]*

- **deuteron_electron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mag. mom. ratio",-4.664345535e-4_dp,0.000000026e-4_dp,"")]

- **deuteron_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mass ratio",3670.48296785_dp,0.00000013_dp,"")]

- **deuteron_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron g factor",0.8574382311_dp,0.0000000048_dp,"")]

- **deuteron_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom.",0.4330735040e-26_dp,0.0000000036e-26_dp,"j t^-1")]

- **deuteron_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to bohr magneton ratio",0.4669754554e-3_dp,0.0000000026e-3_dp,"")]

- **deuteron_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to nuclear magneton ratio",0.8574382311_dp,0.0000000048_dp,"")]

- **deuteron_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass",3.343583719e-27_dp,0.000000041e-27_dp,"kg")]

- **deuteron_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent",3.005063183e-10_dp,0.000000037e-10_dp,"j")]

- **deuteron_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent in mev",1875.612928_dp,0.000012_dp,"mev")]

- **deuteron_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass in u",2.013553212745_dp,0.000000000040_dp,"u")]

- **deuteron_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron molar mass",2.013553212745e-3_dp,0.000000000040e-3_dp,"kg mol^-1")]

- **deuteron_neutron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-neutron mag. mom. ratio",-0.44820652_dp,0.00000011_dp,"")]

- **deuteron_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mag. mom. ratio",0.3070122077_dp,0.0000000015_dp,"")]

- **deuteron_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mass ratio",1.99900750087_dp,0.00000000019_dp,"")]

- **deuteron_rms_charge_radius_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron rms charge radius",2.1413e-15_dp,0.0025e-15_dp,"m")]

- **electric_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electric constant",8.854187817e-12_dp,0.0_dp,"f m^-1")]

- **electron_charge_to_mass_quotient_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron charge to mass quotient",-1.758820024e11_dp,0.000000011e11_dp,"c kg^-1")]

- **electron_deuteron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mag. mom. ratio",-2143.923499_dp,0.000012_dp,"")]

- **electron_deuteron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mass ratio",2.724437107484e-4_dp,0.000000000096e-4_dp,"")]

- **electron_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron g factor",-2.00231930436182_dp,0.00000000000052_dp,"")]

- **electron_gyromag_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio",1.760859644e11_dp,0.000000011e11_dp,"s^-1 t^-1")]

- **electron_gyromag_ratio_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio over 2 pi",28024.95164_dp,0.00017_dp,"mhz t^-1")]

- **electron_helion_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-helion mass ratio",1.819543074854e-4_dp,0.000000000088e-4_dp,"")]

- **electron_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom.",-928.4764620e-26_dp,0.0000057e-26_dp,"j t^-1")]

- **electron_mag_mom_anomaly_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. anomaly",1.15965218091e-3_dp,0.00000000026e-3_dp,"")]

- **electron_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to bohr magneton ratio",-1.00115965218091_dp,0.00000000000026_dp,"")]

- **electron_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to nuclear magneton ratio",-1838.28197234_dp,0.00000017_dp,"")]

- **electron_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass",9.10938356e-31_dp,0.00000011e-31_dp,"kg")]

- **electron_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent",8.18710565e-14_dp,0.00000010e-14_dp,"j")]

- **electron_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent in mev",0.5109989461_dp,0.0000000031_dp,"mev")]

- **electron_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass in u",5.48579909070e-4_dp,0.00000000016e-4_dp,"u")]

- **electron_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron molar mass",5.48579909070e-7_dp,0.00000000016e-7_dp,"kg mol^-1")]

- **electron_muon_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mag. mom. ratio",206.7669880_dp,0.0000046_dp,"")]

- **electron_muon_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mass ratio",4.83633170e-3_dp,0.00000011e-3_dp,"")]

- **electron_neutron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mag. mom. ratio",960.92050_dp,0.00023_dp,"")]

- **electron_neutron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mass ratio",5.4386734428e-4_dp,0.0000000027e-4_dp,"")]

- **electron_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mag. mom. ratio",-658.2106866_dp,0.0000020_dp,"")]

- **electron_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mass ratio",5.44617021352e-4_dp,0.00000000052e-4_dp,"")]

- **electron_tau_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-tau mass ratio",2.87592e-4_dp,0.00026e-4_dp,"")]

- **electron_to_alpha_particle_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to alpha particle mass ratio",1.370933554798e-4_dp,0.000000000045e-4_dp,"")]

- **electron_to_shielded_helion_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded helion mag. mom. ratio",864.058257_dp,0.000010_dp,"")]

- **electron_to_shielded_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded proton mag. mom. ratio",-658.2275971_dp,0.0000072_dp,"")]

- **electron_triton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-triton mass ratio",1.819200062203e-4_dp,0.000000000084e-4_dp,"")]

- **electron_volt_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt",1.6021766208e-19_dp,0.0000000098e-19_dp,"j")]

- **electron_volt_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-atomic mass unit relationship",1.0735441105e-9_dp,0.0000000066e-9_dp,"u")]

- **electron_volt_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hartree relationship",3.674932248e-2_dp,0.000000023e-2_dp,"e_h")]

- **electron_volt_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hertz relationship",2.417989262e14_dp,0.000000015e14_dp,"hz")]

- **electron_volt_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-inverse meter relationship",8.065544005e5_dp,0.000000050e5_dp,"m^-1")]

- **electron_volt_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-joule relationship",1.6021766208e-19_dp,0.0000000098e-19_dp,"j")]

- **electron_volt_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kelvin relationship",1.16045221e4_dp,0.00000067e4_dp,"k")]

- **electron_volt_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kilogram relationship",1.782661907e-36_dp,0.000000011e-36_dp,"kg")]

- **elementary_charge_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge",1.6021766208e-19_dp,0.0000000098e-19_dp,"c")]

- **elementary_charge_over_h_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge over h",2.417989262e14_dp,0.000000015e14_dp,"a j^-1")]

- **faraday_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant",96485.33289_dp,0.00059_dp,"c mol^-1")]

- **faraday_constant_for_conventional_electric_current_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant for conventional electric current",96485.3251_dp,0.0012_dp,"c_90 mol^-1")]

- **fermi_coupling_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fermi coupling constant",1.1663787e-5_dp,0.0000006e-5_dp,"gev^-2")]

- **fine_structure_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fine-structure constant",7.2973525664e-3_dp,0.0000000017e-3_dp,"")]

- **first_radiation_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant",3.741771790e-16_dp,0.000000046e-16_dp,"w m^2")]

- **first_radiation_constant_for_spectral_radiance_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant for spectral radiance",1.191042953e-16_dp,0.000000015e-16_dp,"w m^2 sr^-1")]

- **hartree_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-atomic mass unit relationship",2.9212623197e-8_dp,0.0000000013e-8_dp,"u")]

- **hartree_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-electron volt relationship",27.21138602_dp,0.00000017_dp,"ev")]

- **hartree_energy_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy",4.359744650e-18_dp,0.000000054e-18_dp,"j")]

- **hartree_energy_in_ev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy in ev",27.21138602_dp,0.00000017_dp,"ev")]

- **hartree_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-hertz relationship",6.579683920711e15_dp,0.000000000039e15_dp,"hz")]

- **hartree_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-inverse meter relationship",2.194746313702e7_dp,0.000000000013e7_dp,"m^-1")]

- **hartree_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-joule relationship",4.359744650e-18_dp,0.000000054e-18_dp,"j")]

- **hartree_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kelvin relationship",3.1577513e5_dp,0.0000018e5_dp,"k")]

- **hartree_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kilogram relationship",4.850870129e-35_dp,0.000000060e-35_dp,"kg")]

- **helion_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-electron mass ratio",5495.88527922_dp,0.00000027_dp,"")]

- **helion_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion g factor",-4.255250616_dp,0.000000050_dp,"")]

- **helion_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom.",-1.074617522e-26_dp,0.000000014e-26_dp,"j t^-1")]

- **helion_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to bohr magneton ratio",-1.158740958e-3_dp,0.000000014e-3_dp,"")]

- **helion_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to nuclear magneton ratio",-2.127625308_dp,0.000000025_dp,"")]

- **helion_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass",5.006412700e-27_dp,0.000000062e-27_dp,"kg")]*

- **helion_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent",4.499539341e-10_dp,0.000000055e-10_dp,"j")]

- **helion_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent in mev",2808.391586_dp,0.000017_dp,"mev")]

- **helion_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass in u",3.01493224673_dp,0.00000000012_dp,"u")]

- **helion_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion molar mass",3.01493224673e-3_dp,0.00000000012e-3_dp,"kg mol^-1")]

- **helion_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-proton mass ratio",2.99315267046_dp,0.00000000029_dp,"")]

- **hertz_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-atomic mass unit relationship",4.4398216616e-24_dp,0.0000000020e-24_dp,"u")]

- **hertz_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-electron volt relationship",4.135667662e-15_dp,0.000000025e-15_dp,"ev")]

- **hertz_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-hartree relationship",1.5198298460088e-16_dp,0.0000000000090e-16_dp,"e_h")]

- **hertz_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-inverse meter relationship",3.335640951e-9_dp,0.0_dp,"m^-1")]

- **hertz_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-joule relationship",6.626070040e-34_dp,0.000000081e-34_dp,"j")]

- **hertz_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kelvin relationship",4.7992447e-11_dp,0.0000028e-11_dp,"k")]

- **hertz_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kilogram relationship",7.372497201e-51_dp,0.000000091e-51_dp,"kg")]

- **inverse_fine_structure_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse fine-structure constant",137.035999139_dp,0.000000031_dp,"")]

- **inverse_meter_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-atomic mass unit relationship",1.33102504900e-15_dp,0.00000000061e-15_dp,"u")]

- **inverse_meter_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-electron volt relationship",1.2398419739e-6_dp,0.0000000076e-6_dp,"ev")]

- **inverse_meter_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hartree relationship",4.556335252767e-8_dp,0.000000000027e-8_dp,"e_h")]

- **inverse_meter_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hertz relationship",299792458_dp,0.0_dp,"hz")]

- **inverse_meter_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-joule relationship",1.986445824e-25_dp,0.000000024e-25_dp,"j")]

- **inverse_meter_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kelvin relationship",1.43877736e-2_dp,0.00000083e-2_dp,"k")]

- **inverse_meter_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kilogram relationship",2.210219057e-42_dp,0.000000027e-42_dp,"kg")]

- **inverse_of_conductance_quantum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse of conductance quantum",12906.4037278_dp,0.0000029_dp,"ohm")]

- **josephson_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("josephson constant",483597.8525e9_dp,0.0030e9_dp,"hz v^-1")]

- **joule_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-atomic mass unit relationship",6.700535363e9_dp,0.000000082e9_dp,"u")]

- **joule_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-electron volt relationship",6.241509126e18_dp,0.000000038e18_dp,"ev")]

- **joule_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hartree relationship",2.293712317e17_dp,0.000000028e17_dp,"e_h")]

- **joule_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hertz relationship",1.509190205e33_dp,0.000000019e33_dp,"hz")]

- **joule_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-inverse meter relationship",5.034116651e24_dp,0.000000062e24_dp,"m^-1")]

- **joule_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kelvin relationship",7.2429731e22_dp,0.0000042e22_dp,"k")]

- **joule_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kilogram relationship",1.112650056e-17_dp,0.0_dp,"kg")]

- **kelvin_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-atomic mass unit relationship",9.2510842e-14_dp,0.0000053e-14_dp,"u")]

- **kelvin_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-electron volt relationship",8.6173303e-5_dp,0.0000050e-5_dp,"ev")]

- **kelvin_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hartree relationship",3.1668105e-6_dp,0.0000018e-6_dp,"e_h")]

- **kelvin_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hertz relationship",2.0836612e10_dp,0.0000012e10_dp,"hz")]

- **kelvin_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-inverse meter relationship",69.503457_dp,0.000040_dp,"m^-1")]

- **kelvin_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-joule relationship",1.38064852e-23_dp,0.00000079e-23_dp,"j")]

- **kelvin_kilogram_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-kilogram relationship",1.53617865e-40_dp,0.00000088e-40_dp,"kg")]

- **kilogram_atomic_mass_unit_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-atomic mass unit relationship",6.022140857e26_dp,0.000000074e26_dp,"u")]

- **kilogram_electron_volt_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-electron volt relationship",5.609588650e35_dp,0.000000034e35_dp,"ev")]

- **kilogram_hartree_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hartree relationship",2.061485823e34_dp,0.000000025e34_dp,"e_h")]

- **kilogram_hertz_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hertz relationship",1.356392512e50_dp,0.000000017e50_dp,"hz")]

- **kilogram_inverse_meter_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-inverse meter relationship",4.524438411e41_dp,0.000000056e41_dp,"m^-1")]

- **kilogram_joule_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-joule relationship",8.987551787e16_dp,0.0_dp,"j")]

- **kilogram_kelvin_relationship_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-kelvin relationship",6.5096595e39_dp,0.0000037e39_dp,"k")]

- **lattice_parameter_of_silicon_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice parameter of silicon",543.1020504e-12_dp,0.0000089e-12_dp,"m")]

- **lattice_spacing_of_silicon_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("{220} lattice spacing of silicon",192.0155714e-12_dp,0.0000032e-12_dp,"m")]

- **loschmidt_constant_273_15_k_100_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,100 kpa)",2.6516467e25_dp,0.0000015e25_dp,"m^-3")]

- **loschmidt_constant_273_15_k_101_325_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,101.325 kpa)",2.6867811e25_dp,0.0000015e25_dp,"m^-3")]

- **mag_constant_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. constant",12.566370614e-7_dp,0.0_dp,"n a^-2")]*

- **mag_flux_quantum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. flux quantum",2.067833831e-15_dp,0.000000013e-15_dp,"wb")]

- **mo_x_unit_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("mo x unit",1.00209952e-13_dp,0.00000053e-13_dp,"m")]*

- **molar_gas_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar gas constant",8.3144598_dp,0.0000048_dp,"j mol^-1 k^-1")]

- **molar_mass_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass constant",1e-3_dp,0.0_dp,"kg mol^-1")]

- **molar_mass_of_carbon_12_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass of carbon-12",12e-3_dp,0.0_dp,"kg mol^-1")]

- **molar_planck_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant",3.9903127110e-10_dp,0.0000000018e-10_dp,"j s mol^-1")]

- **molar_planck_constant_times_c_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant times c",0.119626565582_dp,0.000000000054_dp,"j m mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_100_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,100 kpa)",22.710947e-3_dp,0.000013e-3_dp,"m^3 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_101_325_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,101.325 kpa)",22.413962e-3_dp,0.000013e-3_dp,"m^3 mol^-1")]

- **molar_volume_of_silicon_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of silicon",12.05883214e-6_dp,0.00000061e-6_dp,"m^3 mol^-1")]

- **muon_compton_wavelength_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength",11.73444111e-15_dp,0.00000026e-15_dp,"m")]

- **muon_compton_wavelength_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength over 2 pi",1.867594308e-15_dp,0.000000042e-15_dp,"m")]

- **muon_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-electron mass ratio",206.7682826_dp,0.0000046_dp,"")]

- **muon_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon g factor",-2.0023318418_dp,0.0000000013_dp,"")]

- **muon_mag_mom_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom.",-4.49044826e-26_dp,0.00000010e-26_dp,"j t^-1")]*

- **muon_mag_mom_anomaly_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. anomaly",1.16592089e-3_dp,0.00000063e-3_dp,"")]

- **muon_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to bohr magneton ratio",-4.84197048e-3_dp,0.00000011e-3_dp,"")]

- **muon_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to nuclear magneton ratio",-8.89059705_dp,0.00000020_dp,"")]

- **muon_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass",1.883531594e-28_dp,0.000000048e-28_dp,"kg")]*

- **muon_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent",1.692833774e-11_dp,0.000000043e-11_dp,"j")]

- **muon_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent in mev",105.6583745_dp,0.0000024_dp,"mev")]

- **muon_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass in u",0.1134289257_dp,0.0000000025_dp,"u")]

- **muon_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon molar mass",0.1134289257e-3_dp,0.0000000025e-3_dp,"kg mol^-1")]

- **muon_neutron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-neutron mass ratio",0.1124545167_dp,0.0000000025_dp,"")]

- **muon_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mag. mom. ratio",-3.183345142_dp,0.000000071_dp,"")]

- **muon_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mass ratio",0.1126095262_dp,0.0000000025_dp,"")]

- **muon_tau_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-tau mass ratio",5.94649e-2_dp,0.00054e-2_dp,"")]

- **natural_unit_of_action_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action",1.054571800e-34_dp,0.000000013e-34_dp,"j s")]

- **natural_unit_of_action_in_ev_s_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action in ev s",6.582119514e-16_dp,0.000000040e-16_dp,"ev s")]

- **natural_unit_of_energy_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy",8.18710565e-14_dp,0.00000010e-14_dp,"j")]

- **natural_unit_of_energy_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy in mev",0.5109989461_dp,0.0000000031_dp,"mev")]

- **natural_unit_of_length_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of length",386.15926764e-15_dp,0.00000018e-15_dp,"m")]

- **natural_unit_of_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mass",9.10938356e-31_dp,0.00000011e-31_dp,"kg")]

- **natural_unit_of_momum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mom.um",2.730924488e-22_dp,0.000000034e-22_dp,"kg m s^-1")]

- **natural_unit_of_momum_in_mev_c_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mom.um in mev/c",0.5109989461_dp,0.0000000031_dp,"mev/c")]

- **natural_unit_of_time_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of time",1.28808866712e-21_dp,0.00000000058e-21_dp,"s")]

- **natural_unit_of_velocity_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of velocity",299792458_dp,0.0_dp,"m s^-1")]

- **neutron_compton_wavelength_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength",1.31959090481e-15_dp,0.00000000088e-15_dp,"m")]

- **neutron_compton_wavelength_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength over 2 pi",0.21001941536e-15_dp,0.00000000014e-15_dp,"m")]

- **neutron_electron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mag. mom. ratio",1.04066882e-3_dp,0.00000025e-3_dp,"")]

- **neutron_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mass ratio",1838.68366158_dp,0.00000090_dp,"")]

- **neutron_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron g factor",-3.82608545_dp,0.00000090_dp,"")]

- **neutron_gyromag_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio",1.83247172e8_dp,0.00000043e8_dp,"s^-1 t^-1")]

- **neutron_gyromag_ratio_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio over 2 pi",29.1646933_dp,0.0000069_dp,"mhz t^-1")]

- **neutron_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom.",-0.96623650e-26_dp,0.00000023e-26_dp,"j t^-1")]

- **neutron_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to bohr magneton ratio",-1.04187563e-3_dp,0.00000025e-3_dp,"")]

- **neutron_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to nuclear magneton ratio",-1.91304273_dp,0.00000045_dp,"")]

- **neutron_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass",1.674927471e-27_dp,0.000000021e-27_dp,"kg")]

- **neutron_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent",1.505349739e-10_dp,0.000000019e-10_dp,"j")]

- **neutron_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent in mev",939.5654133_dp,0.0000058_dp,"mev")]

- **neutron_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass in u",1.00866491588_dp,0.00000000049_dp,"u")]

- **neutron_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron molar mass",1.00866491588e-3_dp,0.00000000049e-3_dp,"kg mol^-1")]

- **neutron_muon_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-muon mass ratio",8.89248408_dp,0.00000020_dp,"")]

- **neutron_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mag. mom. ratio",-0.68497934_dp,0.00000016_dp,"")]

- **neutron_proton_mass_difference_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference",2.30557377e-30_dp,0.00000085e-30_dp,"")]

- **neutron_proton_mass_difference_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent",2.07214637e-13_dp,0.00000076e-13_dp,"")]

- **neutron_proton_mass_difference_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent in mev",1.29333205_dp,0.00000048_dp,"")]

- **neutron_proton_mass_difference_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference in u",0.00138844900_dp,0.00000000051_dp,"")]

- **neutron_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass ratio",1.00137841898_dp,0.00000000051_dp,"")]

- **neutron_tau_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-tau mass ratio",0.528790_dp,0.000048_dp,"")]

- **neutron_to_shielded_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron to shielded proton mag. mom. ratio",-0.68499694_dp,0.00000016_dp,"")]

- **newtonian_constant_of_gravitation_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation",6.67408e-11_dp,0.00031e-11_dp,"m^3 kg^-1 s^-2")]

- **newtonian_constant_of_gravitation_over_h_bar_c_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation over h-bar c",6.70861e-39_dp,0.00031e-39_dp,"(gev/c^2)^-2")]

- **nuclear_magneton_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton",5.050783699e-27_dp,0.000000031e-27_dp,"j t^-1")]

- **nuclear_magneton_in_ev_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in ev/t",3.1524512550e-8_dp,0.0000000015e-8_dp,"ev t^-1")]

- **nuclear_magneton_in_inverse_meters_per_tesla_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in inverse meters per tesla",2.542623432e-2_dp,0.000000016e-2_dp,"m^-1 t^-1")]

- **nuclear_magneton_in_k_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in k/t",3.6582690e-4_dp,0.0000021e-4_dp,"k t^-1")]

- **nuclear_magneton_in_mhz_t_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in mhz/t",7.622593285_dp,0.000000047_dp,"mhz t^-1")]

- **planck_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant",6.626070040e-34_dp,0.000000081e-34_dp,"j s")]

- **planck_constant_in_ev_s_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant in ev s",4.135667662e-15_dp,0.000000025e-15_dp,"ev s")]

- **planck_constant_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi",1.054571800e-34_dp,0.000000013e-34_dp,"j s")]

- **planck_constant_over_2_pi_in_ev_s_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi in ev s",6.582119514e-16_dp,0.000000040e-16_dp,"ev s")]

- **planck_constant_over_2_pi_times_c_in_mev_fm_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant over 2 pi times c in mev fm",197.3269788_dp,0.0000012_dp,"mev fm")]

- **planck_length_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck length",1.616229e-35_dp,0.000038e-35_dp,"m")]

- **planck_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass",2.176470e-8_dp,0.000051e-8_dp,"kg")]*

- **planck_mass_energy_equivalent_in_gev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass energy equivalent in gev",1.220910e19_dp,0.000029e19_dp,"gev")]

- **planck_temperature_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck temperature",1.416808e32_dp,0.000033e32_dp,"k")]

- **planck_time_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck time",5.39116e-44_dp,0.00013e-44_dp,"s")]*

- **proton_charge_to_mass_quotient_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton charge to mass quotient",9.578833226e7_dp,0.000000059e7_dp,"c kg^-1")]

- **proton_compton_wavelength_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength",1.32140985396e-15_dp,0.00000000061e-15_dp,"m")]

- **proton_compton_wavelength_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength over 2 pi",0.210308910109e-15_dp,0.000000000097e-15_dp,"m")]

- **proton_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-electron mass ratio",1836.15267389_dp,0.00000017_dp,"")]

- **proton_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton g factor",5.585694702_dp,0.000000017_dp,"")]

- **proton_gyromag_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio",2.675221900e8_dp,0.000000018e8_dp,"s^-1 t^-1")]

- **proton_gyromag_ratio_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio over 2 pi",42.57747892_dp,0.00000029_dp,"mhz t^-1")]

- **proton_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom.",1.4106067873e-26_dp,0.0000000097e-26_dp,"j t^-1")]

- **proton_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to bohr magneton ratio",1.5210322053e-3_dp,0.0000000046e-3_dp,"")]

- **proton_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to nuclear magneton ratio",2.7928473508_dp,0.0000000085_dp,"")]

- **proton_mag_shielding_correction_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. shielding correction",25.691e-6_dp,0.011e-6_dp,"")]

- **proton_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass",1.672621898e-27_dp,0.000000021e-27_dp,"kg")]*

- **proton_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent",1.503277593e-10_dp,0.000000018e-10_dp,"j")]

- **proton_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent in mev",938.2720813_dp,0.0000058_dp,"mev")]

- **proton_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass in u",1.007276466879_dp,0.000000000091_dp,"u")]

- **proton_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton molar mass",1.007276466879e-3_dp,0.000000000091e-3_dp,"kg mol^-1")]

- **proton_muon_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-muon mass ratio",8.88024338_dp,0.00000020_dp,"")]

- **proton_neutron_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mag. mom. ratio",-1.45989805_dp,0.00000034_dp,"")]

- **proton_neutron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mass ratio",0.99862347844_dp,0.00000000051_dp,"")]

- **proton_rms_charge_radius_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton rms charge radius",0.8751e-15_dp,0.0061e-15_dp,"m")]

- **proton_tau_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-tau mass ratio",0.528063_dp,0.000048_dp,"")]

- **quantum_of_circulation_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation",3.6369475486e-4_dp,0.0000000017e-4_dp,"m^2 s^-1")]

- **quantum_of_circulation_times_2_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation times 2",7.2738950972e-4_dp,0.0000000033e-4_dp,"m^2 s^-1")]

- **rydberg_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant",10973731.568508_dp,0.000065_dp,"m^-1")]

- **rydberg_constant_times_c_in_hz_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times c in hz",3.289841960355e15_dp,0.000000000019e15_dp,"hz")]

- **rydberg_constant_times_hc_in_ev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in ev",13.605693009_dp,0.000000084_dp,"ev")]

- **rydberg_constant_times_hc_in_j_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in j",2.179872325e-18_dp,0.000000027e-18_dp,"j")]

- **sackur_tetrode_constant_1_k_100_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,100 kpa)",-1.1517084_dp,0.0000014_dp,"")]

- **sackur_tetrode_constant_1_k_101_325_kpa_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,101.325 kpa)",-1.1648714_dp,0.0000014_dp,"")]

- **second_radiation_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("second radiation constant",1.43877736e-2_dp,0.00000083e-2_dp,"m k")]

- **shielded_helion_gyromag_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio",2.037894585e8_dp,0.000000027e8_dp,"s^-1 t^-1")]

- **shielded_helion_gyromag_ratio_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio over 2 pi",32.43409966_dp,0.00000043_dp,"mhz t^-1")]

- **shielded_helion_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom.",-1.074553080e-26_dp,0.000000014e-26_dp,"j t^-1")]

- **shielded_helion_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to bohr magneton ratio",-1.158671471e-3_dp,0.000000014e-3_dp,"")]

- **shielded_helion_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to nuclear magneton ratio",-2.127497720_dp,0.000000025_dp,"")]

- **shielded_helion_to_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to proton mag. mom. ratio",-0.7617665603_dp,0.0000000092_dp,"")]

- **shielded_helion_to_shielded_proton_mag_mom_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to shielded proton mag. mom. ratio",-0.7617861313_dp,0.0000000033_dp,"")]

- **shielded_proton_gyromag_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio",2.67515317 1e8_dp,0.000000033e8_dp,"s^-1 t^-1")]

- **shielded_proton_gyromag_ratio_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio over 2 pi",42.57638507_dp,0.00000053_dp,"mhz t^-1")]

- **shielded_proton_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom.",1.410570547e-26_dp,0.000000018e-26_dp,"j t^-1")]

- **shielded_proton_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to bohr magneton ratio",1.520993128e-3_dp,0.000000017e-3_dp,"")]

- **shielded_proton_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to nuclear magneton ratio",2.792775600_dp,0.000000030_dp,"")]

- **speed_of_light_in_vacuum_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("speed of light in vacuum",299792458_dp,0.0_dp,"m s^-1")]

- **standard_acceleration_of_gravity_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard acceleration of gravity",9.80665_dp,0.0_dp,"m s^-2")]

- **standard_atmosphere_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard atmosphere",101325_dp,0.0_dp,"pa")]

- **standard_state_pressure_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard-state pressure",100000_dp,0.0_dp,"pa")]

- **stefan_boltzmann_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("stefan-boltzmann constant",5.670367e-8_dp,0.000013e-8_dp,"w m^-2 k^-4")]

- **tau_compton_wavelength_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength",0.697787e-15_dp,0.000063e-15_dp,"m")]

- **tau_compton_wavelength_over_2_pi_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength over 2 pi",0.111056e-15_dp,0.000010e-15_dp,"m")]

- **tau_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-electron mass ratio",3477.15_dp,0.31_dp,"")]

- **tau_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass",3.16747e-27_dp,0.00029e-27_dp,"kg")]*

- **tau_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent",2.84678e-10_dp,0.00026e-10_dp,"j")]

- **tau_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent in mev",1776.82_dp,0.16_dp,"mev")]

- **tau_mass_in_u_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass in u",1.90749_dp,0.00017_dp,"u")]*

- **tau_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau molar mass",1.90749e-3_dp,0.00017e-3_dp,"kg mol^-1")]

- **tau_muon_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-muon mass ratio",16.8167_dp,0.0015_dp,"")]

- **tau_neutron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-neutron mass ratio",1.89111_dp,0.00017_dp,"")]

- **tau_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-proton mass ratio",1.89372_dp,0.00017_dp,"")]

- **thomson_cross_section_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("thomson cross section",0.66524587158e-28_dp,0.00000000091e-28_dp,"m^2")]

- **triton_electron_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-electron mass ratio",5496.92153588_dp,0.00000026_dp,"")]

- **triton_g_factor_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton g factor",5.957924920_dp,0.000000028_dp,"")]

- **triton_mag_mom_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom.",1.504609503e-26_dp,0.000000012e-26_dp,"j t^-1")]

- **triton_mag_mom_to_bohr_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to bohr magneton ratio",1.6223936616e-3_dp,0.0000000076e-3_dp,"")]

- **triton_mag_mom_to_nuclear_magneton_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to nuclear magneton ratio",2.978962460_dp,0.000000014_dp,"")]

- **triton_mass_2014** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass",5.007356665e-27_dp,0.000000062e-27_dp,"kg")]*

- **triton_mass_energy_equivalent_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent",4.500387735e-10_dp,0.000000055e-10_dp,"j")]

- **triton_mass_energy_equivalent_in_mev_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent in mev",2808.921112_dp,0.000017_dp,"mev")]

- **triton_mass_in_u_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass in u",3.01550071632_dp,0.00000000011_dp,"u")]

- **triton_molar_mass_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton molar mass",3.01550071632e-3_dp,0.00000000011e-3_dp,"kg mol^-1")]

- **triton_proton_mass_ratio_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-proton mass ratio",2.99371703348_dp,0.00000000022_dp,"")]

- **unified_atomic_mass_unit_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("unified atomic mass unit",1.660539040e-27_dp,0.000000020e-27_dp,"kg")]

- **von_klitzing_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("von klitzing constant",25812.8074555_dp,0.0000059_dp,"ohm")]

- **weak_mixing_angle_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("weak mixing angle",0.2223_dp,0.0021_dp,"")]

- **wien_frequency_displacement_law_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien frequency displacement law constant",5.8789238e10_dp,0.0000034e10_dp,"hz k^-1")]

- **wien_wavelength_displacement_law_constant_2014**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien wavelength displacement law constant",2.8977729e-3_dp,0.0000017e-3_dp,"m k")]

- **year_2014** *[integer,public/parameter/optional/default=2014]*

  ! Year of release.

1.1.6 2018

Description

! Codata Constants - Autogenerated

Quick access

Variables

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
atomic_mass_unit_hartree_relationship_2018, atomic_mass_unit_hertz_relationship_2018,
atomic_mass_unit_inverse_meter_relationship_2018, atomic_mass_unit_joule_relationship_2018,
atomic_mass_unit_kelvin_relationship_2018, atomic_mass_unit_kilogram_relationship_2018,
atomic_unit_of_1st_hyperpolarizability_2018, atomic_unit_of_2nd_hyperpolarizability_2018,
atomic_unit_of_action_2018, atomic_unit_of_charge_2018,
atomic_unit_of_charge_density_2018, atomic_unit_of_current_2018,
atomic_unit_of_electric_dipole_mom_2018, atomic_unit_of_electric_field_2018,
atomic_unit_of_electric_field_gradient_2018, atomic_unit_of_electric_polarizability_2018,
atomic_unit_of_electric_potential_2018, atomic_unit_of_electric_quadrupole_mom_2018,
atomic_unit_of_energy_2018, atomic_unit_of_force_2018,
atomic_unit_of_length_2018, atomic_unit_of_mag_dipole_mom_2018,
atomic_unit_of_mag_flux_density_2018, atomic_unit_of_magnetizability_2018,
atomic_unit_of_mass_2018, atomic_unit_of_momentum_2018,
atomic_unit_of_permittivity_2018, atomic_unit_of_time_2018,
atomic_unit_of_velocity_2018, avogadro_constant_2018, bohr_magneton_2018,
bohr_magneton_in_ev_t_2018, 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, boltzmann_constant_in_ev_k_2018,
boltzmann_constant_in_hz_k_2018, boltzmann_constant_in_inverse_meter_per_kelvin_2018,
characteristic_impedance_of_vacuum_2018, classical_electron_radius_2018,
compton_wavelength_2018, conductance_quantum_2018, conventional_value_of_ampere_90_2018,
conventional_value_of_coulomb_90_2018, conventional_value_of_farad_90_2018,
conventional_value_of_henry_90_2018, conventional_value_of_josephson_constant_2018,
conventional_value_of_ohm_90_2018, conventional_value_of_volt_90_2018,
conventional_value_of_von_klitzing_constant_2018, conventional_value_of_watt_90_2018,
copper_x_unit_2018, deuteron_electron_mag_mom_ratio_2018,
deuteron_electron_mass_ratio_2018, deuteron_g_factor_2018,
deuteron_mag_mom_2018, deuteron_mag_mom_to_bohr_magneton_ratio_2018,
deuteron_mag_mom_to_nuclear_magneton_ratio_2018, deuteron_mass_2018,
deuteron_mass_energy_equivalent_2018, deuteron_mass_energy_equivalent_in_mev_2018,
deuteron_mass_in_u_2018, deuteron_molar_mass_2018, deuteron_neutron_mag_mom_ratio_2018,
deuteron_proton_mag_mom_ratio_2018, deuteron_proton_mass_ratio_2018,
deuteron_relative_atomic_mass_2018, deuteron_rms_charge_radius_2018,
electron_charge_to_mass_quotient_2018, electron_deuteron_mag_mom_ratio_2018,
electron_deuteron_mass_ratio_2018, electron_g_factor_2018,
electron_gyromag_ratio_2018, electron_gyromag_ratio_in_mhz_t_2018,
electron_helion_mass_ratio_2018, electron_mag_mom_2018,
electron_mag_mom_anomaly_2018, electron_mag_mom_to_bohr_magneton_ratio_2018,
electron_mag_mom_to_nuclear_magneton_ratio_2018, electron_mass_2018,
electron_mass_energy_equivalent_2018, electron_mass_energy_equivalent_in_mev_2018,
electron_mass_in_u_2018, electron_molar_mass_2018, electron_muon_mag_mom_ratio_2018,
electron_muon_mass_ratio_2018, electron_neutron_mag_mom_ratio_2018,
electron_neutron_mass_ratio_2018, electron_proton_mag_mom_ratio_2018,
electron_proton_mass_ratio_2018, electron_relative_atomic_mass_2018,
electron_tau_mass_ratio_2018, electron_to_alpha_particle_mass_ratio_2018,
electron_to_shielded_helion_mag_mom_ratio_2018, electron_to_shielded_proton_mag_mom_ratio_2018,
electron_triton_mass_ratio_2018, electron_volt_2018,
electron_volt_atomic_mass_unit_relationship_2018, electron_volt_hartree_relationship_2018,
electron_volt_hertz_relationship_2018, electron_volt_inverse_meter_relationship_2018,
electron_volt_joule_relationship_2018, electron_volt_kelvin_relationship_2018,
electron_volt_kilogram_relationship_2018, elementary_charge_2018,
elementary_charge_over_h_bar_2018, faraday_constant_2018,

fermi_coupling_constant_2018, fine_structure_constant_2018,
first_radiation_constant_2018, first_radiation_constant_for_spectral_radiance_2018,
hartree_atomic_mass_unit_relationship_2018, hartree_electron_volt_relationship_2018,
hartree_energy_2018, hartree_energy_in_ev_2018, hartree_hertz_relationship_2018,
hartree_inverse_meter_relationship_2018, hartree_joule_relationship_2018,
hartree_kelvin_relationship_2018, hartree_kilogram_relationship_2018,
helion_electron_mass_ratio_2018, helion_g_factor_2018,
helion_mag_mom_2018, helion_mag_mom_to_bohr_magneton_ratio_2018,
helion_mag_mom_to_nuclear_magneton_ratio_2018, helion_mass_2018,
helion_mass_energy_equivalent_2018, helion_mass_energy_equivalent_in_mev_2018,
helion_mass_in_u_2018, helion_molar_mass_2018, helion_proton_mass_ratio_2018,
helion_relative_atomic_mass_2018, helion_shielding_shift_2018,
hertz_atomic_mass_unit_relationship_2018, hertz_electron_volt_relationship_2018,
hertz_hartree_relationship_2018, hertz_inverse_meter_relationship_2018,
hertz_joule_relationship_2018, hertz_kelvin_relationship_2018,
hertz_kilogram_relationship_2018, hyperfine_transition_frequency_of_cs_133_2018,
inverse_fine_structure_constant_2018, inverse_meter_atomic_mass_unit_relationship_2018,
inverse_meter_electron_volt_relationship_2018, inverse_meter_hartree_relationship_2018,
inverse_meter_hertz_relationship_2018, inverse_meter_joule_relationship_2018,
inverse_meter_kelvin_relationship_2018, inverse_meter_kilogram_relationship_2018,
inverse_of_conductance_quantum_2018, josephson_constant_2018,
joule_atomic_mass_unit_relationship_2018, joule_electron_volt_relationship_2018,
joule_hartree_relationship_2018, joule_hertz_relationship_2018,
joule_inverse_meter_relationship_2018, joule_kelvin_relationship_2018,
joule_kilogram_relationship_2018, kelvin_atomic_mass_unit_relationship_2018,
kelvin_electron_volt_relationship_2018, kelvin_hartree_relationship_2018,
kelvin_hertz_relationship_2018, kelvin_inverse_meter_relationship_2018,
kelvin_joule_relationship_2018, kelvin_kilogram_relationship_2018,
kilogram_atomic_mass_unit_relationship_2018, kilogram_electron_volt_relationship_2018,
kilogram_hartree_relationship_2018, kilogram_hertz_relationship_2018,
kilogram_inverse_meter_relationship_2018, kilogram_joule_relationship_2018,
kilogram_kelvin_relationship_2018, lattice_parameter_of_silicon_2018,
lattice_spacing_of_ideal_si_220_2018, loschmidt_constant_273_15_k_100_kpa_2018,
loschmidt_constant_273_15_k_101_325_kpa_2018, luminous_efficacy_2018,
mag_flux_quantum_2018, molar_gas_constant_2018, molar_mass_constant_2018,
molar_mass_of_carbon_12_2018, molar_planck_constant_2018,
molar_volume_of_ideal_gas_273_15_k_100_kpa_2018, molar_volume_of_ideal_gas_273_15_k_101_325_kpa_
molar_volume_of_silicon_2018, molybdenum_x_unit_2018,
muon_compton_wavelength_2018, muon_electron_mass_ratio_2018,
muon_g_factor_2018, muon_mag_mom_2018, muon_mag_mom_anomaly_2018,
muon_mag_mom_to_bohr_magneton_ratio_2018, muon_mag_mom_to_nuclear_magneton_ratio_2018,
muon_mass_2018, muon_mass_energy_equivalent_2018, muon_mass_energy_equivalent_in_mev_2018,
muon_mass_in_u_2018, muon_molar_mass_2018, muon_neutron_mass_ratio_2018,
muon_proton_mag_mom_ratio_2018, muon_proton_mass_ratio_2018,
muon_tau_mass_ratio_2018, natural_unit_of_action_2018,
natural_unit_of_action_in_ev_s_2018, natural_unit_of_energy_2018,
natural_unit_of_energy_in_mev_2018, natural_unit_of_length_2018,
natural_unit_of_mass_2018, natural_unit_of_momentum_2018,
natural_unit_of_momentum_in_mev_c_2018, natural_unit_of_time_2018,
natural_unit_of_velocity_2018, neutron_compton_wavelength_2018,
neutron_electron_mag_mom_ratio_2018, neutron_electron_mass_ratio_2018,
neutron_g_factor_2018, neutron_gyromag_ratio_2018, neutron_gyromag_ratio_in_mhz_t_2018,
neutron_mag_mom_2018, neutron_mag_mom_to_bohr_magneton_ratio_2018,
neutron_mag_mom_to_nuclear_magneton_ratio_2018, neutron_mass_2018,

neutron_mass_energy_equivalent_2018, neutron_mass_energy_equivalent_in_mev_2018,
neutron_mass_in_u_2018, neutron_molar_mass_2018, neutron_muon_mass_ratio_2018,
neutron_proton_mag_mom_ratio_2018, neutron_proton_mass_difference_2018,
neutron_proton_mass_difference_energy_equivalent_2018,
neutron_proton_mass_difference_energy_equivalent_in_mev_2018,
neutron_proton_mass_difference_in_u_2018, neutron_proton_mass_ratio_2018,
neutron_relative_atomic_mass_2018, neutron_tau_mass_ratio_2018,
neutron_to_shielded_proton_mag_mom_ratio_2018, newtonian_constant_of_gravitation_2018,
newtonian_constant_of_gravitation_over_h_bar_c_2018,
nuclear_magneton_2018, nuclear_magneton_in_ev_t_2018,
nuclear_magneton_in_inverse_meter_per_tesla_2018, nuclear_magneton_in_k_t_2018,
nuclear_magneton_in_mhz_t_2018, planck_constant_2018,
planck_constant_in_ev_hz_2018, planck_length_2018, planck_mass_2018,
planck_mass_energy_equivalent_in_gev_2018, planck_temperature_2018,
planck_time_2018, proton_charge_to_mass_quotient_2018,
proton_compton_wavelength_2018, proton_electron_mass_ratio_2018,
proton_g_factor_2018, proton_gyromag_ratio_2018, proton_gyromag_ratio_in_mhz_t_2018,
proton_mag_mom_2018, proton_mag_mom_to_bohr_magneton_ratio_2018,
proton_mag_mom_to_nuclear_magneton_ratio_2018, proton_mag_shielding_correction_2018,
proton_mass_2018, proton_mass_energy_equivalent_2018,
proton_mass_energy_equivalent_in_mev_2018, proton_mass_in_u_2018,
proton_molar_mass_2018, proton_muon_mass_ratio_2018,
proton_neutron_mag_mom_ratio_2018, proton_neutron_mass_ratio_2018,
proton_relative_atomic_mass_2018, proton_rms_charge_radius_2018,
proton_tau_mass_ratio_2018, quantum_of_circulation_2018,
quantum_of_circulation_times_2_2018, reduced_compton_wavelength_2018,
reduced_muon_compton_wavelength_2018, reduced_neutron_compton_wavelength_2018,
reduced_planck_constant_2018, reduced_planck_constant_in_ev_s_2018,
reduced_planck_constant_times_c_in_mev_fm_2018, reduced_proton_compton_wavelength_2018,
reduced_tau_compton_wavelength_2018, rydberg_constant_2018,
rydberg_constant_times_c_in_hz_2018, rydberg_constant_times_hc_in_ev_2018,
rydberg_constant_times_hc_in_j_2018, sackur_tetrode_constant_1_k_100_kpa_2018,
sackur_tetrode_constant_1_k_101_325_kpa_2018, second_radiation_constant_2018,
shielded_helion_gyromag_ratio_2018, shielded_helion_gyromag_ratio_in_mhz_t_2018,
shielded_helion_mag_mom_2018, shielded_helion_mag_mom_to_bohr_magneton_ratio_2018,
shielded_helion_mag_mom_to_nuclear_magneton_ratio_2018,
shielded_helion_to_proton_mag_mom_ratio_2018, shielded_helion_to_shielded_proton_mag_mom_ratio_
shielded_proton_gyromag_ratio_2018, shielded_proton_gyromag_ratio_in_mhz_t_2018,
shielded_proton_mag_mom_2018, shielded_proton_mag_mom_to_bohr_magneton_ratio_2018,
shielded_proton_mag_mom_to_nuclear_magneton_ratio_2018,
shielding_difference_of_d_and_p_in_hd_2018, shielding_difference_of_t_and_p_in_ht_2018,
speed_of_light_in_vacuum_2018, standard_acceleration_of_gravity_2018,
standard_atmosphere_2018, standard_state_pressure_2018,
stefan_boltzmann_constant_2018, tau_compton_wavelength_2018,
tau_electron_mass_ratio_2018, tau_energy_equivalent_2018,
tau_mass_2018, tau_mass_energy_equivalent_2018, tau_mass_in_u_2018,
tau_molar_mass_2018, tau_muon_mass_ratio_2018, tau_neutron_mass_ratio_2018,
tau_proton_mass_ratio_2018, thomson_cross_section_2018,
triton_electron_mass_ratio_2018, triton_g_factor_2018,
triton_mag_mom_2018, triton_mag_mom_to_bohr_magneton_ratio_2018,
triton_mag_mom_to_nuclear_magneton_ratio_2018, triton_mass_2018,
triton_mass_energy_equivalent_2018, triton_mass_energy_equivalent_in_mev_2018,
triton_mass_in_u_2018, triton_molar_mass_2018, triton_proton_mass_ratio_2018,
triton_relative_atomic_mass_2018, triton_to_proton_mag_mom_ratio_2018,

unified_atomic_mass_unit_2018, *vacuum_electric_permittivity_2018*, *vacuum_mag_permeability_2018*, *von_klitzing_constant_2018*, *w_to_z_mass_ratio_2018*, *weak_mixing_angle_2018*, *wien_frequency_displacement_law_constant_2018*, *wien_wavelength_displacement_law_constant_2018*, *year_2018*

Needed modules

- `stdlib_kinds` (`dp()`, `int32()`)
- *codata__constants_type*: ! Codata constant type

Variables

- **alpha_particle_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-electron mass ratio",7294.29954142_dp,0.00000024_dp,"")]

- **alpha_particle_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass",6.6446573357e-27_dp,0.0000000020e-27_dp,"kg")]

- **alpha_particle_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent",5.9719201914e-10_dp,0.0000000018e-10_dp,"j")]

- **alpha_particle_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent in mev",3727.3794066_dp,0.0000011_dp,"mev")]

- **alpha_particle_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass in u",4.001506179127_dp,0.000000000063_dp,"u")]

- **alpha_particle_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle molar mass",4.0015061777e-3_dp,0.0000000012e-3_dp,"kg mol^-1")]

- **alpha_particle_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-proton mass ratio",3.97259969009_dp,0.00000000022_dp,"")]

- **alpha_particle_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle relative atomic mass",4.001506179127_dp,0.000000000063_dp,"")]

- **angstrom_star_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("angstrom star",1.00001495e-10_dp,0.00000090e-10_dp,"m")]

- **atomic_mass_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant",1.66053906660e-27_dp,0.00000000050e-27_dp,"kg")]

- **atomic_mass_constant_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent",1.49241808560e-10_dp,0.00000000045e-10_dp,"j")]

- **atomic_mass_constant_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent in mev",931.49410242_dp,0.00000028_dp,"mev")]

- **atomic_mass_unit_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-electron volt relationship",9.3149410242e8_dp,0.0000000028e8_dp,"ev")]

- **atomic_mass_unit_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hartree relationship",3.4231776874e7_dp,0.0000000010e7_dp,"e_h")]

- **atomic_mass_unit_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hertz relationship",2.25234271871e23_dp,0.00000000068e23_dp,"hz")]

- **atomic_mass_unit_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-inverse meter relationship",7.5130066104e14_dp,0.0000000023e14_dp,"m^-1")]

- **atomic_mass_unit_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-joule relationship",1.49241808560e-10_dp,0.00000000045e-10_dp,"j")]

- **atomic_mass_unit_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kelvin relationship",1.08095401916e13_dp,0.00000000033e13_dp,"k")]

- **atomic_mass_unit_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kilogram relationship",1.66053906660e-27_dp,0.00000000050e-27_dp,"kg")]

- **atomic_unit_of_1st_hyperpolarizability_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 1st hyperpolarizability",3.2063613061e-53_dp,0.0000000015e-53_dp,"c^3 m^3 j^-2")]

- **atomic_unit_of_2nd_hyperpolarizability_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 2nd hyperpolarizability",6.2353799905e-65_dp,0.0000000038e-65_dp,"c^4 m^4 j^-3")]

- **atomic_unit_of_action_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of action",1.054571817e-34_dp,0.0_dp,"j s")]

- **atomic_unit_of_charge_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge",1.602176634e-19_dp,0.0_dp,"c")]

- **atomic_unit_of_charge_density_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge density",1.08120238457e12_dp,0.00000000049e12_dp,"c m^-3")]

- **atomic_unit_of_current_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of current",6.623618237510e-3_dp,0.000000000013e-3_dp,"a")]

- **atomic_unit_of_electric_dipole_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric dipole mom.",8.4783536255e-30_dp,0.0000000013e-30_dp,"c m")]

- **atomic_unit_of_electric_field_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field",5.14220674763e11_dp,0.00000000078e11_dp,"v m^-1")]

- **atomic_unit_of_electric_field_gradient_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field gradient",9.7173624292e21_dp,0.0000000029e21_dp,"v m^-2")]

- **atomic_unit_of_electric_polarizability_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric polarizability",1.64877727436e-41_dp,0.00000000050e-41_dp,"c^2 m^2 j^-1")]

- **atomic_unit_of_electric_potential_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric potential",27.211386245988_dp,0.000000000053_dp,"v")]

- **atomic_unit_of_electric_quadrupole_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric quadrupole mom.",4.4865515246e-40_dp,0.0000000014e-40_dp,"c m^2")]

- **atomic_unit_of_energy_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of energy",4.3597447222071e-18_dp,0.0000000000085e-18_dp,"j")]

- **atomic_unit_of_force_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of force",8.2387234983e-8_dp,0.0000000012e-8_dp,"n")]

- **atomic_unit_of_length_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of length",5.29177210903e-11_dp,0.00000000080e-11_dp,"m")]

- **atomic_unit_of_mag_dipole_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. dipole mom.",1.85480201566e-23_dp,0.00000000056e-23_dp,"j t^-1")]

- **atomic_unit_of_mag_flux_density_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. flux density",2.35051756758e5_dp,0.00000000071e5_dp,"t")]

- **atomic_unit_of_magnetizability_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of magnetizability",7.8910366008e-29_dp,0.0000000048e-29_dp,"j t^-2")]

- **atomic_unit_of_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mass",9.1093837015e-31_dp,0.0000000028e-31_dp,"kg")]

- **atomic_unit_of_momentum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of momentum",1.99285191410e-24_dp,0.00000000030e-24_dp,"kg m s^-1")]

- **atomic_unit_of_permittivity_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of permittivity",1.11265005545e-10_dp,0.00000000017e-10_dp,"f m^-1")]

- **atomic_unit_of_time_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of time",2.4188843265857e-17_dp,0.0000000000047e-17_dp,"s")]

- **atomic_unit_of_velocity_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of velocity",2.18769126364e6_dp,0.00000000033e6_dp,"m s^-1")]

- **avogadro_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("avogadro constant",6.02214076e23_dp,0.0_dp,"mol^-1")]

- **bohr_magneton_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton",9.2740100783e-24_dp,0.0000000028e-24_dp,"j t^-1")]

- **bohr_magneton_in_ev_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in ev/t",5.7883818060e-5_dp,0.0000000017e-5_dp,"ev t^-1")]

- **bohr_magneton_in_hz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in hz/t",1.39962449361e10_dp,0.00000000042e10_dp,"hz t^-1")]

- **bohr_magneton_in_inverse_meter_per_tesla_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in inverse meter per tesla",46.686447783_dp,0.000000014_dp,"m^-1 t^-1")]

- **bohr_magneton_in_k_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in k/t",0.67171381563_dp,0.00000000020_dp,"k t^-1")]

- **bohr_radius_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr radius",5.29177210903e-11_dp,0.00000000080e-11_dp,"m")]*

- **boltzmann_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant",1.380649e-23_dp,0.0_dp,"j k^-1")]

- **boltzmann_constant_in_ev_k_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in ev/k",8.617333262e-5_dp,0.0_dp,"ev k^-1")]

- **boltzmann_constant_in_hz_k_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in hz/k",2.083661912e10_dp,0.0_dp,"hz k^-1")]

- **boltzmann_constant_in_inverse_meter_per_kelvin_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in inverse meter per kelvin",69.50348004_dp,0.0_dp,"m^-1 k^-1")]

- **characteristic_impedance_of_vacuum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("characteristic impedance of vacuum",376.730313668_dp,0.000000057_dp,"ohm")]

- **classical_electron_radius_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("classical electron radius",2.8179403262e-15_dp,0.0000000013e-15_dp,"m")]

- **compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength",2.42631023867e-12_dp,0.00000000073e-12_dp,"m")]

- **conductance_quantum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conductance quantum",7.748091729e-5_dp,0.0_dp,"s")]

- **conventional_value_of_ampere_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of ampere-90",1.00000008887_dp,0.0_dp,"a")]

- **conventional_value_of_coulomb_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of coulomb-90",1.00000008887_dp,0.0_dp,"c")]

- **conventional_value_of_farad_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of farad-90",0.99999998220_dp,0.0_dp,"f")]

- **conventional_value_of_henry_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of henry-90",1.00000001779_dp,0.0_dp,"h")]

- **conventional_value_of_josephson_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of josephson constant",483597.9e9_dp,0.0_dp,"hz v^-1")]

- **conventional_value_of_ohm_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of ohm-90",1.00000001779_dp,0.0_dp,"ohm")]

- **conventional_value_of_volt_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of volt-90",1.00000010666_dp,0.0_dp,"v")]

- **conventional_value_of_von_klitzing_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of von klitzing constant",25812.807_dp,0.0_dp,"ohm")]

- **conventional_value_of_watt_90_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of watt-90",1.00000019553_dp,0.0_dp,"w")]

- **copper_x_unit_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("copper x unit",1.00207697e-13_dp,0.00000028e-13_dp,"m")]

- **deuteron_electron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mag. mom. ratio",-4.664345551e-4_dp,0.000000012e-4_dp,"")]

- **deuteron_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mass ratio",3670.48296788_dp,0.00000013_dp,"")]

- **deuteron_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron g factor",0.8574382338_dp,0.0000000022_dp,"")]

- **deuteron_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom.",4.330735094e-27_dp,0.000000011e-27_dp,"j t^-1")]

- **deuteron_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to bohr magneton ratio",4.669754570e-4_dp,0.000000012e-4_dp,"")]

- **deuteron_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to nuclear magneton ratio",0.8574382338_dp,0.0000000022_dp,"")]

- **deuteron_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass",3.3435837724e-27_dp,0.0000000010e-27_dp,"kg")]

- **deuteron_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent",3.00506323102e-10_dp,0.00000000091e-10_dp,"j")]

- **deuteron_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent in mev",1875.61294257_dp,0.00000057_dp,"mev")]

- **deuteron_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass in u",2.013553212745_dp,0.000000000040_dp,"u")]

- **deuteron_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron molar mass",2.01355321205e-3_dp,0.00000000061e-3_dp,"kg mol^-1")]

- **deuteron_neutron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-neutron mag. mom. ratio",-0.44820653_dp,0.00000011_dp,"")]

- **deuteron_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mag. mom. ratio",0.30701220939_dp,0.00000000079_dp,"")]

- **deuteron_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mass ratio",1.99900750139_dp,0.00000000011_dp,"")]

- **deuteron_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron relative atomic mass",2.013553212745_dp,0.000000000040_dp,"")]

- **deuteron_rms_charge_radius_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron rms charge radius",2.12799e-15_dp,0.00074e-15_dp,"m")]

- **electron_charge_to_mass_quotient_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron charge to mass quotient",-1.75882001076e11_dp,0.00000000053e11_dp,"c kg^-1")]

- **electron_deuteron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mag. mom. ratio",-2143.9234915_dp,0.0000056_dp,"")]

- **electron_deuteron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mass ratio",2.724437107462e-4_dp,0.000000000096e-4_dp,"")]

- **electron_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron g factor",-2.00231930436256_dp,0.00000000000035_dp,"")]

- **electron_gyromag_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio",1.76085963023e11_dp,0.00000000053e11_dp,"s^-1 t^-1")]

- **electron_gyromag_ratio_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio in mhz/t",28024.9514242_dp,0.0000085_dp,"mhz t^-1")]

- **electron_helion_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-helion mass ratio",1.819543074573e-4_dp,0.000000000079e-4_dp,"")]

- **electron_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom.",-9.2847647043e-24_dp,0.0000000028e-24_dp,"j t^-1")]

- **electron_mag_mom_anomaly_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. anomaly",1.15965218128e-3_dp,0.00000000018e-3_dp,"")]

- **electron_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to bohr magneton ratio",-1.00115965218128_dp,0.00000000000018_dp,"")]

- **electron_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to nuclear magneton ratio",-1838.28197188_dp,0.00000011_dp,"")]

- **electron_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass",9.1093837015e-31_dp,0.0000000028e-31_dp,"kg")]

- **electron_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent",8.1871057769e-14_dp,0.0000000025e-14_dp,"j")]

- **electron_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent in mev",0.51099895000_dp,0.00000000015_dp,"mev")]

- **electron_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass in u",5.48579909065e-4_dp,0.00000000016e-4_dp,"u")]

- **electron_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron molar mass",5.4857990888e-7_dp,0.0000000017e-7_dp,"kg mol^-1")]

- **electron_muon_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mag. mom. ratio",206.7669883_dp,0.0000046_dp,"")]

- **electron_muon_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mass ratio",4.83633169e-3_dp,0.00000011e-3_dp,"")]

- **electron_neutron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mag. mom. ratio",960.92050_dp,0.00023_dp,"")]

- **electron_neutron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mass ratio",5.4386734424e-4_dp,0.0000000026e-4_dp,"")]

- **electron_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mag. mom. ratio",-658.21068789_dp,0.00000020_dp,"")]

- **electron_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mass ratio",5.44617021487e-4_dp,0.00000000033e-4_dp,"")]

- **electron_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron relative atomic mass",5.48579909065e-4_dp,0.00000000016e-4_dp,"")]

- **electron_tau_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-tau mass ratio",2.87585e-4_dp,0.00019e-4_dp,"")]

- **electron_to_alpha_particle_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to alpha particle mass ratio",1.370933554787e-4_dp,0.000000000045e-4_dp,"")]

- **electron_to_shielded_helion_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded helion mag. mom. ratio",864.058257_dp,0.000010_dp,"")]

- **electron_to_shielded_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded proton mag. mom. ratio",-658.2275971_dp,0.0000072_dp,"")]

- **electron_triton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-triton mass ratio",1.819200062251e-4_dp,0.000000000090e-4_dp,"")]

- **electron_volt_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt",1.602176634e-19_dp,0.0_dp,"j")]

- **electron_volt_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-atomic mass unit relationship",1.07354410233e-9_dp,0.00000000032e-9_dp,"u")]

- **electron_volt_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hartree relationship",3.6749322175655e-2_dp,0.0000000000071e-2_dp,"e_h")]

- **electron_volt_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hertz relationship",2.417989242e14_dp,0.0_dp,"hz")]

- **electron_volt_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-inverse meter relationship",8.065543937e5_dp,0.0_dp,"m^-1")]

- **electron_volt_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-joule relationship",1.602176634e-19_dp,0.0_dp,"j")]

- **electron_volt_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kelvin relationship",1.160451812e4_dp,0.0_dp,"k")]

- **electron_volt_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kilogram relationship",1.782661921e-36_dp,0.0_dp,"kg")]

- **elementary_charge_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge",1.602176634e-19_dp,0.0_dp,"c")]

- **elementary_charge_over_h_bar_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge over h-bar",1.519267447e15_dp,0.0_dp,"a j^-1")]

- **faraday_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant",96485.33212_dp,0.0_dp,"c mol^-1")]

- **fermi_coupling_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fermi coupling constant",1.1663787e-5_dp,0.0000006e-5_dp,"gev^-2")]

- **fine_structure_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fine-structure constant",7.2973525693e-3_dp,0.0000000011e-3_dp,"")]

- **first_radiation_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant",3.741771852e-16_dp,0.0_dp,"w m^2")]

- **first_radiation_constant_for_spectral_radiance_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant for spectral radiance",1.191042972e-16_dp,0.0_dp,"w m^2 sr^-1")]

- **hartree_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-atomic mass unit relationship",2.92126232205e-8_dp,0.00000000088e-8_dp,"u")]

- **hartree_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-electron volt relationship",27.211386245988_dp,0.000000000053_dp,"ev")]

- **hartree_energy_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy",4.3597447222071e-18_dp,0.0000000000085e-18_dp,"j")]

- **hartree_energy_in_ev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy in ev",27.211386245988_dp,0.000000000053_dp,"ev")]

- **hartree_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-hertz relationship",6.579683920502e15_dp,0.000000000013e15_dp,"hz")]

- **hartree_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-inverse meter relationship",2.1947463136320e7_dp,0.0000000000043e7_dp,"m^-1")]

- **hartree_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-joule relationship",4.3597447222071e-18_dp,0.0000000000085e-18_dp,"j")]

- **hartree_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kelvin relationship",3.1577502480407e5_dp,0.0000000000061e5_dp,"k")]

- **hartree_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kilogram relationship",4.8508702095432e-35_dp,0.0000000000094e-35_dp,"kg")]

- **helion_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-electron mass ratio",5495.88528007_dp,0.00000024_dp,"")]

- **helion_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion g factor",-4.255250615_dp,0.000000050_dp,"")]

- **helion_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom.",-1.074617532e-26_dp,0.000000013e-26_dp,"j t^-1")]

- **helion_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to bohr magneton ratio",-1.158740958e-3_dp,0.000000014e-3_dp,"")]

- **helion_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to nuclear magneton ratio",-2.127625307_dp,0.000000025_dp,"")]

- **helion_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass",5.0064127796e-27_dp,0.0000000015e-27_dp,"kg")]*

- **helion_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent",4.4995394125e-10_dp,0.0000000014e-10_dp,"j")]

- **helion_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent in mev",2808.39160743_dp,0.00000085_dp,"mev")]

- **helion_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass in u",3.014932247175_dp,0.000000000097_dp,"u")]

- **helion_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion molar mass",3.01493224613e-3_dp,0.00000000091e-3_dp,"kg mol^-1")]

- **helion_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-proton mass ratio",2.99315267167_dp,0.00000000013_dp,"")]

- **helion_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion relative atomic mass",3.014932247175_dp,0.000000000097_dp,"")]

- **helion_shielding_shift_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion shielding shift",5.996743e-5_dp,0.000010e-5_dp,"")]

- **hertz_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-atomic mass unit relationship",4.4398216652e-24_dp,0.0000000013e-24_dp,"u")]

- **hertz_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-electron volt relationship",4.135667696e-15_dp,0.0_dp,"ev")]

- **hertz_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-hartree relationship",1.5198298460570e-16_dp,0.0000000000029e-16_dp,"e_h")]

- **hertz_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-inverse meter relationship",3.335640951e-9_dp,0.0_dp,"m^-1")]

- **hertz_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-joule relationship",6.62607015e-34_dp,0.0_dp,"j")]

- **hertz_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kelvin relationship",4.799243073e-11_dp,0.0_dp,"k")]

- **hertz_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kilogram relationship",7.372497323e-51_dp,0.0_dp,"kg")]

- **hyperfine_transition_frequency_of_cs_133_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hyperfine transition frequency of cs-133",9192631770_dp,0.0_dp,"hz")]

- **inverse_fine_structure_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse fine-structure constant",137.035999084_dp,0.000000021_dp,"")]

- **inverse_meter_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-atomic mass unit relationship",1.33102505010e-15_dp,0.00000000040e-15_dp,"u")]

- **inverse_meter_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-electron volt relationship",1.239841984e-6_dp,0.0_dp,"ev")]

- **inverse_meter_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hartree relationship",4.5563352529120e-8_dp,0.0000000000088e-8_dp,"e_h")]

- **inverse_meter_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hertz relationship",299792458_dp,0.0_dp,"hz")]

- **inverse_meter_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-joule relationship",1.986445857e-25_dp,0.0_dp,"j")]

- **inverse_meter_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kelvin relationship",1.438776877e-2_dp,0.0_dp,"k")]

- **inverse_meter_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kilogram relationship",2.210219094e-42_dp,0.0_dp,"kg")]

- **inverse_of_conductance_quantum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse of conductance quantum",12906.40372_dp,0.0_dp,"ohm")]

- **josephson_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("josephson constant",483597.8484e9_dp,0.0_dp,"hz v^-1")]

- **joule_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-atomic mass unit relationship",6.7005352565e9_dp,0.0000000020e9_dp,"u")]

- **joule_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-electron volt relationship",6.241509074e18_dp,0.0_dp,"ev")]

- **joule_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hartree relationship",2.2937122783963e17_dp,0.0000000000045e17_dp,"e_h")]

- **joule_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hertz relationship",1.509190179e33_dp,0.0_dp,"hz")]

- **joule_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-inverse meter relationship",5.034116567e24_dp,0.0_dp,"m^-1")]

- **joule_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kelvin relationship",7.242970516e22_dp,0.0_dp,"k")]

- **joule_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kilogram relationship",1.112650056e-17_dp,0.0_dp,"kg")]

- **kelvin_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-atomic mass unit relationship",9.2510873014e-14_dp,0.0000000028e-14_dp,"u")]

- **kelvin_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-electron volt relationship",8.617333262e-5_dp,0.0_dp,"ev")]

- **kelvin_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hartree relationship",3.1668115634556e-6_dp,0.0000000000061e-6_dp,"e_h")]

- **kelvin_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hertz relationship",2.083661912e10_dp,0.0_dp,"hz")]

- **kelvin_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-inverse meter relationship",69.50348004_dp,0.0_dp,"m^-1")]

- **kelvin_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-joule relationship",1.380649e-23_dp,0.0_dp,"j")]

- **kelvin_kilogram_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-kilogram relationship",1.536179187e-40_dp,0.0_dp,"kg")]

- **kilogram_atomic_mass_unit_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-atomic mass unit relationship",6.0221407621e26_dp,0.0000000018e26_dp,"u")]

- **kilogram_electron_volt_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-electron volt relationship",5.609588603e35_dp,0.0_dp,"ev")]

- **kilogram_hartree_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hartree relationship",2.0614857887409e34_dp,0.0000000000040e34_dp,"e_h")]

- **kilogram_hertz_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hertz relationship",1.356392489e50_dp,0.0_dp,"hz")]

- **kilogram_inverse_meter_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-inverse meter relationship",4.524438335e41_dp,0.0_dp,"m^-1")]

- **kilogram_joule_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-joule relationship",8.987551787e16_dp,0.0_dp,"j")]

- **kilogram_kelvin_relationship_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-kelvin relationship",6.509657260e39_dp,0.0_dp,"k")]

- **lattice_parameter_of_silicon_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice parameter of silicon",5.431020511e-10_dp,0.000000089e-10_dp,"m")]

- **lattice_spacing_of_ideal_si_220_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice spacing of ideal si (220)",1.920155716e-10_dp,0.000000032e-10_dp,"m")]

- **loschmidt_constant_273_15_k_100_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,100 kpa)",2.651645804e25_dp,0.0_dp,"m^-3")]

- **loschmidt_constant_273_15_k_101_325_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,101.325 kpa)",2.686780111e25_dp,0.0_dp,"m^-3")]

- **luminous_efficacy_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("luminous efficacy",683_dp,0.0_dp,"lm w^-1")]

- **mag_flux_quantum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. flux quantum",2.067833848e-15_dp,0.0_dp,"wb")]

- **molar_gas_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar gas constant",8.314462618_dp,0.0_dp,"j mol^-1 k^-1")]

- **molar_mass_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass constant",0.99999999965e-3_dp,0.00000000030e-3_dp,"kg mol^-1")]

- **molar_mass_of_carbon_12_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass of carbon-12",11.9999999958e-3_dp,0.0000000036e-3_dp,"kg mol^-1")]

- **molar_planck_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant",3.990312712e-10_dp,0.0_dp,"j hz^-1 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_100_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,100 kpa)",22.71095464e-3_dp,0.0_dp,"m^3 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_101_325_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,101.325 kpa)",22.41396954e-3_dp,0.0_dp,"m^3 mol^-1")]

- **molar_volume_of_silicon_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of silicon",1.205883199e-5_dp,0.000000060e-5_dp,"m^3 mol^-1")]

- **molybdenum_x_unit_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molybdenum x unit",1.00209952e-13_dp,0.00000053e-13_dp,"m")]

- **muon_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength",1.173444110e-14_dp,0.000000026e-14_dp,"m")]

- **muon_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-electron mass ratio",206.7682830_dp,0.0000046_dp,"")]

- **muon_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon g factor",-2.0023318418_dp,0.0000000013_dp,"")]

- **muon_mag_mom_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom.",-4.49044830e-26_dp,0.00000010e-26_dp,"j t^-1")]*

- **muon_mag_mom_anomaly_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. anomaly",1.16592089e-3_dp,0.00000063e-3_dp,"")]

- **muon_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to bohr magneton ratio",-4.84197047e-3_dp,0.00000011e-3_dp,"")]

- **muon_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to nuclear magneton ratio",-8.89059703_dp,0.00000020_dp,"")]

- **muon_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass",1.883531627e-28_dp,0.000000042e-28_dp,"kg")]*

- **muon_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent",1.692833804e-11_dp,0.000000038e-11_dp,"j")]

- **muon_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent in mev",105.6583755_dp,0.0000023_dp,"mev")]

- **muon_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass in u",0.1134289259_dp,0.0000000025_dp,"u")]

- **muon_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon molar mass",1.134289259e-4_dp,0.000000025e-4_dp,"kg mol^-1")]

- **muon_neutron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-neutron mass ratio",0.1124545170_dp,0.0000000025_dp,"")]

- **muon_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mag. mom. ratio",-3.183345142_dp,0.000000071_dp,"")]

- **muon_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mass ratio",0.1126095264_dp,0.0000000025_dp,"")]

- **muon_tau_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-tau mass ratio",5.94635e-2_dp,0.00040e-2_dp,"")]

- **natural_unit_of_action_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action",1.054571817e-34_dp,0.0_dp,"j s")]

- **natural_unit_of_action_in_ev_s_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action in ev s",6.582119569e-16_dp,0.0_dp,"ev s")]

- **natural_unit_of_energy_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy",8.1871057769e-14_dp,0.0000000025e-14_dp,"j")]

- **natural_unit_of_energy_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy in mev",0.51099895000_dp,0.00000000015_dp,"mev")]

- **natural_unit_of_length_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of length",3.8615926796e-13_dp,0.0000000012e-13_dp,"m")]

- **natural_unit_of_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mass",9.1093837015e-31_dp,0.0000000028e-31_dp,"kg")]

- **natural_unit_of_momentum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of momentum",2.73092453075e-22_dp,0.00000000082e-22_dp,"kg m s^-1")]

- **natural_unit_of_momentum_in_mev_c_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of momentum in mev/c",0.51099895000_dp,0.00000000015_dp,"mev/c")]

- **natural_unit_of_time_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of time",1.28808866819e-21_dp,0.00000000039e-21_dp,"s")]

- **natural_unit_of_velocity_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of velocity",299792458_dp,0.0_dp,"m s^-1")]

- **neutron_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength",1.31959090581e-15_dp,0.00000000075e-15_dp,"m")]

- **neutron_electron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mag. mom. ratio",1.04066882e-3_dp,0.00000025e-3_dp,"")]

- **neutron_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mass ratio",1838.68366173_dp,0.00000089_dp,"")]

- **neutron_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron g factor",-3.82608545_dp,0.00000090_dp,"")]

- **neutron_gyromag_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio",1.83247171e8_dp,0.00000043e8_dp,"s^-1 t^-1")]

- **neutron_gyromag_ratio_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio in mhz/t",29.1646931_dp,0.0000069_dp,"mhz t^-1")]

- **neutron_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom.",-9.6623651e-27_dp,0.0000023e-27_dp,"j t^-1")]

- **neutron_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to bohr magneton ratio",-1.04187563e-3_dp,0.00000025e-3_dp,"")]

- **neutron_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to nuclear magneton ratio",-1.91304273_dp,0.00000045_dp,"")]

- **neutron_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass",1.67492749804e-27_dp,0.00000000095e-27_dp,"kg")]

- **neutron_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent",1.50534976287e-10_dp,0.00000000086e-10_dp,"j")]

- **neutron_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent in mev",939.56542052_dp,0.00000054_dp,"mev")]

- **neutron_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass in u",1.00866491595_dp,0.00000000049_dp,"u")]

- **neutron_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron molar mass",1.00866491560e-3_dp,0.00000000057e-3_dp,"kg mol^-1")]

- **neutron_muon_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-muon mass ratio",8.89248406_dp,0.00000020_dp,"")]

- **neutron_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mag. mom. ratio",-0.68497934_dp,0.00000016_dp,"")]

- **neutron_proton_mass_difference_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference",2.30557435e-30_dp,0.00000082e-30_dp,"kg")]

- **neutron_proton_mass_difference_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent",2.07214689e-13_dp,0.00000074e-13_dp,"j")]

- **neutron_proton_mass_difference_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent in mev",1.29333236_dp,0.00000046_dp,"mev")]

- **neutron_proton_mass_difference_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference in u",1.38844933e-3_dp,0.00000049e-3_dp,"u")]

- **neutron_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass ratio",1.00137841931_dp,0.00000000049_dp,"")]

- **neutron_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron relative atomic mass",1.00866491595_dp,0.00000000049_dp,"")]

- **neutron_tau_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-tau mass ratio",0.528779_dp,0.000036_dp,"")]

- **neutron_to_shielded_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron to shielded proton mag. mom. ratio",-0.68499694_dp,0.00000016_dp,"")]

- **newtonian_constant_of_gravitation_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation",6.67430e-11_dp,0.00015e-11_dp,"m^3 kg^-1 s^-2")]

- **newtonian_constant_of_gravitation_over_h_bar_c_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation over h-bar c",6.70883e-39_dp,0.00015e-39_dp,"(gev/c^2)^-2")]

- **nuclear_magneton_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton",5.0507837461e-27_dp,0.0000000015e-27_dp,"j t^-1")]

- **nuclear_magneton_in_ev_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in ev/t",3.15245125844e-8_dp,0.00000000096e-8_dp,"ev t^-1")]

- **nuclear_magneton_in_inverse_meter_per_tesla_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in inverse meter per tesla",2.54262341353e-2_dp,0.00000000078e-2_dp,"m^-1 t^-1")]

- **nuclear_magneton_in_k_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in k/t",3.6582677756e-4_dp,0.0000000011e-4_dp,"k t^-1")]

- **nuclear_magneton_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in mhz/t",7.6225932291_dp,0.0000000023_dp,"mhz t^-1")]

- **planck_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant",6.62607015e-34_dp,0.0_dp,"j hz^-1")]

- **planck_constant_in_ev_hz_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant in ev/hz",4.135667696e-15_dp,0.0_dp,"ev hz^-1")]

- **planck_length_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck length",1.616255e-35_dp,0.000018e-35_dp,"m")]

- **planck_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass",2.176434e-8_dp,0.000024e-8_dp,"kg")]*

- **planck_mass_energy_equivalent_in_gev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass energy equivalent in gev",1.220890e19_dp,0.000014e19_dp,"gev")]

- **planck_temperature_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck temperature",1.416784e32_dp,0.000016e32_dp,"k")]

- **planck_time_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck time",5.391247e-44_dp,0.000060e-44_dp,"s")]*

- **proton_charge_to_mass_quotient_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton charge to mass quotient",9.5788331560e7_dp,0.0000000029e7_dp,"c kg^-1")]

- **proton_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength",1.32140985539e-15_dp,0.00000000040e-15_dp,"m")]

- **proton_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-electron mass ratio",1836.15267343_dp,0.00000011_dp,"")]

- **proton_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton g factor",5.5856946893_dp,0.0000000016_dp,"")]

- **proton_gyromag_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio",2.6752218744e8_dp,0.0000000011e8_dp,"s^-1 t^-1")]

- **proton_gyromag_ratio_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio in mhz/t",42.577478518_dp,0.000000018_dp,"mhz t^-1")]

- **proton_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom.",1.41060679736e-26_dp,0.00000000060e-26_dp,"j t^-1")]

- **proton_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to bohr magneton ratio",1.52103220230e-3_dp,0.00000000046e-3_dp,"")]

- **proton_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to nuclear magneton ratio",2.79284734463_dp,0.00000000082_dp,"")]

- **proton_mag_shielding_correction_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. shielding correction",2.5689e-5_dp,0.0011e-5_dp,"")]

- **proton_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass",1.67262192369e-27_dp,0.00000000051e-27_dp,"kg")]*

- **proton_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent",1.50327761598e-10_dp,0.00000000046e-10_dp,"j")]

- **proton_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent in mev",938.27208816_dp,0.00000029_dp,"mev")]

- **proton_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass in u",1.007276466621_dp,0.000000000053_dp,"u")]

- **proton_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton molar mass",1.00727646627e-3_dp,0.00000000031e-3_dp,"kg mol^-1")]

- **proton_muon_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-muon mass ratio",8.88024337_dp,0.00000020_dp,"")]

- **proton_neutron_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mag. mom. ratio",-1.45989805_dp,0.00000034_dp,"")]

- **proton_neutron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mass ratio",0.99862347812_dp,0.00000000049_dp,"")]

- **proton_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton relative atomic mass",1.007276466621_dp,0.000000000053_dp,"")]

- **proton_rms_charge_radius_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton rms charge radius",8.414e-16_dp,0.019e-16_dp,"m")]

- **proton_tau_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-tau mass ratio",0.528051_dp,0.000036_dp,"")]

- **quantum_of_circulation_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation",3.6369475516e-4_dp,0.0000000011e-4_dp,"m^2 s^-1")]

- **quantum_of_circulation_times_2_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation times 2",7.2738951032e-4_dp,0.0000000022e-4_dp,"m^2 s^-1")]

- **reduced_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced compton wavelength",3.8615926796e-13_dp,0.0000000012e-13_dp,"m")]

- **reduced_muon_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced muon compton wavelength",1.867594306e-15_dp,0.000000042e-15_dp,"m")]

- **reduced_neutron_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced neutron compton wavelength",2.1001941552e-16_dp,0.0000000012e-16_dp,"m")]

- **reduced_planck_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant",1.054571817e-34_dp,0.0_dp,"j s")]

- **reduced_planck_constant_in_ev_s_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant in ev s",6.582119569e-16_dp,0.0_dp,"ev s")]

- **reduced_planck_constant_times_c_in_mev_fm_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant times c in mev fm",197.3269804_dp,0.0_dp,"mev fm")]

- **reduced_proton_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced proton compton wavelength",2.10308910336e-16_dp,0.00000000064e-16_dp,"m")]

- **reduced_tau_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced tau compton wavelength",1.110538e-16_dp,0.000075e-16_dp,"m")]

- **rydberg_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant",10973731.568160_dp,0.000021_dp,"m^-1")]

- **rydberg_constant_times_c_in_hz_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times c in hz",3.2898419602508e15_dp,0.0000000000064e15_dp,"hz")]

- **rydberg_constant_times_hc_in_ev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in ev",13.605693122994_dp,0.000000000026_dp,"ev")]

- **rydberg_constant_times_hc_in_j_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in j",2.1798723611035e-18_dp,0.0000000000042e-18_dp,"j")]

- **sackur_tetrode_constant_1_k_100_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,100 kpa)",-1.15170753706_dp,0.00000000045_dp,"")]

- **sackur_tetrode_constant_1_k_101_325_kpa_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,101.325 kpa)",-1.16487052358_dp,0.00000000045_dp,"")]

- **second_radiation_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("second radiation constant",1.438776877e-2_dp,0.0_dp,"m k")]

- **shielded_helion_gyromag_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio",2.037894569e8_dp,0.000000024e8_dp,"s^-1 t^-1")]

- **shielded_helion_gyromag_ratio_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio in mhz/t",32.43409942_dp,0.00000038_dp,"mhz t^-1")]

- **shielded_helion_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom.",-1.074553090e-26_dp,0.000000013e-26_dp,"j t^-1")]

- **shielded_helion_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to bohr magneton ratio",-1.158671471e-3_dp,0.000000014e-3_dp,"")]

- **shielded_helion_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to nuclear magneton ratio",-2.127497719_dp,0.000000025_dp,"")]

- **shielded_helion_to_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to proton mag. mom. ratio",-0.7617665618_dp,0.0000000089_dp,"")]

- **shielded_helion_to_shielded_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to shielded proton mag. mom. ratio",-0.7617861313_dp,0.0000000033_dp,"")]

- **shielded_proton_gyromag_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio",2.675153151e8_dp,0.000000029e8_dp,"s^-1 t^-1")]

- **shielded_proton_gyromag_ratio_in_mhz_t_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio in mhz/t",42.57638474_dp,0.00000046_dp,"mhz t^-1")]

- **shielded_proton_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom.",1.410570560e-26_dp,0.000000015e-26_dp,"j t^-1")]

- **shielded_proton_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to bohr magneton ratio",1.520993128e-3_dp,0.000000017e-3_dp,"")]

- **shielded_proton_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to nuclear magneton ratio",2.792775599_dp,0.000000030_dp,"")]

- **shielding_difference_of_d_and_p_in_hd_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielding difference of d and p in hd",2.0200e-8_dp,0.0020e-8_dp,"")]

- **shielding_difference_of_t_and_p_in_ht_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielding difference of t and p in ht",2.4140e-8_dp,0.0020e-8_dp,"")]

- **speed_of_light_in_vacuum_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("speed of light in vacuum",299792458_dp,0.0_dp,"m s^-1")]

- **standard_acceleration_of_gravity_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard acceleration of gravity",9.80665_dp,0.0_dp,"m s^-2")]

- **standard_atmosphere_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard atmosphere",101325_dp,0.0_dp,"pa")]

- **standard_state_pressure_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard-state pressure",100000_dp,0.0_dp,"pa")]

- **stefan_boltzmann_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("stefan-boltzmann constant",5.670374419e-8_dp,0.0_dp,"w m^-2 k^-4")]

- **tau_compton_wavelength_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength",6.97771e-16_dp,0.00047e-16_dp,"m")]

- **tau_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-electron mass ratio",3477.23_dp,0.23_dp,"")]

- **tau_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau energy equivalent",1776.86_dp,0.12_dp,"mev")]

- **tau_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass",3.16754e-27_dp,0.00021e-27_dp,"kg")]*

- **tau_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent",2.84684e-10_dp,0.00019e-10_dp,"j")]

- **tau_mass_in_u_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass in u",1.90754_dp,0.00013_dp,"u")]*

- **tau_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau molar mass",1.90754e-3_dp,0.00013e-3_dp,"kg mol^-1")]

- **tau_muon_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-muon mass ratio",16.8170_dp,0.0011_dp,"")]

- **tau_neutron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-neutron mass ratio",1.89115_dp,0.00013_dp,"")]

- **tau_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-proton mass ratio",1.89376_dp,0.00013_dp,"")]

- **thomson_cross_section_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("thomson cross section",6.6524587321e-29_dp,0.0000000060e-29_dp,"m^2")]

- **triton_electron_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-electron mass ratio",5496.92153573_dp,0.00000027_dp,"")]

- **triton_g_factor_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton g factor",5.957924931_dp,0.000000012_dp,"")]

- **triton_mag_mom_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom.",1.5046095202e-26_dp,0.0000000030e-26_dp,"j t^-1")]

- **triton_mag_mom_to_bohr_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to bohr magneton ratio",1.6223936651e-3_dp,0.0000000032e-3_dp,"")]

- **triton_mag_mom_to_nuclear_magneton_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to nuclear magneton ratio",2.9789624656_dp,0.0000000059_dp,"")]

- **triton_mass_2018** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass",5.0073567446e-27_dp,0.0000000015e-27_dp,"kg")]*

- **triton_mass_energy_equivalent_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent",4.5003878060e-10_dp,0.0000000014e-10_dp,"j")]

- **triton_mass_energy_equivalent_in_mev_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent in mev",2808.92113298_dp,0.00000085_dp,"mev")]

- **triton_mass_in_u_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass in u",3.01550071621_dp,0.00000000012_dp,"u")]

- **triton_molar_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton molar mass",3.01550071517e-3_dp,0.00000000092e-3_dp,"kg mol^-1")]

- **triton_proton_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-proton mass ratio",2.99371703414_dp,0.00000000015_dp,"")]

- **triton_relative_atomic_mass_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton relative atomic mass",3.01550071621_dp,0.00000000012_dp,"")]

- **triton_to_proton_mag_mom_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton to proton mag. mom. ratio",1.0666399191_dp,0.0000000021_dp,"")]

- **unified_atomic_mass_unit_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("unified atomic mass unit",1.66053906660e-27_dp,0.00000000050e-27_dp,"kg")]

- **vacuum_electric_permittivity_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("vacuum electric permittivity",8.8541878128e-12_dp,0.0000000013e-12_dp,"f m^-1")]

- **vacuum_mag_permeability_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("vacuum mag. permeability",1.25663706212e-6_dp,0.00000000019e-6_dp,"n a^-2")]

- **von_klitzing_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("von klitzing constant",25812.80745_dp,0.0_dp,"ohm")]

- **w_to_z_mass_ratio_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("w to z mass ratio",0.88153_dp,0.00017_dp,"")]

- **weak_mixing_angle_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("weak mixing angle",0.22290_dp,0.00030_dp,"")]

- **wien_frequency_displacement_law_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien frequency displacement law constant",5.878925757e10_dp,0.0_dp,"hz k^-1")]

- **wien_wavelength_displacement_law_constant_2018**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien wavelength displacement law constant",2.897771955e-3_dp,0.0_dp,"m k")]

- **year_2018** *[integer,public/parameter/optional/default=2018]*

  ! Year of release.

1.1.7 2022

Description

! Codata Constants - Autogenerated

Quick access

Variables

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_mass_unit_hertz_relationship*, *atomic_mass_unit_inverse_meter_relationship*, *atomic_mass_unit_joule_relationship*, *atomic_mass_unit_kelvin_relationship*, *atomic_mass_unit_kilogram_relationship*, *atomic_unit_of_1st_hyperpolarizability*, *atomic_unit_of_2nd_hyperpolarizability*, *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_in_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_helion_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_helion_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_radiance, 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_silicon,
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_silicon,
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_equivale
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_helion_gyromag_ratio, shielded_helion_gyromag_ratio_in_mhz_t, shielded_helion_mag_mom, shielded_helion_mag_mom_to_bohr_magneton_ratio, shielded_helion_mag_mom_to_nuclear_magneton_ratio, shielded_helion_to_proton_mag_mom_ratio, shielded_helion_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_rati
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, w_to_z_mass_ratio, weak_mixing_angle, wien_frequency_displacement_law_constant, wien_wavelength_displacement_law_constant, year

Needed modules

- stdlib_kinds (dp(), int32())
- codata__constants_type: ! Codata constant type

Variables

- **alpha_particle_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-electron mass ratio",7294.29954171_dp,0.00000017_dp,"")]

- **alpha_particle_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass",6.6446573450e-27_dp,0.0000000021e-27_dp,"kg")]

- **alpha_particle_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent",5.9719201997e-10_dp,0.0000000019e-10_dp,"j")]

- **alpha_particle_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass energy equivalent in mev",3727.3794118_dp,0.0000012_dp,"mev")]

- **alpha_particle_mass_in_u**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle mass in u",4.001506179129_dp,0.000000000062_dp,"u")]

- **alpha_particle_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle molar mass",4.0015061833e-3_dp,0.0000000012e-3_dp,"kg mol^-1")]

- **alpha_particle_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle-proton mass ratio",3.972599690252_dp,0.000000000070_dp,"")]

- **alpha_particle_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle relative atomic mass",4.001506179129_dp,0.000000000062_dp,"")]

- **alpha_particle_rms_charge_radius**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("alpha particle rms charge radius",1.6785e-15_dp,0.0021e-15_dp,"m")]

- **angstrom_star** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("angstrom star",1.00001495e-10_dp,0.00000090e-10_dp,"m")]*

- **atomic_mass_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant",1.66053906892e-27_dp,0.00000000052e-27_dp,"kg")]

- **atomic_mass_constant_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent",1.49241808768e-10_dp,0.00000000046e-10_dp,"j")]

- **atomic_mass_constant_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass constant energy equivalent in mev",931.49410372_dp,0.00000029_dp,"mev")]

- **atomic_mass_unit_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-electron volt relationship",9.3149410372e8_dp,0.0000000029e8_dp,"ev")]

- **atomic_mass_unit_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hartree relationship",3.4231776922e7_dp,0.0000000011e7_dp,"e_h")]

- **atomic_mass_unit_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-hertz relationship",2.25234272185e23_dp,0.00000000070e23_dp,"hz")]

- **atomic_mass_unit_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-inverse meter relationship",7.5130066209e14_dp,0.0000000023e14_dp,"m^-1")]

- **atomic_mass_unit_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-joule relationship",1.49241808768e-10_dp,0.00000000046e-10_dp,"j")]

- **atomic_mass_unit_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kelvin relationship",1.08095402067e13_dp,0.00000000034e13_dp,"k")]

- **atomic_mass_unit_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic mass unit-kilogram relationship",1.66053906892e-27_dp,0.00000000052e-27_dp,"kg")]

- **atomic_unit_of_1st_hyperpolarizability**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 1st hyperpolarizability",3.2063612996e-53_dp,0.0000000015e-53_dp,"c^3 m^3 j^-2")]

- **atomic_unit_of_2nd_hyperpolarizability**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of 2nd hyperpolarizability",6.2353799735e-65_dp,0.0000000039e-65_dp,"c^4 m^4 j^-3")]

- **atomic_unit_of_action**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of action",1.054571817e-34_dp,0.0_dp,"j s")]

- **atomic_unit_of_charge**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge",1.602176634e-19_dp,0.0_dp,"c")]

- **atomic_unit_of_charge_density**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of charge density",1.08120238677e12_dp,0.00000000051e12_dp,"c m^-3")]

- **atomic_unit_of_current**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of current",6.6236182375082e-3_dp,0.0000000000072e-3_dp,"a")]

- **atomic_unit_of_electric_dipole_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric dipole mom.",8.4783536198e-30_dp,0.0000000013e-30_dp,"c m")]

- **atomic_unit_of_electric_field**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field",5.14220675112e11_dp,0.00000000080e11_dp,"v m^-1")]

- **atomic_unit_of_electric_field_gradient**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric field gradient",9.7173624424e21_dp,0.0000000030e21_dp,"v m^-2")]

- **atomic_unit_of_electric_polarizability**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric polarizability",1.64877727212e-41_dp,0.00000000051e-41_dp,"c^2 m^2 j^-1")]

- **atomic_unit_of_electric_potential**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric potential",27.211386245981_dp,0.000000000030_dp,"v")]

- **atomic_unit_of_electric_quadrupole_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of electric quadrupole mom.",4.4865515185e-40_dp,0.0000000014e-40_dp,"c m^2")]

- **atomic_unit_of_energy**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of energy",4.3597447222060e-18_dp,0.0000000000048e-18_dp,"j")]

- **atomic_unit_of_force**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of force",8.2387235038e-8_dp,0.0000000013e-8_dp,"n")]

- **atomic_unit_of_length**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of length",5.29177210544e-11_dp,0.00000000082e-11_dp,"m")]

- **atomic_unit_of_mag_dipole_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. dipole mom.",1.85480201315e-23_dp,0.00000000058e-23_dp,"j t^-1")]

- **atomic_unit_of_mag_flux_density**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mag. flux density",2.35051757077e5_dp,0.00000000073e5_dp,"t")]

- **atomic_unit_of_magnetizability**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of magnetizability",7.8910365794e-29_dp,0.0000000049e-29_dp,"j t^-2")]

- **atomic_unit_of_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of mass",9.1093837139e-31_dp,0.0000000028e-31_dp,"kg")]

- **atomic_unit_of_momentum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of momentum",1.99285191545e-24_dp,0.00000000031e-24_dp,"kg m s^-1")]

- **atomic_unit_of_permittivity**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of permittivity",1.11265005620e-10_dp,0.00000000017e-10_dp,"f m^-1")]

- **atomic_unit_of_time**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of time",2.4188843265864e-17_dp,0.0000000000026e-17_dp,"s")]

- **atomic_unit_of_velocity**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("atomic unit of velocity",2.18769126216e6_dp,0.00000000034e6_dp,"m s^-1")]

- **avogadro_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("avogadro constant",6.02214076e23_dp,0.0_dp,"mol^-1")]

- **bohr_magneton** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton",9.2740100657e-24_dp,0.0000000029e-24_dp,"j t^-1")]*

- **bohr_magneton_in_ev_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in ev/t",5.7883817982e-5_dp,0.0000000018e-5_dp,"ev t^-1")]

- **bohr_magneton_in_hz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in hz/t",1.39962449171e10_dp,0.00000000044e10_dp,"hz t^-1")]

- **bohr_magneton_in_inverse_meter_per_tesla**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in inverse meter per tesla",46.686447719_dp,0.000000015_dp,"m^-1 t^-1")]

- **bohr_magneton_in_k_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr magneton in k/t",0.67171381472_dp,0.00000000021_dp,"k t^-1")]

- **bohr_radius** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("bohr radius",5.29177210544e-11_dp,0.00000000082e-11_dp,"m")]*

- **boltzmann_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant",1.380649e-23_dp,0.0_dp,"j k^-1")]

- **boltzmann_constant_in_ev_k**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in ev/k",8.617333262e-5_dp,0.0_dp,"ev k^-1")]

- **boltzmann_constant_in_hz_k**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in hz/k",2.083661912e10_dp,0.0_dp,"hz k^-1")]

- **boltzmann_constant_in_inverse_meter_per_kelvin**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("boltzmann constant in inverse meter per kelvin",69.50348004_dp,0.0_dp,"m^-1 k^-1")]

- **characteristic_impedance_of_vacuum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("characteristic impedance of vacuum",376.730313412_dp,0.000000059_dp,"ohm")]

- **classical_electron_radius**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("classical electron radius",2.8179403205e-15_dp,0.0000000013e-15_dp,"m")]

- **compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("compton wavelength",2.42631023538e-12_dp,0.00000000076e-12_dp,"m")]

- **conductance_quantum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conductance quantum",7.748091729e-5_dp,0.0_dp,"s")]

- **conventional_value_of_ampere_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of ampere-90",1.00000008887_dp,0.0_dp,"a")]

- **conventional_value_of_coulomb_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of coulomb-90",1.00000008887_dp,0.0_dp,"c")]

- **conventional_value_of_farad_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of farad-90",0.99999998220_dp,0.0_dp,"f")]

- **conventional_value_of_henry_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of henry-90",1.00000001779_dp,0.0_dp,"h")]

- **conventional_value_of_josephson_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of josephson constant",483597.9e9_dp,0.0_dp,"hz v^-1")]

- **conventional_value_of_ohm_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of ohm-90",1.00000001779_dp,0.0_dp,"ohm")]

- **conventional_value_of_volt_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of volt-90",1.00000010666_dp,0.0_dp,"v")]

- **conventional_value_of_von_klitzing_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of von klitzing constant",25812.807_dp,0.0_dp,"ohm")]

- **conventional_value_of_watt_90**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("conventional value of watt-90",1.00000019553_dp,0.0_dp,"w")]

- **copper_x_unit** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("copper x unit",1.00207697e-13_dp,0.00000028e-13_dp,"m")]*

- **deuteron_electron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mag. mom. ratio",-4.664345550e-4_dp,0.000000012e-4_dp,"")]

- **deuteron_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-electron mass ratio",3670.482967655_dp,0.000000063_dp,"")]

- **deuteron_g_factor**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron g factor",0.8574382335_dp,0.0000000022_dp,"")]

- **deuteron_mag_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom.",4.330735087e-27_dp,0.000000011e-27_dp,"j t^-1")]

- **deuteron_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to bohr magneton ratio",4.669754568e-4_dp,0.000000012e-4_dp,"")]

- **deuteron_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mag. mom. to nuclear magneton ratio",0.8574382335_dp,0.0000000022_dp,"")]

- **deuteron_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass",3.3435837768e-27_dp,0.0000000010e-27_dp,"kg")]*
- **deuteron_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent",3.00506323491e-10_dp,0.00000000094e-10_dp,"j")]
- **deuteron_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass energy equivalent in mev",1875.61294500_dp,0.00000058_dp,"mev")]
- **deuteron_mass_in_u**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron mass in u",2.013553212544_dp,0.000000000015_dp,"u")]
- **deuteron_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron molar mass",2.01355321466e-3_dp,0.00000000063e-3_dp,"kg mol^-1")]
- **deuteron_neutron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-neutron mag. mom. ratio",-0.44820652_dp,0.00000011_dp,"")]
- **deuteron_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mag. mom. ratio",0.30701220930_dp,0.00000000079_dp,"")]
- **deuteron_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron-proton mass ratio",1.9990075012699_dp,0.0000000000084_dp,"")]
- **deuteron_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron relative atomic mass",2.013553212544_dp,0.000000000015_dp,"")]
- **deuteron_rms_charge_radius**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("deuteron rms charge radius",2.12778e-15_dp,0.00027e-15_dp,"m")]
- **electron_charge_to_mass_quotient**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron charge to mass quotient",-1.75882000838e11_dp,0.00000000055e11_dp,"c kg^-1")]
- **electron_deuteron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mag. mom. ratio",-2143.9234921_dp,0.0000056_dp,"")]
- **electron_deuteron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-deuteron mass ratio",2.724437107629e-4_dp,0.000000000047e-4_dp,"")]
- **electron_g_factor**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron g factor",-2.00231930436092_dp,0.00000000000036_dp,"")]

- **electron_gyromag_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio",1.76085962784e11_dp,0.00000000055e11_dp,"s^-1 t^-1")]

- **electron_gyromag_ratio_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron gyromag. ratio in mhz/t",28024.9513861_dp,0.0000087_dp,"mhz t^-1")]

- **electron_helion_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-helion mass ratio",1.819543074649e-4_dp,0.000000000053e-4_dp,"")]

- **electron_mag_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom.",-9.2847646917e-24_dp,0.0000000029e-24_dp,"j t^-1")]

- **electron_mag_mom_anomaly**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. anomaly",1.15965218046e-3_dp,0.00000000018e-3_dp,"")]

- **electron_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to bohr magneton ratio",-1.00115965218046_dp,0.00000000000018_dp,"")]

- **electron_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mag. mom. to nuclear magneton ratio",-1838.281971877_dp,0.000000032_dp,"")]

- **electron_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass",9.1093837139e-31_dp,0.0000000028e-31_dp,"kg")]*

- **electron_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent",8.1871057880e-14_dp,0.0000000026e-14_dp,"j")]

- **electron_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass energy equivalent in mev",0.51099895069_dp,0.00000000016_dp,"mev")]

- **electron_mass_in_u**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron mass in u",5.485799090441e-4_dp,0.000000000097e-4_dp,"u")]

- **electron_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron molar mass",5.4857990962e-7_dp,0.0000000017e-7_dp,"kg mol^-1")]

- **electron_muon_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mag. mom. ratio",206.7669881_dp,0.0000046_dp,"")]

- **electron_muon_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-muon mass ratio",4.83633170e-3_dp,0.00000011e-3_dp,"")]

- **electron_neutron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mag. mom. ratio",960.92048_dp,0.00023_dp,"")]

- **electron_neutron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-neutron mass ratio",5.4386734416e-4_dp,0.0000000022e-4_dp,"")]

- **electron_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mag. mom. ratio",-658.21068789_dp,0.00000019_dp,"")]

- **electron_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-proton mass ratio",5.446170214889e-4_dp,0.000000000094e-4_dp,"")]

- **electron_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron relative atomic mass",5.485799090441e-4_dp,0.000000000097e-4_dp,"")]

- **electron_tau_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-tau mass ratio",2.87585e-4_dp,0.00019e-4_dp,"")]

- **electron_to_alpha_particle_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to alpha particle mass ratio",1.370933554733e-4_dp,0.000000000032e-4_dp,"")]

- **electron_to_shielded_helion_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded helion mag. mom. ratio",864.05823986_dp,0.00000070_dp,"")]

- **electron_to_shielded_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron to shielded proton mag. mom. ratio",-658.2275856_dp,0.0000027_dp,"")]

- **electron_triton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron-triton mass ratio",1.819200062327e-4_dp,0.000000000068e-4_dp,"")]

- **electron_volt** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt",1.602176634e-19_dp,0.0_dp,"j")]*

- **electron_volt_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-atomic mass unit relationship",1.07354410083e-9_dp,0.00000000033e-9_dp,"u")]

- **electron_volt_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hartree relationship",3.6749322175665e-2_dp,0.0000000000040e-2_dp,"e_h")]

- **electron_volt_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-hertz relationship",2.417989242e14_dp,0.0_dp,"hz")]

- **electron_volt_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-inverse meter relationship",8.065543937e5_dp,0.0_dp,"m^-1")]

- **electron_volt_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-joule relationship",1.602176634e-19_dp,0.0_dp,"j")]

- **electron_volt_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kelvin relationship",1.160451812e4_dp,0.0_dp,"k")]

- **electron_volt_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("electron volt-kilogram relationship",1.782661921e-36_dp,0.0_dp,"kg")]

- **elementary_charge**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge",1.602176634e-19_dp,0.0_dp,"c")]

- **elementary_charge_over_h_bar**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("elementary charge over h-bar",1.519267447e15_dp,0.0_dp,"a j^-1")]

- **faraday_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("faraday constant",96485.33212_dp,0.0_dp,"c mol^-1")]

- **fermi_coupling_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fermi coupling constant",1.1663787e-5_dp,0.0000006e-5_dp,"gev^-2")]

- **fine_structure_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("fine-structure constant",7.2973525643e-3_dp,0.0000000011e-3_dp,"")]

- **first_radiation_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant",3.741771852e-16_dp,0.0_dp,"w m^2")]

- **first_radiation_constant_for_spectral_radiance**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("first radiation constant for spectral radiance",1.191042972e-16_dp,0.0_dp,"w m^2 sr^-1")]

- **hartree_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-atomic mass unit relationship",2.92126231797e-8_dp,0.00000000091e-8_dp,"u")]

- **hartree_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-electron volt relationship",27.211386245981_dp,0.000000000030_dp,"ev")]

- **hartree_energy** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy",4.3597447222060e-18_dp,0.0000000000048e-18_dp,"j")]*

- **hartree_energy_in_ev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree energy in ev",27.211386245981_dp,0.000000000030_dp,"ev")]

- **hartree_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-hertz relationship",6.5796839204999e15_dp,0.0000000000072e15_dp,"hz")]

- **hartree_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-inverse meter relationship",2.1947463136314e7_dp,0.0000000000024e7_dp,"m^-1")]

- **hartree_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-joule relationship",4.3597447222060e-18_dp,0.0000000000048e-18_dp,"j")]

- **hartree_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kelvin relationship",3.1577502480398e5_dp,0.0000000000034e5_dp,"k")]

- **hartree_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hartree-kilogram relationship",4.8508702095419e-35_dp,0.0000000000053e-35_dp,"kg")]

- **helion_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-electron mass ratio",5495.88527984_dp,0.00000016_dp,"")]

- **helion_g_factor** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion g factor",-4.2552506995_dp,0.0000000034_dp,"")]*

- **helion_mag_mom** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom.",-1.07461755198e-26_dp,0.00000000093e-26_dp,"j t^-1")]*

- **helion_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to bohr magneton ratio",-1.15874098083e-3_dp,0.00000000094e-3_dp,"")]

- **helion_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mag. mom. to nuclear magneton ratio",-2.1276253498_dp,0.0000000017_dp,"")]

- **helion_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass",5.0064127862e-27_dp,0.0000000016e-27_dp,"kg")]*

- **helion_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent",4.4995394185e-10_dp,0.0000000014e-10_dp,"j")]

- **helion_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass energy equivalent in mev",2808.39161112_dp,0.00000088_dp,"mev")]

- **helion_mass_in_u** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("helion mass in u",3.014932246932_dp,0.000000000074_dp,"u")]*

- **helion_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion molar mass",3.01493225010e-3_dp,0.00000000094e-3_dp,"kg mol^-1")]

- **helion_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion-proton mass ratio",2.993152671552_dp,0.000000000070_dp,"")]

- **helion_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion relative atomic mass",3.014932246932_dp,0.000000000074_dp,"")]

- **helion_shielding_shift**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("helion shielding shift",5.9967029e-5_dp,0.0000023e-5_dp,"")]

- **hertz_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-atomic mass unit relationship",4.4398216590e-24_dp,0.0000000014e-24_dp,"u")]

- **hertz_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-electron volt relationship",4.135667696e-15_dp,0.0_dp,"ev")]

- **hertz_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-hartree relationship",1.5198298460574e-16_dp,0.0000000000017e-16_dp,"e_h")]

- **hertz_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-inverse meter relationship",3.335640951e-9_dp,0.0_dp,"m^-1")]

- **hertz_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-joule relationship",6.62607015e-34_dp,0.0_dp,"j")]

- **hertz_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kelvin relationship",4.799243073e-11_dp,0.0_dp,"k")]

- **hertz_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hertz-kilogram relationship",7.372497323e-51_dp,0.0_dp,"kg")]

- **hyperfine_transition_frequency_of_cs_133**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("hyperfine transition frequency of cs-133",9192631770_dp,0.0_dp,"hz")]

- **inverse_fine_structure_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse fine-structure constant",137.035999177_dp,0.000000021_dp,"")]

- **inverse_meter_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-atomic mass unit relationship",1.33102504824e-15_dp,0.00000000041e-15_dp,"u")]

- **inverse_meter_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-electron volt relationship",1.239841984e-6_dp,0.0_dp,"ev")]

- **inverse_meter_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hartree relationship",4.5563352529132e-8_dp,0.0000000000050e-8_dp,"e_h")]

- **inverse_meter_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-hertz relationship",299792458_dp,0.0_dp,"hz")]

- **inverse_meter_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-joule relationship",1.986445857e-25_dp,0.0_dp,"j")]

- **inverse_meter_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kelvin relationship",1.438776877e-2_dp,0.0_dp,"k")]

- **inverse_meter_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse meter-kilogram relationship",2.210219094e-42_dp,0.0_dp,"kg")]

- **inverse_of_conductance_quantum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("inverse of conductance quantum",12906.40372_dp,0.0_dp,"ohm")]

- **josephson_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("josephson constant",483597.8484e9_dp,0.0_dp,"hz v^-1")]

- **joule_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-atomic mass unit relationship",6.7005352471e9_dp,0.0000000021e9_dp,"u")]

- **joule_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-electron volt relationship",6.241509074e18_dp,0.0_dp,"ev")]

- **joule_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hartree relationship",2.2937122783969e17_dp,0.0000000000025e17_dp,"e_h")]

- **joule_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-hertz relationship",1.509190179e33_dp,0.0_dp,"hz")]

- **joule_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-inverse meter relationship",5.034116567e24_dp,0.0_dp,"m^-1")]

- **joule_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kelvin relationship",7.242970516e22_dp,0.0_dp,"k")]

- **joule_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("joule-kilogram relationship",1.112650056e-17_dp,0.0_dp,"kg")]

- **kelvin_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-atomic mass unit relationship",9.2510872884e-14_dp,0.0000000029e-14_dp,"u")]

- **kelvin_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-electron volt relationship",8.617333262e-5_dp,0.0_dp,"ev")]

- **kelvin_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hartree relationship",3.1668115634564e-6_dp,0.0000000000035e-6_dp,"e_h")]

- **kelvin_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-hertz relationship",2.083661912e10_dp,0.0_dp,"hz")]

- **kelvin_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-inverse meter relationship",69.50348004_dp,0.0_dp,"m^-1")]

- **kelvin_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-joule relationship",1.380649e-23_dp,0.0_dp,"j")]

- **kelvin_kilogram_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kelvin-kilogram relationship",1.536179187e-40_dp,0.0_dp,"kg")]

- **kilogram_atomic_mass_unit_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-atomic mass unit relationship",6.0221407537e26_dp,0.0000000019e26_dp,"u")]

- **kilogram_electron_volt_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-electron volt relationship",5.609588603e35_dp,0.0_dp,"ev")]

- **kilogram_hartree_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hartree relationship",2.0614857887415e34_dp,0.0000000000022e34_dp,"e_h")]

- **kilogram_hertz_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-hertz relationship",1.356392489e50_dp,0.0_dp,"hz")]

- **kilogram_inverse_meter_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-inverse meter relationship",4.524438335e41_dp,0.0_dp,"m^-1")]

- **kilogram_joule_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-joule relationship",8.987551787e16_dp,0.0_dp,"j")]

- **kilogram_kelvin_relationship**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("kilogram-kelvin relationship",6.509657260e39_dp,0.0_dp,"k")]

- **lattice_parameter_of_silicon**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice parameter of silicon",5.431020511e-10_dp,0.000000089e-10_dp,"m")]

- **lattice_spacing_of_ideal_si_220**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("lattice spacing of ideal si (220)",1.920155716e-10_dp,0.000000032e-10_dp,"m")]

- **loschmidt_constant_273_15_k_100_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,100 kpa)",2.651645804e25_dp,0.0_dp,"m^-3")]

- **loschmidt_constant_273_15_k_101_325_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("loschmidt constant (273.15 k,101.325 kpa)",2.686780111e25_dp,0.0_dp,"m^-3")]

- **luminous_efficacy**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("luminous efficacy",683_dp,0.0_dp,"lm w^-1")]

- **mag_flux_quantum** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("mag. flux quantum",2.067833848e-15_dp,0.0_dp,"wb")]*

- **molar_gas_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar gas constant",8.314462618_dp,0.0_dp,"j mol^-1 k^-1")]

- **molar_mass_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass constant",1.00000000105e-3_dp,0.00000000031e-3_dp,"kg mol^-1")]

- **molar_mass_of_carbon_12**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar mass of carbon-12",12.0000000126e-3_dp,0.0000000037e-3_dp,"kg mol^-1")]

- **molar_planck_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar planck constant",3.990312712e-10_dp,0.0_dp,"j hz^-1 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_100_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,100 kpa)",22.71095464e-3_dp,0.0_dp,"m^3 mol^-1")]

- **molar_volume_of_ideal_gas_273_15_k_101_325_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of ideal gas (273.15 k,101.325 kpa)",22.41396954e-3_dp,0.0_dp,"m^3 mol^-1")]

- **molar_volume_of_silicon**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molar volume of silicon",1.205883199e-5_dp,0.000000060e-5_dp,"m^3 mol^-1")]

- **molybdenum_x_unit**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("molybdenum x unit",1.00209952e-13_dp,0.00000053e-13_dp,"m")]

- **muon_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon compton wavelength",1.173444110e-14_dp,0.000000026e-14_dp,"m")]

- **muon_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-electron mass ratio",206.7682827_dp,0.0000046_dp,"")]

- **muon_g_factor** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon g factor",-2.00233184123_dp,0.00000000082_dp,"")]*

- **muon_mag_mom** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom.",-4.49044830e-26_dp,0.00000010e-26_dp,"j t^-1")]*

- **muon_mag_mom_anomaly**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. anomaly",1.16592062e-3_dp,0.00000041e-3_dp,"")]

- **muon_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to bohr magneton ratio",-4.84197048e-3_dp,0.00000011e-3_dp,"")]

- **muon_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mag. mom. to nuclear magneton ratio",-8.89059704_dp,0.00000020_dp,"")]

- **muon_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass",1.883531627e-28_dp,0.000000042e-28_dp,"kg")]*

- **muon_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent",1.692833804e-11_dp,0.000000038e-11_dp,"j")]

- **muon_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass energy equivalent in mev",105.6583755_dp,0.0000023_dp,"mev")]

- **muon_mass_in_u** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon mass in u",0.1134289257_dp,0.0000000025_dp,"u")]*

- **muon_molar_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("muon molar mass",1.134289258e-4_dp,0.000000025e-4_dp,"kg mol^-1")]*

- **muon_neutron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-neutron mass ratio",0.1124545168_dp,0.0000000025_dp,"")]

- **muon_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mag. mom. ratio",-3.183345146_dp,0.000000071_dp,"")]

- **muon_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-proton mass ratio",0.1126095262_dp,0.0000000025_dp,"")]

- **muon_tau_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("muon-tau mass ratio",5.94635e-2_dp,0.00040e-2_dp,"")]

- **natural_unit_of_action**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action",1.054571817e-34_dp,0.0_dp,"j s")]

- **natural_unit_of_action_in_ev_s**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of action in ev s",6.582119569e-16_dp,0.0_dp,"ev s")]

- **natural_unit_of_energy**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy",8.1871057880e-14_dp,0.0000000026e-14_dp,"j")]

- **natural_unit_of_energy_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of energy in mev",0.51099895069_dp,0.00000000016_dp,"mev")]

- **natural_unit_of_length**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of length",3.8615926744e-13_dp,0.0000000012e-13_dp,"m")]

- **natural_unit_of_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of mass",9.1093837139e-31_dp,0.0000000028e-31_dp,"kg")]

- **natural_unit_of_momentum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of momentum",2.73092453446e-22_dp,0.00000000085e-22_dp,"kg m s^-1")]

- **natural_unit_of_momentum_in_mev_c**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of momentum in mev/c",0.51099895069_dp,0.00000000016_dp,"mev/c")]

- **natural_unit_of_time**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of time",1.28808866644e-21_dp,0.00000000040e-21_dp,"s")]

- **natural_unit_of_velocity**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("natural unit of velocity",299792458_dp,0.0_dp,"m s^-1")]

- **neutron_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron compton wavelength",1.31959090382e-15_dp,0.00000000067e-15_dp,"m")]

- **neutron_electron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mag. mom. ratio",1.04066884e-3_dp,0.00000024e-3_dp,"")]

- **neutron_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-electron mass ratio",1838.68366200_dp,0.00000074_dp,"")]

- **neutron_g_factor**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron g factor",-3.82608552_dp,0.00000090_dp,"")]

- **neutron_gyromag_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio",1.83247174e8_dp,0.00000043e8_dp,"s^-1 t^-1")]

- **neutron_gyromag_ratio_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron gyromag. ratio in mhz/t",29.1646935_dp,0.0000069_dp,"mhz t^-1")]

- **neutron_mag_mom** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom.",-9.6623653e-27_dp,0.0000023e-27_dp,"j t^-1")]*

- **neutron_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to bohr magneton ratio",-1.04187565e-3_dp,0.00000025e-3_dp,"")]

- **neutron_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mag. mom. to nuclear magneton ratio",-1.91304276_dp,0.00000045_dp,"")]

- **neutron_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass",1.67492750056e-27_dp,0.00000000085e-27_dp,"kg")]*

- **neutron_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent",1.50534976514e-10_dp,0.00000000076e-10_dp,"j")]

- **neutron_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass energy equivalent in mev",939.56542194_dp,0.00000048_dp,"mev")]

- **neutron_mass_in_u**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron mass in u",1.00866491606_dp,0.00000000040_dp,"u")]

- **neutron_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron molar mass",1.00866491712e-3_dp,0.00000000051e-3_dp,"kg mol^-1")]

- **neutron_muon_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-muon mass ratio",8.89248408_dp,0.00000020_dp,"")]

- **neutron_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mag. mom. ratio",-0.68497935_dp,0.00000016_dp,"")]

- **neutron_proton_mass_difference**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference",2.30557461e-30_dp,0.00000067e-30_dp,"kg")]

- **neutron_proton_mass_difference_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent",2.07214712e-13_dp,0.00000060e-13_dp,"j")]

- **neutron_proton_mass_difference_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference energy equivalent in mev",1.29333251_dp,0.00000038_dp,"mev")]

- **neutron_proton_mass_difference_in_u**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass difference in u",1.38844948e-3_dp,0.00000040e-3_dp,"u")]

- **neutron_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-proton mass ratio",1.00137841946_dp,0.00000000040_dp,"")]

- **neutron_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron relative atomic mass",1.00866491606_dp,0.00000000040_dp,"")]

- **neutron_tau_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron-tau mass ratio",0.528779_dp,0.000036_dp,"")]

- **neutron_to_shielded_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("neutron to shielded proton mag. mom. ratio",-0.68499694_dp,0.00000016_dp,"")]

- **newtonian_constant_of_gravitation**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation",6.67430e-11_dp,0.00015e-11_dp,"m^3 kg^-1 s^-2")]

- **newtonian_constant_of_gravitation_over_h_bar_c**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("newtonian constant of gravitation over h-bar c",6.70883e-39_dp,0.00015e-39_dp,"(gev/c^2)^-2")]

- **nuclear_magneton**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton",5.0507837393e-27_dp,0.0000000016e-27_dp,"j t^-1")]

- **nuclear_magneton_in_ev_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in ev/t",3.15245125417e-8_dp,0.00000000098e-8_dp,"ev t^-1")]

- **nuclear_magneton_in_inverse_meter_per_tesla**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in inverse meter per tesla",2.54262341009e-2_dp,0.00000000079e-2_dp,"m^-1 t^-1")]

- **nuclear_magneton_in_k_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in k/t",3.6582677706e-4_dp,0.0000000011e-4_dp,"k t^-1")]

- **nuclear_magneton_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("nuclear magneton in mhz/t",7.6225932188_dp,0.0000000024_dp,"mhz t^-1")]

- **planck_constant** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant",6.62607015e-34_dp,0.0_dp,"j hz^-1")]*

- **planck_constant_in_ev_hz**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck constant in ev/hz",4.135667696e-15_dp,0.0_dp,"ev hz^-1")]

- **planck_length** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck length",1.616255e-35_dp,0.000018e-35_dp,"m")]*

- **planck_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass",2.176434e-8_dp,0.000024e-8_dp,"kg")]*

- **planck_mass_energy_equivalent_in_gev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck mass energy equivalent in gev",1.220890e19_dp,0.000014e19_dp,"gev")]

- **planck_temperature**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("planck temperature",1.416784e32_dp,0.000016e32_dp,"k")]

- **planck_time** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("planck time",5.391247e-44_dp,0.000060e-44_dp,"s")]*

- **proton_charge_to_mass_quotient**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton charge to mass quotient",9.5788331430e7_dp,0.0000000030e7_dp,"c kg^-1")]

- **proton_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton compton wavelength",1.32140985360e-15_dp,0.00000000041e-15_dp,"m")]

- **proton_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-electron mass ratio",1836.152673426_dp,0.000000032_dp,"")]

- **proton_g_factor** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton g factor",5.5856946893_dp,0.0000000016_dp,"")]*

- **proton_gyromag_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio",2.6752218708e8_dp,0.0000000011e8_dp,"s^-1 t^-1")]

- **proton_gyromag_ratio_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton gyromag. ratio in mhz/t",42.577478461_dp,0.000000018_dp,"mhz t^-1")]

- **proton_mag_mom** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom.",1.41060679545e-26_dp,0.00000000060e-26_dp,"j t^-1")]*

- **proton_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to bohr magneton ratio",1.52103220230e-3_dp,0.00000000045e-3_dp,"")]

- **proton_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. mom. to nuclear magneton ratio",2.79284734463_dp,0.00000000082_dp,"")]

- **proton_mag_shielding_correction**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mag. shielding correction",2.56715e-5_dp,0.00041e-5_dp,"")]

- **proton_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass",1.67262192595e-27_dp,0.00000000052e-27_dp,"kg")]*

- **proton_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent",1.50327761802e-10_dp,0.00000000047e-10_dp,"j")]

- **proton_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass energy equivalent in mev",938.27208943_dp,0.00000029_dp,"mev")]

- **proton_mass_in_u** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("proton mass in u",1.0072764665789_dp,0.0000000000083_dp,"u")]*

- **proton_molar_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton molar mass",1.00727646764e-3_dp,0.00000000031e-3_dp,"kg mol^-1")]

- **proton_muon_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-muon mass ratio",8.88024338_dp,0.00000020_dp,"")]

- **proton_neutron_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mag. mom. ratio",-1.45989802_dp,0.00000034_dp,"")]

- **proton_neutron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-neutron mass ratio",0.99862347797_dp,0.00000000040_dp,"")]

- **proton_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton relative atomic mass",1.0072764665789_dp,0.0000000000083_dp,"")]

- **proton_rms_charge_radius**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton rms charge radius",8.4075e-16_dp,0.0064e-16_dp,"m")]

- **proton_tau_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("proton-tau mass ratio",0.528051_dp,0.000036_dp,"")]

- **quantum_of_circulation**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation",3.6369475467e-4_dp,0.0000000011e-4_dp,"m^2 s^-1")]

- **quantum_of_circulation_times_2**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("quantum of circulation times 2",7.2738950934e-4_dp,0.0000000023e-4_dp,"m^2 s^-1")]

- **reduced_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced compton wavelength",3.8615926744e-13_dp,0.0000000012e-13_dp,"m")]

- **reduced_muon_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced muon compton wavelength",1.867594306e-15_dp,0.000000042e-15_dp,"m")]

- **reduced_neutron_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced neutron compton wavelength",2.1001941520e-16_dp,0.0000000011e-16_dp,"m")]

- **reduced_planck_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant",1.054571817e-34_dp,0.0_dp,"j s")]

- **reduced_planck_constant_in_ev_s**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant in ev s",6.582119569e-16_dp,0.0_dp,"ev s")]

- **reduced_planck_constant_times_c_in_mev_fm**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced planck constant times c in mev fm",197.3269804_dp,0.0_dp,"mev fm")]

- **reduced_proton_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced proton compton wavelength",2.10308910051e-16_dp,0.00000000066e-16_dp,"m")]

- **reduced_tau_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("reduced tau compton wavelength",1.110538e-16_dp,0.000075e-16_dp,"m")]

- **rydberg_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant",10973731.568157_dp,0.000012_dp,"m^-1")]

- **rydberg_constant_times_c_in_hz**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times c in hz",3.2898419602500e15_dp,0.0000000000036e15_dp,"hz")]

- **rydberg_constant_times_hc_in_ev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in ev",13.605693122990_dp,0.000000000015_dp,"ev")]

- **rydberg_constant_times_hc_in_j**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("rydberg constant times hc in j",2.1798723611030e-18_dp,0.0000000000024e-18_dp,"j")]

- **sackur_tetrode_constant_1_k_100_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,100 kpa)",-1.15170753496_dp,0.00000000047_dp,"")]

- **sackur_tetrode_constant_1_k_101_325_kpa**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("sackur-tetrode constant (1 k,101.325 kpa)",-1.16487052149_dp,0.00000000047_dp,"")]

- **second_radiation_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("second radiation constant",1.438776877e-2_dp,0.0_dp,"m k")]

- **shielded_helion_gyromag_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio",2.0378946078e8_dp,0.0000000018e8_dp,"s^-1 t^-1")]

- **shielded_helion_gyromag_ratio_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion gyromag. ratio in mhz/t",32.434100033_dp,0.000000028_dp,"mhz t^-1")]

- **shielded_helion_mag_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom.",-1.07455311035e-26_dp,0.00000000093e-26_dp,"j t^-1")]

- **shielded_helion_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to bohr magneton ratio",-1.15867149457e-3_dp,0.00000000094e-3_dp,"")]

- **shielded_helion_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion mag. mom. to nuclear magneton ratio",-2.1274977624_dp,0.0000000017_dp,"")]

- **shielded_helion_to_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to proton mag. mom. ratio",-0.76176657721_dp,0.00000000066_dp,"")]

- **shielded_helion_to_shielded_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded helion to shielded proton mag. mom. ratio",-0.7617861334_dp,0.0000000031_dp,"")]

- **shielded_proton_gyromag_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio",2.675153194e8_dp,0.000000011e8_dp,"s^-1 t^-1")]

- **shielded_proton_gyromag_ratio_in_mhz_t**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton gyromag. ratio in mhz/t",42.57638543_dp,0.00000017_dp,"mhz t^-1")]

- **shielded_proton_mag_mom**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom.",1.4105705830e-26_dp,0.0000000058e-26_dp,"j t^-1")]

- **shielded_proton_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to bohr magneton ratio",1.5209931551e-3_dp,0.0000000062e-3_dp,"")]

- **shielded_proton_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielded proton mag. mom. to nuclear magneton ratio",2.792775648_dp,0.000000011_dp,"")]

- **shielding_difference_of_d_and_p_in_hd**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielding difference of d and p in hd",1.98770e-8_dp,0.00010e-8_dp,"")]

- **shielding_difference_of_t_and_p_in_ht**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("shielding difference of t and p in ht",2.39450e-8_dp,0.00020e-8_dp,"")]

- **speed_of_light_in_vacuum**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("speed of light in vacuum",299792458_dp,0.0_dp,"m s^-1")]

- **standard_acceleration_of_gravity**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard acceleration of gravity",9.80665_dp,0.0_dp,"m s^-2")]

- **standard_atmosphere**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard atmosphere",101325_dp,0.0_dp,"pa")]

- **standard_state_pressure**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("standard-state pressure",100000_dp,0.0_dp,"pa")]

- **stefan_boltzmann_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("stefan-boltzmann constant",5.670374419e-8_dp,0.0_dp,"w m^-2 k^-4")]

- **tau_compton_wavelength**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau compton wavelength",6.97771e-16_dp,0.00047e-16_dp,"m")]

- **tau_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-electron mass ratio",3477.23_dp,0.23_dp,"")]

- **tau_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau energy equivalent",1776.86_dp,0.12_dp,"mev")]

- **tau_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass",3.16754e-27_dp,0.00021e-27_dp,"kg")]*

- **tau_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass energy equivalent",2.84684e-10_dp,0.00019e-10_dp,"j")]

- **tau_mass_in_u** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau mass in u",1.90754_dp,0.00013_dp,"u")]*

- **tau_molar_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("tau molar mass",1.90754e-3_dp,0.00013e-3_dp,"kg mol^-1")]*

- **tau_muon_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-muon mass ratio",16.8170_dp,0.0011_dp,"")]

- **tau_neutron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-neutron mass ratio",1.89115_dp,0.00013_dp,"")]

- **tau_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("tau-proton mass ratio",1.89376_dp,0.00013_dp,"")]

- **thomson_cross_section**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("thomson cross section",6.6524587051e-29_dp,0.0000000062e-29_dp,"m^2")]

- **triton_electron_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-electron mass ratio",5496.92153551_dp,0.00000021_dp,"")]

- **triton_g_factor** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton g factor",5.957924930_dp,0.000000012_dp,"")]*

- **triton_mag_mom** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom.",1.5046095178e-26_dp,0.0000000030e-26_dp,"j t^-1")]*

- **triton_mag_mom_to_bohr_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to bohr magneton ratio",1.6223936648e-3_dp,0.0000000032e-3_dp,"")]

- **triton_mag_mom_to_nuclear_magneton_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mag. mom. to nuclear magneton ratio",2.9789624650_dp,0.0000000059_dp,"")]

- **triton_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass",5.0073567512e-27_dp,0.0000000016e-27_dp,"kg")]*

- **triton_mass_energy_equivalent**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent",4.5003878119e-10_dp,0.0000000014e-10_dp,"j")]

- **triton_mass_energy_equivalent_in_mev**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass energy equivalent in mev",2808.92113668_dp,0.00000088_dp,"mev")]

- **triton_mass_in_u** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton mass in u",3.01550071597_dp,0.00000000010_dp,"u")]*

- **triton_molar_mass** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("triton molar mass",3.01550071913e-3_dp,0.00000000094e-3_dp,"kg mol^-1")]*

- **triton_proton_mass_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton-proton mass ratio",2.99371703403_dp,0.00000000010_dp,"")]

- **triton_relative_atomic_mass**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton relative atomic mass",3.01550071597_dp,0.00000000010_dp,"")]

- **triton_to_proton_mag_mom_ratio**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("triton to proton mag. mom. ratio",1.0666399189_dp,0.0000000021_dp,"")]

- **unified_atomic_mass_unit**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("unified atomic mass unit",1.66053906892e-27_dp,0.00000000052e-27_dp,"kg")]

- **vacuum_electric_permittivity**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("vacuum electric permittivity",8.8541878188e-12_dp,0.0000000014e-12_dp,"f m^-1")]

- **vacuum_mag_permeability**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("vacuum mag. permeability",1.25663706127e-6_dp,0.00000000020e-6_dp,"n a^-2")]

- **von_klitzing_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("von klitzing constant",25812.80745_dp,0.0_dp,"ohm")]

- **w_to_z_mass_ratio** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("w to z mass ratio",0.88145_dp,0.00013_dp,"")]*

- **weak_mixing_angle** *[codata_constant_type,public/parameter/optional/default=codata_constant_type("weak mixing angle",0.22305_dp,0.00023_dp,"")]*

- **wien_frequency_displacement_law_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien frequency displacement law constant",5.878925757e10_dp,0.0_dp,"hz k^-1")]

- **wien_wavelength_displacement_law_constant**
  [codata_constant_type,public/parameter/optional/default=codata_constant_type("wien wavelength displacement law constant",2.897771955e-3_dp,0.0_dp,"m k")]

- **year** *[integer,public/parameter/optional/default=2022]*

  ! Year of release.

1.2 C

.... literalinclude:: ../../../../include/codata.h

language
C

1.3 Python

Codata 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.

The latest values are available at the top level and older values are available in dedicated modules.

CHAPTER

TWO

EXAMPLES

2.1 Fortran

```
! 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
```

2.2 C

```
/* EXAMPLE IN C */
#include <stdio.h>
#include "codata.h"

int main(void){

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

(continues on next page)

(continued from previous page)

```
    printf("%s\n","# VERSION");
    printf("version = %s\n", codata_get_version());

    printf("%s\n","# CONSTANTS");
    printf("c = %f\n", SPEED_OF_LIGHT_IN_VACUUM.value);

    printf("%s\n","# UNCERTAINTY");
    printf("u(c) = %f\n", SPEED_OF_LIGHT_IN_VACUUM.uncertainty);

    printf("%s\n","# OLDER VALUES");
    printf("Mu_2022(latest) = %23.16f\n", MOLAR_MASS_CONSTANT.value);
    printf("Mu_2018 = %23.16f\n", MOLAR_MASS_CONSTANT_2018.value);
    printf("Mu_2014 = %23.16f\n", MOLAR_MASS_CONSTANT_2014.value);
    printf("Mu_2010 = %23.16f\n", MOLAR_MASS_CONSTANT_2010.value);

    return 0;
}
```

2.3 Python

```
sys.path.insert(0, "../py/src/")
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.constants_2018.MOLAR_MASS_CONSTANT_2018["value"])
print(f"Mu_2014 = ", pycodata.constants_2014.MOLAR_MASS_CONSTANT_2014["value"])
print(f"Mu_2010 = ", pycodata.constants_2010.MOLAR_MASS_CONSTANT_2010["value"])
```

CHAPTER

THREE

CHANGELOG

3.1 2.3.1

- Refactoring the `configure.sh` script.
- Remove support for 3.14t. No official release on python.org.
- If binaries for Python 3.14t are needed you need to compile them by yourself.

3.2 2.3.0

- Remove support for Python 3.9 and add support for Python 3.14(t).

Full changelog

3.3 2.2.0

- Switch to UCRT64 for Windows binaries.
- Switch to sphinx documentation using fspx.
- Update references with publication for codata 2022.
- Update compilation flags for compatibility with `stdlib`.

Full changelog

3.4 2.1.1

- No code change.
- Code refractoring and cleaning
- Update CI/CD workflows.

Full changelog

3.5 2.1.0

- Roll back to C API in Fortran code: easier maintenance.
- Roll back to compiled C extension for python: easier maintenance.

Full changelog available at github

3.6 2.0.1

- Fix bug in version for Fortran code.

Full changelog available at github

3.7 2.0.0

- Drop compiled extensions for Python.
- Pure Python code for constants auto-generated as it is the case for the Fortran code.
- Pure C code for constants auto-generated as it is the case for the Fortran code.
- API break:
  - No more C API in the Fortran code.
  - Use the pure C code to build a C library.

Full changelog available at github

3.8 1.2.2

- Fix conflict that could occur with C API modules. Add prefix in module names.
- Cleanup and refractoring.
- Documentation update.

3.9 1.2.1

- Refractoring
- Merge back C API and python wrapper.

Full changelog available at github

3.10 1.2.0

- Refractoring
- Documentation update.

Full changelog available at github

3.11 1.1.0

- C API and Python wrapper moved to their own repositories.
  - C wrapper
  - Python wrapper
- API break: C API is no more provided by default. Use the optional C wrapper.
- Code cleanup
- Documentation update

Full changelog available at github

3.12 1.0.0

- Add codata values for 2010, 2014 and 2018.
- Code refractoring and code cleaning.
- Documentation update and switch to only FORD documentation.
- Rewrite code generators in python.
- Generate source code for stdlib.
- API break: constants are defined as DT like in stdlib.

Full changelog available at github

Python wrapper available at pypi.

3.13 0.10.0

- Remove remove generation of the version module.
- Add tests using the test-drive framework.
- Explicit parameter constants for Fortran and protected constants for C API.
- Minor fixes in documentation.
- Code cleanup.
- Merge of all code for autogeneration in one file.

Full changelog available at github

Python wrapper available at pypi.

3.14 0.9.0

- No API changes.
- Automatic generation of the version module.
- Generic Makefiles for automatic the building process of the library and the pywrapper.
- Add targets: build, build_debug, test, test_debug.
- Minor fixes in documentation.

Full changelog available at github

Python wrapper available at pypi.

3.15 0.8.2

- No API changes.
- Improve Makefile for generating the source code at each compilation.
- Source generator rewritten in Fortran.
- Switch to pyproject.toml for the Python wrapper.

- Minor fixes in documentation.

Full changelog available at github

Python wrapper available at pypi.

3.16 0.8.1

- Use shared library in python wrapper.
- Minor fixes in documentation.

Full changelog available at github

Python wrapper available at pypi.

3.17 0.8.0

- Back to the approach with a library.
- Compatible with fpm.
- Configuration file for setting all the environmental variables.
- Global makefile for building a static library (through fpm) and a shared library.
- Automatic copy of the necessary sources for the python wrapper.
- Python wrapper built with the static library
  - no dependency on a shared library.
  - sources and static library embeded in the python wrapper.
- FORD for documenting the Fortran code.
- Integration of the FORD documentation into the main documentation with sphinx.

Full changelog available at github

Python wrapper available at pypi.

3.18 0.7.1

- Minor fixes in generator code
- Add automatic copy of c sources for the python wrapper.

Full changelog available at github

Python wrapper available at pypi.

3.19 0.7.0

- Migrate documentation from doxygen to sphinx+breathe.
- Add YEAR constant indicating the year of the codata constants.
- Refractoring

Full changelog available at github

Python wrapper available at pypi.

3.20 0.6.0

- Created documentation.
- Fixed missing uncertainties for Cpython.

Full changelog available at github

Python wrapper available at pypi.

3.21 0.5.0

- Changed the complete approach by not generating a library but only source files for different languages.
- Available languages: Fortran, C, python, CPython

Full changelog available at github

Python wrapper available at pypi.

3.22 0.4.0

- Bring back pywrapper in the codata repository to sync versions.
- Improvements of the documentation.

Full changelog available at github

Python wrapper available at pypi.

3.23 0.3.0

- Only last codata constants.

Full changelog available at github

Python wrapper available at pypi.

3.24 0.2.1

- Integration of Intel Fortran compiler and MSVC in cmake scripts.
- Add specifications and instructions for compiling on Windows

Full changelog available at github

Python wrapper available at pypi.

3.25 0.2.0

- Bug fixes for the codata 2010.
- Bug fixes in the tests linked to the codata 2010.
- Add python wrapper for the number of constants method.

Full changelog available at github

Python wrapper available at pypi.

3.26 0.1.0

Implementation of:

- the parser of the codata raw data
- the generator of the Fortran modules
- the C API and C header
- the python wrapper (will be moved to its repository next release).

Full changelog available at github

Python wrapper available at pypi.

Fundamental physical constants for Modern Fortran according to CODATA.

BIBLIOGRAPHY

[1] Peter J Mohr, Barry N Taylor, and David B. Newell. CODATA recommended values of the fundamental physical constants: 2010. *Review of Modern Physics*, 2012.

[2] Peter J Mohr, Barry N Taylor, and David B. Newell. CODATA recommended values of the fundamental physical constants: 2014. *Journal of Physical and Chemical Reference Data*, 2016.

[3] Peter J Mohr, Barry N Taylor, and David B. Newell. CODATA recommended values of the fundamental physical constants: 2018. *Review of Modern Physics*, 2021.

[4] Peter Mohr, David Newell, Barry Taylor, and Eite Tiesinga. CODATA Recommended Values of the Fundamental Physical Constants: 2022. URL: https://arxiv.org/abs/2409.03787 (visited on 2025-05-05), doi:10.48550/ARXIV.2409.03787.

[5] Peter J. Mohr, David B. Newell, Barry N. Taylor, and Eite Tiesinga. CODATA recommended values of the fundamental physical constants: 2022. *Reviews of Modern Physics*, 97(2):025002, 2025. URL: https://link.aps.org/doi/10.1103/RevModPhys.97.025002 (visited on 2025-05-05), doi:10.1103/RevModPhys.97.025002.

FORTRAN MODULE INDEX

C

PYTHON MODULE INDEX

INDEX

A

B

C

D

E

F

G

H

I

J

K

L

M

N

P

Q

R

S

T

U

V

W

Y