

NISTConst

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Chapter 1

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Chapter 2

File Index

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Chapter 3

Module Documentation

3.1 NIST Constants

Constants library for physics and chemistry based off of data from NIST.

Modules

- [Universal](#)
- [Electromagnetic](#)
- [Atomic and nuclear](#)
- [Physico-Chemical](#)
- [Adopted](#)
- [Non-SI units](#)
- [Conversion factors](#)
- [X-ray values](#)

3.1.1 Detailed Description

Constants library for physics and chemistry based off of data from NIST.

Constants are from CODATA-2014

<https://dx.doi.org/10.1063/1.4954402>

3.2 Universal

Modules

- [Impedance of vacuum](#)
- [Electric constant](#)
- [Magnetic constant](#)
- [Gravitational constant](#)
- [Planck constant](#)
- [Planck length](#)
- [Planck mass](#)
- [Planck temperature](#)
- [Planck time](#)
- [Speed of light](#)

3.2.1 Detailed Description

3.3 Impedance of vacuum

Variables

- const double `NISTConst::impedanceOfVacuum` = 376.730313461
- const double `NISTConst::impedanceOfVacuumUncertainty` = 0.0
- const double `NISTConst::Z0` = `impedanceOfVacuum`
- const double `NISTConst::impedanceOfFreeSpace` = `impedanceOfVacuum`
- const double `NISTConst::Z0Uncertainty` = `impedanceOfVacuumUncertainty`
- const double `NISTConst::impedanceOfFreeSpaceUncertainty` = `impedanceOfVacuumUncertainty`

3.3.1 Detailed Description

3.3.2 Variable Documentation

3.3.2.1 `impedanceOfFreeSpace`

```
const double NISTConst::impedanceOfFreeSpace = impedanceOfVacuum
```

Z_0 (Ω) Characteristic impedance of vacuum in ohms. Alias of `impedanceOfVacuum`.

3.3.2.2 `impedanceOfFreeSpaceUncertainty`

```
const double NISTConst::impedanceOfFreeSpaceUncertainty = impedanceOfVacuumUncertainty
```

Z_0 (Ω) Uncertainty in characteristic impedance of vacuum in ohms. Alias of `impedanceOfVacuumUncertainty`.

3.3.2.3 `impedanceOfVacuum`

```
const double NISTConst::impedanceOfVacuum = 376.730313461
```

Z_0 (Ω) Characteristic impedance of vacuum in ohms.

3.3.2.4 `impedanceOfVacuumUncertainty`

```
const double NISTConst::impedanceOfVacuumUncertainty = 0.0
```

Z_0 (Ω) Uncertainty in characteristic impedance of vacuum in ohms. Note should be 0.0 since it is a defined value.

3.3.2.5 `Z0`

```
const double NISTConst::Z0 = impedanceOfVacuum
```

Z_0 (Ω) Characteristic impedance of vacuum in ohms. Alias of `impedanceOfVacuum`.

3.3.2.6 `Z0Uncertainty`

```
const double NISTConst::Z0Uncertainty = impedanceOfVacuumUncertainty
```

Z_0 (Ω) Uncertainty in characteristic impedance of vacuum in ohms. Alias of `impedanceOfVacuumUncertainty`.

3.4 Electric constant

Variables

- const double `NISTConst::electricConstant` = 8.854187817e-12
- const double `NISTConst::electricConstantUncertainty` = 0.0
- const double `NISTConst::e0` = `electricConstant`
- const double `NISTConst::vacuumPermittivity` = `electricConstant`
- const double `NISTConst::permittivityOfFreeSpace` = `electricConstant`
- const double `NISTConst::permittivityOfVacuum` = `electricConstant`
- const double `NISTConst::e0Uncertainty` = `electricConstantUncertainty`
- const double `NISTConst::vacuumPermittivityUncertainty` = `electricConstantUncertainty`
- const double `NISTConst::permittivityOfFreeSpaceUncertainty` = `electricConstantUncertainty`
- const double `NISTConst::permittivityOfVacuumUncertainty` = `electricConstantUncertainty`

3.4.1 Detailed Description

3.4.2 Variable Documentation

3.4.2.1 e0

```
const double NISTConst::e0 = electricConstant
```

ϵ_0 ($\frac{F}{m}$) Electric constant in farads per meter. Alias of `electricConstant`.

3.4.2.2 e0Uncertainty

```
const double NISTConst::e0Uncertainty = electricConstantUncertainty
```

ϵ_0 ($\frac{F}{m}$) Uncertainty in electric constant in farads per meter. Alias of `electricConstantUncertainty`.

3.4.2.3 electricConstant

```
const double NISTConst::electricConstant = 8.854187817e-12
```

ϵ_0 ($\frac{F}{m}$) Electric constant in farads per meter.

3.4.2.4 electricConstantUncertainty

```
const double NISTConst::electricConstantUncertainty = 0.0
```

ϵ_0 ($\frac{F}{m}$) Uncertainty in electric constant in farads per meter. Note should be 0.0 since it is a defined value.

3.4.2.5 permittivityOfFreeSpace

```
const double NISTConst::permittivityOfFreeSpace = electricConstant
```

ϵ_0 ($\frac{F}{m}$) Electric constant in farads per meter. Alias of electricConstant.

3.4.2.6 permittivityOfFreeSpaceUncertainty

```
const double NISTConst::permittivityOfFreeSpaceUncertainty = electricConstantUncertainty
```

ϵ_0 ($\frac{F}{m}$) Uncertainty in electric constant in farads per meter. Alias of electricConstantUncertainty.

3.4.2.7 permittivityOfVacuum

```
const double NISTConst::permittivityOfVacuum = electricConstant
```

ϵ_0 ($\frac{F}{m}$) Electric constant in farads per meter. Alias of electricConstant.

3.4.2.8 permittivityOfVacuumUncertainty

```
const double NISTConst::permittivityOfVacuumUncertainty = electricConstantUncertainty
```

ϵ_0 ($\frac{F}{m}$) Uncertainty in electric constant in farads per meter. Alias of electricConstantUncertainty.

3.4.2.9 vacuumPermittivity

```
const double NISTConst::vacuumPermittivity = electricConstant
```

ϵ_0 ($\frac{F}{m}$) Electric constant in farads per meter. Alias of electricConstant.

3.4.2.10 vacuumPermittivityUncertainty

```
const double NISTConst::vacuumPermittivityUncertainty = electricConstantUncertainty
```

ϵ_0 ($\frac{F}{m}$) Uncertainty in electric constant in farads per meter. Alias of electricConstantUncertainty.

3.5 Magnetic constant

Variables

- const double [NISTConst::magneticConstant](#) = 12.566370614e-7
- const double [NISTConst::magneticConstantUncertainty](#) = 0.0
- const double [NISTConst::mu0](#) = magneticConstant
- const double [NISTConst::vacuumPermeability](#) = magneticConstant
- const double [NISTConst::permeabilityOfFreeSpace](#) = magneticConstant
- const double [NISTConst::permeabilityOfVacuum](#) = magneticConstant
- const double [NISTConst::mu0Uncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::vacuumPermeabilityUncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::permeabilityOfFreeSpaceUncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::permeabilityOfVacuumUncertainty](#) = magneticConstantUncertainty

3.5.1 Detailed Description

3.5.2 Variable Documentation

3.5.2.1 magneticConstant

```
const double NISTConst::magneticConstant = 12.566370614e-7
```

μ_0 ($\frac{N}{A^2}$) Magnetic constant in newtons per ampere squared.

3.5.2.2 magneticConstantUncertainty

```
const double NISTConst::magneticConstantUncertainty = 0.0
```

μ_0 ($\frac{N}{A^2}$) Uncertainty in magnetic constant in newtons per ampere squared.

3.5.2.3 mu0

```
const double NISTConst::mu0 = magneticConstant
```

μ_0 ($\frac{N}{A^2}$) Magnetic constant in newtons per ampere squared. Alias of magneticConstant.

3.5.2.4 mu0Uncertainty

```
const double NISTConst::mu0Uncertainty = magneticConstantUncertainty
```

μ_0 ($\frac{N}{A^2}$) Uncertainty in magnetic constant in newtons per ampere squared. Alias of magneticConstantUncertainty.

3.5.2.5 permeabilityOfFreeSpace

```
const double NISTConst::permeabilityOfFreeSpace = magneticConstant
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Magnetic constant in newtons per ampere squared. Alias of magneticConstant.

3.5.2.6 permeabilityOfFreeSpaceUncertainty

```
const double NISTConst::permeabilityOfFreeSpaceUncertainty = magneticConstantUncertainty
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Uncertainty in magnetic constant in newtons per ampere squared. Alias of magneticConstantUncertainty.

3.5.2.7 permeabilityOfVacuum

```
const double NISTConst::permeabilityOfVacuum = magneticConstant
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Magnetic constant in newtons per ampere squared. Alias of magneticConstant.

3.5.2.8 permeabilityOfVacuumUncertainty

```
const double NISTConst::permeabilityOfVacuumUncertainty = magneticConstantUncertainty
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Uncertainty in magnetic constant in newtons per ampere squared. Alias of magneticConstantUncertainty.

3.5.2.9 vacuumPermeability

```
const double NISTConst::vacuumPermeability = magneticConstant
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Magnetic constant in newtons per ampere squared. Alias of magneticConstant.

3.5.2.10 vacuumPermeabilityUncertainty

```
const double NISTConst::vacuumPermeabilityUncertainty = magneticConstantUncertainty
```

$\mu_0 \left(\frac{N}{A^2} \right)$ Uncertainty in magnetic constant in newtons per ampere squared. Alias of magneticConstantUncertainty.

3.6 Gravitational constant

Variables

- const double `NISTConst::NewtonianConstantOfGravitation` = 6.67408e-11
- const double `NISTConst::NewtonianConstantOfGravitationOverhbarc` = 6.70861e-39
- const double `NISTConst::NewtonianConstantOfGravitationUncertainty` = 0.00031e-11
- const double `NISTConst::NewtonianConstantOfGravitationOverhbarcUncertainty` = 0.00031e-39
- const double `NISTConst::G` = `NewtonianConstantOfGravitation`
- const double `NISTConst::gravitationalConstant` = `NewtonianConstantOfGravitation`
- const double `NISTConst::universalGravitationalConstant` = `NewtonianConstantOfGravitation`
- const double `NISTConst::NewtonsConstant` = `NewtonianConstantOfGravitation`
- const double `NISTConst::GUncertainty` = `NewtonianConstantOfGravitationUncertainty`
- const double `NISTConst::gravitationalConstantUncertainty` = `NewtonianConstantOfGravitationUncertainty`
- const double `NISTConst::universalGravitationalConstantUncertainty` = `NewtonianConstantOfGravitation`↔
Uncertainty
- const double `NISTConst::NewtonsConstantUncertainty` = `NewtonianConstantOfGravitationUncertainty`

3.6.1 Detailed Description

3.6.2 Variable Documentation

3.6.2.1 G

```
const double NISTConst::G = NewtonianConstantOfGravitation
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of `NewtonianConstantOfGravitation`.

3.6.2.2 gravitationalConstant

```
const double NISTConst::gravitationalConstant = NewtonianConstantOfGravitation
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of `NewtonianConstantOfGravitation`.

3.6.2.3 gravitationalConstantUncertainty

```
const double NISTConst::gravitationalConstantUncertainty = NewtonianConstantOfGravitation↔  
Uncertainty
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Uncertainty in Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of `NewtonianConstantOfGravitationUncertainty`.

3.6.2.4 GUncertainty

```
const double NISTConst::GUncertainty = NewtonianConstantOfGravitationUncertainty
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Uncertainty in Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of NewtonianConstantOfGravitationUncertainty.

3.6.2.5 NewtonianConstantOfGravitation

```
const double NISTConst::NewtonianConstantOfGravitation = 6.67408e-11
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Newtonian constant of gravitation in meters cubed per kilogram second squared.

3.6.2.6 NewtonianConstantOfGravitationOverhbarc

```
const double NISTConst::NewtonianConstantOfGravitationOverhbarc = 6.70861e-39
```

$\frac{G}{\hbar c} \left(\left(\frac{GeV}{c^2} \right)^{-2} \right)$ Newtonian constant of gravitation over h-bar c in speed of light to the fourth per gigaelectron volt squared.

3.6.2.7 NewtonianConstantOfGravitationOverhbarcUncertainty

```
const double NISTConst::NewtonianConstantOfGravitationOverhbarcUncertainty = 0.00031e-39
```

$\frac{G}{\hbar c} \left(\left(\frac{GeV}{c^2} \right)^{-2} \right)$ Uncertainty in Newtonian constant of gravitation over h-bar c in speed of light to the fourth per gigaelectron volt squared.

3.6.2.8 NewtonianConstantOfGravitationUncertainty

```
const double NISTConst::NewtonianConstantOfGravitationUncertainty = 0.00031e-11
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Uncertainty in Newtonian constant of gravitation in meters cubed per kilogram second squared.

3.6.2.9 NewtonsConstant

```
const double NISTConst::NewtonsConstant = NewtonianConstantOfGravitation
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of NewtonianConstantOfGravitation.

3.6.2.10 NewtonsConstantUncertainty

```
const double NISTConst::NewtonsConstantUncertainty = NewtonianConstantOfGravitationUncertainty
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Uncertainty in Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of NewtonianConstantOfGravitationUncertainty.

3.6.2.11 universalGravitationalConstant

```
const double NISTConst::universalGravitationalConstant = NewtonianConstantOfGravitation
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of NewtonianConstantOfGravitation.

3.6.2.12 universalGravitationalConstantUncertainty

```
const double NISTConst::universalGravitationalConstantUncertainty = NewtonianConstantOfGravitationUncertainty
```

$G \left(\frac{m^3}{kg \ s^2} \right)$ Uncertainty in Newtonian constant of gravitation in meters cubed per kilogram second squared. Alias of NewtonianConstantOfGravitationUncertainty.

3.7 Planck constant

Variables

- const double `NISTConst::PlanckConstant` = 6.626070040e-34
- const double `NISTConst::PlanckConstantInVs` = 4.135667662e-15
- const double `NISTConst::PlanckConstantOver2Pi` = 1.054571800e-34
- const double `NISTConst::PlanckConstantOver2PiInVs` = 6.582119514e-16
- const double `NISTConst::PlanckConstantOver2PiTimescInMeVfm` = 197.3269788
- const double `NISTConst::PlanckConstantUncertainty` = 0.000000081e-34
- const double `NISTConst::PlanckConstantInVsUncertainty` = 0.000000025e-15
- const double `NISTConst::PlanckConstantOver2PiUncertainty` = 0.000000013e-34
- const double `NISTConst::PlanckConstantOver2PiInVsUncertainty` = 0.000000040e-16
- const double `NISTConst::PlanckConstantOver2PiTimescInMeVfmUncertainty` = 0.0000012
- const double `NISTConst::h` = PlanckConstant
- const double `NISTConst::hInVs` = PlanckConstantInVs
- const double `NISTConst::hbar` = PlanckConstantOver2Pi
- const double `NISTConst::hbarInVs` = PlanckConstantOver2PiInVs
- const double `NISTConst::reducedPlanckConstant` = PlanckConstantOver2Pi
- const double `NISTConst::reducedPlanckConstantInVs` = PlanckConstantOver2PiInVs
- const double `NISTConst::hUncertainty` = PlanckConstantUncertainty
- const double `NISTConst::hInVsUncertainty` = PlanckConstantInVsUncertainty
- const double `NISTConst::hbarUncertainty` = PlanckConstantOver2PiUncertainty
- const double `NISTConst::hbarInVsUncertainty` = PlanckConstantOver2PiInVsUncertainty
- const double `NISTConst::reducedPlanckConstantUncertainty` = PlanckConstantOver2PiUncertainty
- const double `NISTConst::reducedPlanckConstantInVsUncertainty` = PlanckConstantOver2PiInVsUncertainty

3.7.1 Detailed Description

3.7.2 Variable Documentation

3.7.2.1 h

```
const double NISTConst::h = PlanckConstant
```

h (Js) Planck constant in joule seconds. Alias of PlanckConstant.

3.7.2.2 \hbar

```
const double NISTConst::hbar = PlanckConstantOver2Pi
```

\hbar (Js) Planck constant over 2 pi in joule seconds. Alias of PlanckConstantOver2Pi.

3.7.2.3 `hbarIneVs`

```
const double NISTConst::hbarIneVs = PlanckConstantOver2PiIneVs
```

\hbar (eVs) Planck constant over 2 pi in electron volt seconds. Alias of PlanckConstantOver2PiIneVs.

3.7.2.4 `hbarIneVsUncertainty`

```
const double NISTConst::hbarIneVsUncertainty = PlanckConstantOver2PiIneVsUncertainty
```

\hbar (eVs) Uncertainty in Planck constant over 2 pi in electron volt seconds. Alias of PlanckConstantOver2PiIneVsUncertainty.

3.7.2.5 `hbarUncertainty`

```
const double NISTConst::hbarUncertainty = PlanckConstantOver2PiUncertainty
```

\hbar (Js) Uncertainty in Planck constant over 2 pi in joule seconds. Alias of PlanckConstantOver2PiUncertainty.

3.7.2.6 `hIneVs`

```
const double NISTConst::hIneVs = PlanckConstantIneVs
```

h (eVs) Planck constant in electron volt seconds. Alias of PlanckConstantIneVs.

3.7.2.7 `hIneVsUncertainty`

```
const double NISTConst::hIneVsUncertainty = PlanckConstantIneVsUncertainty
```

h (eVs) Uncertainty in Planck constant in electron volt seconds. Alias of PlanckConstantIneVsUncertainty.

3.7.2.8 `hUncertainty`

```
const double NISTConst::hUncertainty = PlanckConstantUncertainty
```

h (Js) Uncertainty in Planck constant in joule seconds. Alias of PlanckConstantUncertainty.

3.7.2.9 `PlanckConstant`

```
const double NISTConst::PlanckConstant = 6.626070040e-34
```

h (Js) Planck constant in joule seconds.

3.7.2.10 PlanckConstantIneVs

```
const double NISTConst::PlanckConstantIneVs = 4.135667662e-15
```

h (eVs) Planck constant in electron volt seconds.

3.7.2.11 PlanckConstantIneVsUncertainty

```
const double NISTConst::PlanckConstantIneVsUncertainty = 0.000000025e-15
```

h (eVs) Uncertainty in Planck constant in electron volt seconds.

3.7.2.12 PlanckConstantOver2Pi

```
const double NISTConst::PlanckConstantOver2Pi = 1.054571800e-34
```

\hbar (Js) Planck constant over 2 pi in joule seconds.

3.7.2.13 PlanckConstantOver2PiIneVs

```
const double NISTConst::PlanckConstantOver2PiIneVs = 6.582119514e-16
```

\hbar (eVs) Planck constant over 2 pi in electron volt seconds.

3.7.2.14 PlanckConstantOver2PiIneVsUncertainty

```
const double NISTConst::PlanckConstantOver2PiIneVsUncertainty = 0.000000040e-16
```

\hbar (eVs) Uncertainty in Planck constant over 2 pi in electron volt seconds.

3.7.2.15 PlanckConstantOver2PiTimescInMeVfm

```
const double NISTConst::PlanckConstantOver2PiTimescInMeVfm = 197.3269788
```

$\hbar c$ (MeV fm) Planck constant over 2 pi times c in megaelectron volt femtometers.

3.7.2.16 PlanckConstantOver2PiTimescInMeVfmUncertainty

```
const double NISTConst::PlanckConstantOver2PiTimescInMeVfmUncertainty = 0.0000012
```

$\hbar c$ (MeV fm) Uncertainty in Planck constant over 2 pi times c in megaelectron volt femtometers.

3.7.2.17 PlanckConstantOver2PiUncertainty

```
const double NISTConst::PlanckConstantOver2PiUncertainty = 0.000000013e-34
```

\hbar (Js) Uncertainty in Planck constant over 2 pi in joule seconds.

3.7.2.18 PlanckConstantUncertainty

```
const double NISTConst::PlanckConstantUncertainty = 0.000000081e-34
```

\hbar (Js) Uncertainty in Planck constant in joule seconds.

3.7.2.19 reducedPlanckConstant

```
const double NISTConst::reducedPlanckConstant = PlanckConstantOver2Pi
```

\hbar (Js) Planck constant over 2 pi in joule seconds. Alias of PlanckConstantOver2Pi.

3.7.2.20 reducedPlanckConstantIneVs

```
const double NISTConst::reducedPlanckConstantIneVs = PlanckConstantOver2PiIneVs
```

\hbar (eVs) Planck constant over 2 pi in electron volt seconds. Alias of PlanckConstantOver2PiIneVs.

3.7.2.21 reducedPlanckConstantIneVsUncertainty

```
const double NISTConst::reducedPlanckConstantIneVsUncertainty = PlanckConstantOver2PiIneVs↔  
Uncertainty
```

\hbar (eVs) Uncertainty in Planck constant over 2 pi in electron volt seconds. Alias of PlanckConstantOver2PiIneVs↔
Uncertainty.

3.7.2.22 reducedPlanckConstantUncertainty

```
const double NISTConst::reducedPlanckConstantUncertainty = PlanckConstantOver2PiUncertainty
```

\hbar (Js) Uncertainty in Planck constant over 2 pi in joule seconds. Alias of PlanckConstantOver2PiUncertainty.

3.8 Planck length

Variables

- const double `NISTConst::PlanckLength` = 1.616229e-35
- const double `NISTConst::PlanckLengthUncertainty` = 0.000038e-35

3.8.1 Detailed Description

3.8.2 Variable Documentation

3.8.2.1 PlanckLength

```
const double NISTConst::PlanckLength = 1.616229e-35
```

ℓ_P (m) Planck length in meters.

3.8.2.2 PlanckLengthUncertainty

```
const double NISTConst::PlanckLengthUncertainty = 0.000038e-35
```

ℓ_P (m) Uncertainty in Planck length in meters.

3.9 Planck mass

Variables

- const double [NISTConst::PlanckMass](#) = 2.176470e-8
- const double [NISTConst::PlanckMassInGeVpercSquared](#) = 1.220910e19
- const double [NISTConst::PlanckMassUncertainty](#) = 0.000051e-8
- const double [NISTConst::PlanckMassInGeVpercSquaredUncertainty](#) = 0.000029e19

3.9.1 Detailed Description

3.9.2 Variable Documentation

3.9.2.1 PlanckMass

```
const double NISTConst::PlanckMass = 2.176470e-8
```

m_P (*kg*) Planck mass in kilograms.

3.9.2.2 PlanckMassInGeVpercSquared

```
const double NISTConst::PlanckMassInGeVpercSquared = 1.220910e19
```

m_P ($\frac{GeV}{c^2}$) Planck mass in gigaelectron volts per speed of light squared.

3.9.2.3 PlanckMassInGeVpercSquaredUncertainty

```
const double NISTConst::PlanckMassInGeVpercSquaredUncertainty = 0.000029e19
```

m_P ($\frac{GeV}{c^2}$) Uncertainty in Planck mass in gigaelectron volts per speed of light squared.

3.9.2.4 PlanckMassUncertainty

```
const double NISTConst::PlanckMassUncertainty = 0.000051e-8
```

m_P (*kg*) Uncertainty in Planck mass in kilograms.

3.10 Planck temperature

Variables

- const double [NISTConst::PlanckTemperature](#) = 1.416808e32
- const double [NISTConst::PlanckTemperatureUncertainty](#) = 0.000033e32

3.10.1 Detailed Description

3.10.2 Variable Documentation

3.10.2.1 PlanckTemperature

```
const double NISTConst::PlanckTemperature = 1.416808e32
```

T_P (K) Planck temperature in kelvins.

3.10.2.2 PlanckTemperatureUncertainty

```
const double NISTConst::PlanckTemperatureUncertainty = 0.000033e32
```

T_P (K) Uncertainty in Planck temperature in kelvins.

3.11 Planck time

Variables

- const double [NISTConst::PlanckTime](#) = 5.39116e-44
- const double [NISTConst::PlanckTimeUncertainty](#) = 0.00013e-44

3.11.1 Detailed Description

3.11.2 Variable Documentation

3.11.2.1 PlanckTime

```
const double NISTConst::PlanckTime = 5.39116e-44
```

t_P (s) Planck time in seconds.

3.11.2.2 PlanckTimeUncertainty

```
const double NISTConst::PlanckTimeUncertainty = 0.00013e-44
```

t_P (s) Uncertainty in Planck time in seconds.

3.12 Speed of light

Variables

- const double `NISTConst::speedOfLightInVacuum` = 299792458.0
- const double `NISTConst::speedOfLightInVacuumUncertainty` = 0.0
- const double `NISTConst::c` = speedOfLightInVacuum
- const double `NISTConst::speedOfLight` = speedOfLightInVacuum
- const double `NISTConst::cUncertainty` = speedOfLightInVacuumUncertainty
- const double `NISTConst::speedOfLightUncertainty` = speedOfLightInVacuumUncertainty

3.12.1 Detailed Description

3.12.2 Variable Documentation

3.12.2.1 `c`

```
const double NISTConst::c = speedOfLightInVacuum
```

$c \left(\frac{m}{s} \right)$ Speed of light in vacuum in meters per second. Alias of speedOfLightInVacuum.

3.12.2.2 `cUncertainty`

```
const double NISTConst::cUncertainty = speedOfLightInVacuumUncertainty
```

$c \left(\frac{m}{s} \right)$ Uncertainty in speed of light in vacuum in meters per second. Alias of speedOfLightInVacuumUncertainty.

3.12.2.3 `speedOfLight`

```
const double NISTConst::speedOfLight = speedOfLightInVacuum
```

$c \left(\frac{m}{s} \right)$ Speed of light in vacuum in meters per second. Alias of speedOfLightInVacuum.

3.12.2.4 `speedOfLightInVacuum`

```
const double NISTConst::speedOfLightInVacuum = 299792458.0
```

$c \left(\frac{m}{s} \right)$ Speed of light in vacuum in meters per second.

3.12.2.5 `speedOfLightInVacuumUncertainty`

```
const double NISTConst::speedOfLightInVacuumUncertainty = 0.0
```

$c \left(\frac{m}{s} \right)$ Uncertainty in speed of light in vacuum in meters per second. Note should be 0.0 since it is a defined value.

3.12.2.6 `speedOfLightUncertainty`

```
const double NISTConst::speedOfLightUncertainty = speedOfLightInVacuumUncertainty
```

$c \left(\frac{m}{s} \right)$ Uncertainty in speed of light in vacuum in meters per second. Alias of speedOfLightInVacuumUncertainty.

3.13 Electromagnetic

Modules

- [Bohr magneton](#)
- [Conductance quantum](#)
- [Elementary charge](#)
- [Josephson constant](#)
- [Magnetic flux quantum](#)
- [Nuclear magneton](#)
- [von Klitzing constant](#)

3.13.1 Detailed Description

3.14 Bohr magneton

Variables

- const double `NISTConst::BohrMagneton` = 927.4009994e-26
- const double `NISTConst::BohrMagnetonIneVPerT` = 5.7883818012e-5
- const double `NISTConst::BohrMagnetonInHzPerT` = 13.996245042e9
- const double `NISTConst::BohrMagnetonInInversemT` = 46.68644814
- const double `NISTConst::BohrMagnetonInKPerT` = 0.67171405
- const double `NISTConst::BohrMagnetonUncertainty` = 0.0000057e-26
- const double `NISTConst::BohrMagnetonIneVPerTUncertainty` = 0.0000000026e-5
- const double `NISTConst::BohrMagnetonInHzPerTUncertainty` = 0.000000086e9
- const double `NISTConst::BohrMagnetonInInversemTUncertainty` = 0.00000029
- const double `NISTConst::BohrMagnetonInKPerTUncertainty` = 0.00000039
- const double `NISTConst::muB` = BohrMagneton
- const double `NISTConst::muBIneVPerT` = BohrMagnetonIneVPerT
- const double `NISTConst::muBInHzPerT` = BohrMagnetonInHzPerT
- const double `NISTConst::muBInInversemPerT` = BohrMagnetonInInversemT
- const double `NISTConst::muBInKPerT` = BohrMagnetonInKPerT
- const double `NISTConst::muBUncertainty` = BohrMagnetonUncertainty
- const double `NISTConst::muBIneVPerTUncertainty` = BohrMagnetonIneVPerTUncertainty
- const double `NISTConst::muBInHzPerTUncertainty` = BohrMagnetonInHzPerTUncertainty
- const double `NISTConst::muBInInversemPerTUncertainty` = BohrMagnetonInInversemTUncertainty
- const double `NISTConst::muBInKPerTUncertainty` = BohrMagnetonInKPerTUncertainty

3.14.1 Detailed Description

3.14.2 Variable Documentation

3.14.2.1 BohrMagneton

```
const double NISTConst::BohrMagneton = 927.4009994e-26
```

μ_B ($\frac{J}{T}$) Bohr magneton in joules per tesla.

3.14.2.2 BohrMagnetonIneVPerT

```
const double NISTConst::BohrMagnetonIneVPerT = 5.7883818012e-5
```

μ_B ($\frac{eV}{T}$) Bohr magneton in electron volts per tesla.

3.14.2.3 BohrMagnetonIneVPerTUncertainty

```
const double NISTConst::BohrMagnetonIneVPerTUncertainty = 0.0000000026e-5
```

μ_B ($\frac{eV}{T}$) Uncertainty in Bohr magneton in electron volts per tesla.

3.14.2.4 BohrMagnetonInHzPerT

```
const double NISTConst::BohrMagnetonInHzPerT = 13.996245042e9
```

$\frac{\mu_B}{h}$ ($\frac{Hz}{T}$) Bohr magneton in hertz per tesla.

3.14.2.5 BohrMagnetonInHzPerTUncertainty

```
const double NISTConst::BohrMagnetonInHzPerTUncertainty = 0.000000086e9
```

$\frac{\mu_B}{h}$ ($\frac{Hz}{T}$) Uncertainty in Bohr magneton in hertz per tesla.

3.14.2.6 BohrMagnetonInInversemT

```
const double NISTConst::BohrMagnetonInInversemT = 46.68644814
```

$\frac{\mu_B}{hc}$ ($\frac{1}{mT}$) Bohr magneton in inverse meters tesla.

3.14.2.7 BohrMagnetonInInversemTUncertainty

```
const double NISTConst::BohrMagnetonInInversemTUncertainty = 0.00000029
```

$\frac{\mu_B}{hc}$ ($\frac{1}{mT}$) Uncertainty in Bohr magneton in inverse meters tesla.

3.14.2.8 BohrMagnetonInKPerT

```
const double NISTConst::BohrMagnetonInKPerT = 0.67171405
```

$\frac{\mu_B}{k}$ ($\frac{K}{T}$) Bohr magneton in kelvin per tesla.

3.14.2.9 BohrMagnetonInKPerTUncertainty

```
const double NISTConst::BohrMagnetonInKPerTUncertainty = 0.00000039
```

$\frac{\mu_B}{k}$ ($\frac{K}{T}$) Uncertainty in Bohr magneton in kelvin per tesla.

3.14.2.10 BohrMagnetonUncertainty

```
const double NISTConst::BohrMagnetonUncertainty = 0.0000057e-26
```

μ_B ($\frac{J}{T}$) Uncertainty in Bohr magneton in joules per tesla.

3.14.2.11 muB

```
const double NISTConst::muB = BohrMagneton
```

μ_B ($\frac{J}{T}$) Bohr magneton in joules per tesla. Alias of BohrMagneton.

3.14.2.12 muBInVPerT

```
const double NISTConst::muBInVPerT = BohrMagnetonInVPerT
```

$\mu_B \left(\frac{eV}{T} \right)$ Bohr magneton in electron volts per tesla. Alias of BohrMagnetonInVPerT.

3.14.2.13 muBInVPerTUncertainty

```
const double NISTConst::muBInVPerTUncertainty = BohrMagnetonInVPerTUncertainty
```

$\mu_B \left(\frac{eV}{T} \right)$ Uncertainty in Bohr magneton in electron volts per tesla. Alias of BohrMagnetonInVPerTUncertainty.

3.14.2.14 muBInHzPerT

```
const double NISTConst::muBInHzPerT = BohrMagnetonInHzPerT
```

$\frac{\mu_B}{h} \left(\frac{Hz}{T} \right)$ Bohr magneton in hertz per tesla. Alias of BohrMagnetonInHzPerT.

3.14.2.15 muBInHzPerTUncertainty

```
const double NISTConst::muBInHzPerTUncertainty = BohrMagnetonInHzPerTUncertainty
```

$\frac{\mu_B}{h} \left(\frac{Hz}{T} \right)$ Uncertainty in Bohr magneton in hertz per tesla. Alias of BohrMagnetonInHzPerTUncertainty.

3.14.2.16 muBInInversemPerT

```
const double NISTConst::muBInInversemPerT = BohrMagnetonInInversemT
```

$\frac{\mu_B}{hc} \left(\frac{1}{m T} \right)$ Bohr magneton in inverse meters tesla. Alias of BohrMagnetonInInversemT.

3.14.2.17 muBInInversemPerTUncertainty

```
const double NISTConst::muBInInversemPerTUncertainty = BohrMagnetonInInversemTUncertainty
```

$\frac{\mu_B}{hc} \left(\frac{1}{m T} \right)$ Uncertainty in Bohr magneton in inverse meters tesla. Alias of BohrMagnetonInInversemTUncertainty.

3.14.2.18 muBInKPerT

```
const double NISTConst::muBInKPerT = BohrMagnetonInKPerT
```

$\frac{\mu_B}{k} \left(\frac{K}{T} \right)$ Bohr magneton in kelvin per tesla. Alias of BohrMagnetonInKPerT.

3.14.2.19 muBInKPerTUncertainty

```
const double NISTConst::muBInKPerTUncertainty = BohrMagnetonInKPerTUncertainty
```

$\frac{\mu_B}{k} \left(\frac{K}{T} \right)$ Uncertainty in Bohr magneton in kelvin per tesla. Alias of BohrMagnetonInKPerTUncertainty.

3.14.2.20 muBUncertainty

```
const double NISTConst::muBUncertainty = BohrMagnetonUncertainty
```

$\mu_B \left(\frac{J}{T} \right)$ Uncertainty in Bohr magneton in joules per tesla. Alias of BohrMagnetonUncertainty.

3.15 Conductance quantum

Variables

- const double `NISTConst::conductanceQuantum` = 7.7480917310e-5
- const double `NISTConst::conductanceQuantumUncertainty` = 0.0000000018e-5
- const double `NISTConst::inverseOfConductanceQuantum` = 12906.4037278
- const double `NISTConst::inverseOfConductanceQuantumUncertainty` = 0.0000029
- const double `NISTConst::G0` = conductanceQuantum
- const double `NISTConst::G0Uncertainty` = conductanceQuantumUncertainty

3.15.1 Detailed Description

3.15.2 Variable Documentation

3.15.2.1 `conductanceQuantum`

```
const double NISTConst::conductanceQuantum = 7.7480917310e-5
```

G_0 (S) Conductance quantum in siemens.

3.15.2.2 `conductanceQuantumUncertainty`

```
const double NISTConst::conductanceQuantumUncertainty = 0.0000000018e-5
```

G_0 (S) Uncertainty in conductance quantum in siemens.

3.15.2.3 `G0`

```
const double NISTConst::G0 = conductanceQuantum
```

G_0 (S) Conductance quantum in siemens. Alias of `conductanceQuantum`.

3.15.2.4 `G0Uncertainty`

```
const double NISTConst::G0Uncertainty = conductanceQuantumUncertainty
```

G_0 (S) Uncertainty in conductance quantum in siemens. Alias of `conductanceQuantumUncertainty`.

3.15.2.5 `inverseOfConductanceQuantum`

```
const double NISTConst::inverseOfConductanceQuantum = 12906.4037278
```

G_0^{-1} (Ω) Inverse of conductance quantum in ohms.

3.15.2.6 `inverseOfConductanceQuantumUncertainty`

```
const double NISTConst::inverseOfConductanceQuantumUncertainty = 0.0000029
```

G_0^{-1} (Ω) Uncertainty in inverse of conductance quantum in ohms.

3.16 Elementary charge

Variables

- const double `NISTConst::elementaryCharge` = 1.6021766208e-19
- const double `NISTConst::elementaryChargeOverh` = 2.417989262e14
- const double `NISTConst::elementaryChargeUncertainty` = 0.0000000098e-19
- const double `NISTConst::elementaryChargeOverhUncertainty` = 0.000000015e14
- const double `NISTConst::e` = elementaryCharge
- const double `NISTConst::elementaryPositiveCharge` = elementaryCharge
- const double `NISTConst::eUncertainty` = elementaryChargeUncertainty
- const double `NISTConst::elementaryPositiveChargeUncertainty` = elementaryChargeUncertainty

3.16.1 Detailed Description

3.16.2 Variable Documentation

3.16.2.1 `e`

```
const double NISTConst::e = elementaryCharge
```

e (C) Elementary charge in coulombs. Alias of elementaryCharge.

3.16.2.2 `elementaryCharge`

```
const double NISTConst::elementaryCharge = 1.6021766208e-19
```

e (C) Elementary charge in coulombs.

3.16.2.3 `elementaryChargeOverh`

```
const double NISTConst::elementaryChargeOverh = 2.417989262e14
```

$\frac{e}{h}$ ($\frac{A}{J}$) Elementary charge over h in amperes per joule.

3.16.2.4 `elementaryChargeOverhUncertainty`

```
const double NISTConst::elementaryChargeOverhUncertainty = 0.000000015e14
```

$\frac{e}{h}$ ($\frac{A}{J}$) Uncertainty in elementary charge over h in amperes per joule.

3.16.2.5 elementaryChargeUncertainty

```
const double NISTConst::elementaryChargeUncertainty = 0.0000000098e-19
```

e (C) Uncertainty in elementary charge in coulombs.

3.16.2.6 elementaryPositiveCharge

```
const double NISTConst::elementaryPositiveCharge = elementaryCharge
```

e (C) Elementary charge in coulombs. Alias of elementaryCharge.

3.16.2.7 elementaryPositiveChargeUncertainty

```
const double NISTConst::elementaryPositiveChargeUncertainty = elementaryChargeUncertainty
```

e (C) Uncertainty in elementary charge in coulombs. Alias of elementaryChargeUncertainty.

3.16.2.8 eUncertainty

```
const double NISTConst::eUncertainty = elementaryChargeUncertainty
```

e (C) Uncertainty in elementary charge in coulombs. Alias of elementaryChargeUncertainty.

3.17 Josephson constant

Variables

- const double `NISTConst::JosephsonConstant` = 483597.8525e9
- const double `NISTConst::JosephsonConstantUncertainty` = 0.0030e9
- const double `NISTConst::KJ` = JosephsonConstant
- const double `NISTConst::KJUncertainty` = JosephsonConstantUncertainty

3.17.1 Detailed Description

3.17.2 Variable Documentation

3.17.2.1 JosephsonConstant

```
const double NISTConst::JosephsonConstant = 483597.8525e9
```

K_J ($\frac{Hz}{V}$) Josephson constant in hertz per volt.

3.17.2.2 JosephsonConstantUncertainty

```
const double NISTConst::JosephsonConstantUncertainty = 0.0030e9
```

K_J ($\frac{Hz}{V}$) Uncertainty in Josephson constant in hertz per volt.

3.17.2.3 KJ

```
const double NISTConst::KJ = JosephsonConstant
```

K_J ($\frac{Hz}{V}$) Josephson constant in hertz per volt. Alias of JosephsonConstant.

3.17.2.4 KJUncertainty

```
const double NISTConst::KJUncertainty = JosephsonConstantUncertainty
```

K_J ($\frac{Hz}{V}$) Uncertainty in Josephson constant in hertz per volt. Alias of JosephsonConstantUncertainty.

3.18 Magnetic flux quantum

Variables

- const double [NISTConst::magneticFluxQuantum](#) = 2.067833831e-15
- const double [NISTConst::magneticFluxQuantumUncertainty](#) = 0.000000013e-15
- const double [NISTConst::Phi0](#) = magneticFluxQuantum
- const double [NISTConst::Phi0Uncertainty](#) = magneticFluxQuantumUncertainty

3.18.1 Detailed Description

3.18.2 Variable Documentation

3.18.2.1 magneticFluxQuantum

```
const double NISTConst::magneticFluxQuantum = 2.067833831e-15
```

Φ_0 (*Wb*) Magnetic flux quantum in weber.

3.18.2.2 magneticFluxQuantumUncertainty

```
const double NISTConst::magneticFluxQuantumUncertainty = 0.000000013e-15
```

Φ_0 (*Wb*) Uncertainty in magnetic flux quantum in weber.

3.18.2.3 Phi0

```
const double NISTConst::Phi0 = magneticFluxQuantum
```

Φ_0 (*Wb*) Magnetic flux quantum in weber. Alias of magneticFluxQuantum.

3.18.2.4 Phi0Uncertainty

```
const double NISTConst::Phi0Uncertainty = magneticFluxQuantumUncertainty
```

Φ_0 (*Wb*) Uncertainty in magnetic flux quantum in weber. Alias of magneticFluxQuantumUncertainty.

3.19 Nuclear magneton

Variables

- const double `NISTConst::nuclearMagneton` = 5.050783699e-27
- const double `NISTConst::nuclearMagnetonIneVPerT` = 3.1524512550e-8
- const double `NISTConst::nuclearMagnetonInInversemT` = 2.542623432e-2
- const double `NISTConst::nuclearMagnetonInKPerT` = 3.6582690e-4
- const double `NISTConst::nuclearMagnetonInMHzPerT` = 7.622593285
- const double `NISTConst::nuclearMagnetonUncertainty` = 0.000000031e-27
- const double `NISTConst::nuclearMagnetonIneVPerTUncertainty` = 0.0000000015e-8
- const double `NISTConst::nuclearMagnetonInInversemTUncertainty` = 0.000000016e-2
- const double `NISTConst::nuclearMagnetonInKPerTUncertainty` = 0.0000021e-4
- const double `NISTConst::nuclearMagnetonInMHzPerTUncertainty` = 0.000000047
- const double `NISTConst::muN` = nuclearMagneton
- const double `NISTConst::muNIneVPerT` = nuclearMagnetonIneVPerT
- const double `NISTConst::muNInInversemT` = nuclearMagnetonInInversemT
- const double `NISTConst::muNInKPerT` = nuclearMagnetonInKPerT
- const double `NISTConst::muNInMHzPerT` = nuclearMagnetonInMHzPerT
- const double `NISTConst::muNUncertainty` = nuclearMagnetonUncertainty
- const double `NISTConst::muNIneVPerTUncertainty` = nuclearMagnetonIneVPerTUncertainty
- const double `NISTConst::muNInInversemTUncertainty` = nuclearMagnetonInInversemTUncertainty
- const double `NISTConst::muNInKPerTUncertainty` = nuclearMagnetonInKPerTUncertainty
- const double `NISTConst::muNInMHzPerTUncertainty` = nuclearMagnetonInMHzPerTUncertainty

3.19.1 Detailed Description

3.19.2 Variable Documentation

3.19.2.1 muN

```
const double NISTConst::muN = nuclearMagneton
```

μ_N ($\frac{J}{T}$) Nuclear magneton in joules per tesla. Alias of nuclearMagneton.

3.19.2.2 muNIneVPerT

```
const double NISTConst::muNIneVPerT = nuclearMagnetonIneVPerT
```

($\frac{eV}{T}$) Nuclear magneton in electron volts per tesla. Alias of nuclearMagnetonIneVPerT.

3.19.2.3 muNIneVPerTUncertainty

```
const double NISTConst::muNIneVPerTUncertainty = nuclearMagnetonIneVPerTUncertainty
```

($\frac{eV}{T}$) Uncertainty in nuclear magneton in electron volts per tesla. Alias of nuclearMagnetonIneVPerTUncertainty.

3.19.2.4 muNInInversemT

```
const double NISTConst::muNInInversemT = nuclearMagnetonInInversemT
```

$\frac{\mu_N}{hc} \left(\frac{1}{m T} \right)$ Nuclear magneton in inverse meters tesla. Alias of nuclearMagnetonInInversemT.

3.19.2.5 muNInInversemTUncertainty

```
const double NISTConst::muNInInversemTUncertainty = nuclearMagnetonInInversemTUncertainty
```

$\frac{\mu_N}{hc} \left(\frac{1}{m T} \right)$ Uncertainty in nuclear magneton in inverse meters tesla. Alias of nuclearMagnetonInInversemT↔Uncertainty.

3.19.2.6 muNInKPerT

```
const double NISTConst::muNInKPerT = nuclearMagnetonInKPerT
```

$\frac{\mu_N}{k} \left(\frac{K}{T} \right)$ Nuclear magneton in kelvins per tesla. Alias of nuclearMagnetonInKPerT.

3.19.2.7 muNInKPerTUncertainty

```
const double NISTConst::muNInKPerTUncertainty = nuclearMagnetonInKPerTUncertainty
```

$\frac{\mu_N}{k} \left(\frac{K}{T} \right)$ Uncertainty in nuclear magneton in kelvins per tesla. Alias of nuclearMagnetonInKPerTUncertainty.

3.19.2.8 muNInMHzPerT

```
const double NISTConst::muNInMHzPerT = nuclearMagnetonInMHzPerT
```

$\frac{\mu_N}{h} \left(\frac{MHz}{T} \right)$ Nuclear magneton in megahertz per tesla. Alias of nuclearMagnetonInMHzPerT.

3.19.2.9 muNInMHzPerTUncertainty

```
const double NISTConst::muNInMHzPerTUncertainty = nuclearMagnetonInMHzPerTUncertainty
```

$\frac{\mu_N}{h} \left(\frac{MHz}{T} \right)$ Uncertainty in nuclear magneton in megahertz per tesla. Alias of nuclearMagnetonInMHzPerT↔Uncertainty.

3.19.2.10 muNUncertainty

```
const double NISTConst::muNUncertainty = nuclearMagnetonUncertainty
```

$\mu_N \left(\frac{J}{T} \right)$ Uncertainty in nuclear magneton in joules per tesla. Alias of nuclearMagnetonUncertainty.

3.19.2.11 nuclearMagneton

```
const double NISTConst::nuclearMagneton = 5.050783699e-27
```

μ_N ($\frac{J}{T}$) Nuclear magneton in joules per tesla.

3.19.2.12 nuclearMagnetonIneVPerT

```
const double NISTConst::nuclearMagnetonIneVPerT = 3.1524512550e-8
```

($\frac{eV}{T}$) Nuclear magneton in electron volts per tesla.

3.19.2.13 nuclearMagnetonIneVPerTUncertainty

```
const double NISTConst::nuclearMagnetonIneVPerTUncertainty = 0.0000000015e-8
```

($\frac{eV}{T}$) Uncertainty in nuclear magneton in electron volts per tesla.

3.19.2.14 nuclearMagnetonInInversemT

```
const double NISTConst::nuclearMagnetonInInversemT = 2.542623432e-2
```

$\frac{\mu_N}{hc}$ ($\frac{1}{m T}$) Nuclear magneton in inverse meters tesla.

3.19.2.15 nuclearMagnetonInInversemTUncertainty

```
const double NISTConst::nuclearMagnetonInInversemTUncertainty = 0.000000016e-2
```

$\frac{\mu_N}{hc}$ ($\frac{1}{m T}$) Uncertainty in nuclear magneton in inverse meters tesla.

3.19.2.16 nuclearMagnetonInKPerT

```
const double NISTConst::nuclearMagnetonInKPerT = 3.6582690e-4
```

$\frac{\mu_N}{k}$ ($\frac{K}{T}$) Nuclear magneton in kelvins per tesla.

3.19.2.17 nuclearMagnetonInKPerTUncertainty

```
const double NISTConst::nuclearMagnetonInKPerTUncertainty = 0.0000021e-4
```

$\frac{\mu_N}{k}$ ($\frac{K}{T}$) Uncertainty in nuclear magneton in kelvins per tesla.

3.19.2.18 nuclearMagnetonInMHzPerT

```
const double NISTConst::nuclearMagnetonInMHzPerT = 7.622593285
```

$\frac{\mu_N}{h}$ ($\frac{MHz}{T}$) Nuclear magneton in megahertz per tesla.

3.19.2.19 nuclearMagnetonInMHzPerTUncertainty

```
const double NISTConst::nuclearMagnetonInMHzPerTUncertainty = 0.000000047
```

$\frac{\mu_N}{h}$ ($\frac{MHz}{T}$) Uncertainty in nuclear magneton in megahertz per tesla.

3.19.2.20 nuclearMagnetonUncertainty

```
const double NISTConst::nuclearMagnetonUncertainty = 0.000000031e-27
```

μ_N ($\frac{J}{T}$) Uncertainty in nuclear magneton in joules per tesla.

3.20 von Klitzing constant

Variables

- const double `NISTConst::vonKlitzingConstant` = 25812.8074555
- const double `NISTConst::vonKlitzingConstantUncertainty` = 0.0000059
- const double `NISTConst::RK` = vonKlitzingConstant
- const double `NISTConst::RKUncertainty` = vonKlitzingConstantUncertainty

3.20.1 Detailed Description

3.20.2 Variable Documentation

3.20.2.1 RK

```
const double NISTConst::RK = vonKlitzingConstant
```

R_K (Ω) von Klitzing constant in ohms. Alias of vonKlitzingConstant.

3.20.2.2 RKUncertainty

```
const double NISTConst::RKUncertainty = vonKlitzingConstantUncertainty
```

R_K (Ω) Uncertainty in von Klitzing constant in ohms. Alias of vonKlitzingConstantUncertainty.

3.20.2.3 vonKlitzingConstant

```
const double NISTConst::vonKlitzingConstant = 25812.8074555
```

R_K (Ω) von Klitzing constant in ohms.

3.20.2.4 vonKlitzingConstantUncertainty

```
const double NISTConst::vonKlitzingConstantUncertainty = 0.0000059
```

R_K (Ω) Uncertainty in von Klitzing constant in ohms.

3.21 Atomic and nuclear

Modules

- [Alpha particle \(Helium-4 nucleus\)](#)
- [Bohr radius](#)
- [Compton Wavelength](#)
- [Deuteron \(Deuterium/Hydrogen-2 nucleus\)](#)
- [Electron particle](#)
- [Fermi coupling constant](#)
- [Fine-structure constant](#)
- [Hartree energy](#)
- [Helion \(Helium-3 nucleus\)](#)
- [Muon particle](#)
- [Neutron particle](#)
- [Proton particle](#)
- [Quantum of circulation](#)
- [Rydberg constant](#)
- [Tau particle](#)
- [Thomson cross section](#)
- [Triton \(Tritium/Hydrogen-3 nucleus\)](#)
- [Weak mixing angle](#)

3.21.1 Detailed Description

3.22 Alpha particle (Helium-4 nucleus)

Variables

- const double `NISTConst::alphaParticleElectronMassRatio` = 7294.29954136
- const double `NISTConst::alphaParticleMass` = 6.644657230e-27
- const double `NISTConst::alphaParticleMassInJPercSquared` = 5.971920097e-10
- const double `NISTConst::alphaParticleMassInMeVPercSquared` = 3727.379378
- const double `NISTConst::alphaParticleMassInu` = 4.001506179127
- const double `NISTConst::alphaParticleMolarMass` = 4.001506179127e-3
- const double `NISTConst::alphaParticleProtonMassRatio` = 3.97259968907
- const double `NISTConst::alphaParticleElectronMassRatioUncertainty` = 0.00000024
- const double `NISTConst::alphaParticleMassUncertainty` = 0.000000082e-27
- const double `NISTConst::alphaParticleMassInJPercSquaredUncertainty` = 0.000000073e-10
- const double `NISTConst::alphaParticleMassInMeVPercSquaredUncertainty` = 0.000023
- const double `NISTConst::alphaParticleMassInuUncertainty` = 0.000000000063
- const double `NISTConst::alphaParticleMolarMassUncertainty` = 0.000000000063e-3
- const double `NISTConst::alphaParticleProtonMassRatioUncertainty` = 0.00000000036

3.22.1 Detailed Description

3.22.2 Variable Documentation

3.22.2.1 `alphaParticleElectronMassRatio`

```
const double NISTConst::alphaParticleElectronMassRatio = 7294.29954136
```

$\frac{m_\alpha}{m_e}$ (1) Alpha particle-electron mass ratio.

3.22.2.2 `alphaParticleElectronMassRatioUncertainty`

```
const double NISTConst::alphaParticleElectronMassRatioUncertainty = 0.00000024
```

$\frac{m_\alpha}{m_e}$ (1) Uncertainty in alpha particle-electron mass ratio.

3.22.2.3 `alphaParticleMass`

```
const double NISTConst::alphaParticleMass = 6.644657230e-27
```

m_α (*kg*) Alpha particle mass in kilograms.

3.22.2.4 `alphaParticleMassInJPercSquared`

```
const double NISTConst::alphaParticleMassInJPercSquared = 5.971920097e-10
```

m_α ($\frac{J}{c^2}$) Alpha particle mass in joules per speed of light squared.

3.22.2.5 alphaParticleMassInJPercSquaredUncertainty

```
const double NISTConst::alphaParticleMassInJPercSquaredUncertainty = 0.000000073e-10
```

$m_{\alpha} \left(\frac{J}{c^2} \right)$ Uncertainty in alpha particle mass in joules per speed of light squared.

3.22.2.6 alphaParticleMassInMeVPercSquared

```
const double NISTConst::alphaParticleMassInMeVPercSquared = 3727.379378
```

$m_{\alpha} \left(\frac{MeV}{c^2} \right)$ Alpha particle mass in megaelectron volts per speed of light squared.

3.22.2.7 alphaParticleMassInMeVPercSquaredUncertainty

```
const double NISTConst::alphaParticleMassInMeVPercSquaredUncertainty = 0.000023
```

$m_{\alpha} \left(\frac{MeV}{c^2} \right)$ Uncertainty in alpha particle mass in megaelectron volts per speed of light squared.

3.22.2.8 alphaParticleMassInu

```
const double NISTConst::alphaParticleMassInu = 4.001506179127
```

$m_{\alpha} (u)$ Alpha particle mass in unified atomic mass units.

3.22.2.9 alphaParticleMassInuUncertainty

```
const double NISTConst::alphaParticleMassInuUncertainty = 0.000000000063
```

$m_{\alpha} (u)$ Uncertainty in alpha particle mass in unified atomic mass units.

3.22.2.10 alphaParticleMassUncertainty

```
const double NISTConst::alphaParticleMassUncertainty = 0.000000082e-27
```

$m_{\alpha} (kg)$ Uncertainty in alpha particle mass in kilograms.

3.22.2.11 alphaParticleMolarMass

```
const double NISTConst::alphaParticleMolarMass = 4.001506179127e-3
```

$M_{\alpha} \left(\frac{kg}{mol} \right)$ Alpha particle molar mass in kilograms per mole.

3.22.2.12 alphaParticleMolarMassUncertainty

```
const double NISTConst::alphaParticleMolarMassUncertainty = 0.000000000063e-3
```

$M_{\alpha} \left(\frac{kg}{mol} \right)$ Uncertainty in alpha particle molar mass in kilograms per mole.

3.22.2.13 alphaParticleProtonMassRatio

```
const double NISTConst::alphaParticleProtonMassRatio = 3.97259968907
```

$\frac{m_{\alpha}}{m_p} (1)$ Alpha particle-proton mass ratio.

3.22.2.14 alphaParticleProtonMassRatioUncertainty

```
const double NISTConst::alphaParticleProtonMassRatioUncertainty = 0.00000000036
```

$\frac{m_{\alpha}}{m_p} (1)$ Uncertainty in alpha particle-proton mass ratio.

3.23 Bohr radius

Variables

- const double `NISTConst::BohrRadius` = 0.52917721067e-10
- const double `NISTConst::BohrRadiusUncertainty` = 0.00000000012e-10
- const double `NISTConst::a0` = BohrRadius
- const double `NISTConst::rBohr` = BohrRadius
- const double `NISTConst::a0Uncertainty` = BohrRadiusUncertainty
- const double `NISTConst::rBohrUncertainty` = BohrRadiusUncertainty

3.23.1 Detailed Description

3.23.2 Variable Documentation

3.23.2.1 a0

```
const double NISTConst::a0 = BohrRadius
```

a_0 (*m*) Bohr radius in meters. Alias of BohrRadius.

3.23.2.2 a0Uncertainty

```
const double NISTConst::a0Uncertainty = BohrRadiusUncertainty
```

a_0 (*m*) Uncertainty in Bohr radius in meters. Alias of BohrRadiusUncertainty.

3.23.2.3 BohrRadius

```
const double NISTConst::BohrRadius = 0.52917721067e-10
```

a_0 (*m*) Bohr radius in meters.

3.23.2.4 BohrRadiusUncertainty

```
const double NISTConst::BohrRadiusUncertainty = 0.00000000012e-10
```

a_0 (*m*) Uncertainty in Bohr radius in meters.

3.23.2.5 rBohr

```
const double NISTConst::rBohr = BohrRadius
```

a_0 (*m*) Bohr radius in meters. Alias of BohrRadius.

3.23.2.6 rBohrUncertainty

```
const double NISTConst::rBohrUncertainty = BohrRadiusUncertainty
```

a_0 (*m*) Uncertainty in Bohr radius in meters. Alias of BohrRadiusUncertainty.

3.24 Compton Wavelength

Variables

- const double `NISTConst::ComptonWavelength` = 2.4263102367e-12
- const double `NISTConst::ComptonWavelengthOver2Pi` = 386.15926764e-15
- const double `NISTConst::ComptonWavelengthUncertainty` = 0.0000000011e-12
- const double `NISTConst::ComptonWavelengthOver2PiUncertainty` = 0.00000018e-15
- const double `NISTConst::lambdaC` = `ComptonWavelength`
- const double `NISTConst::lambdaCOver2Pi` = `ComptonWavelengthOver2Pi`
- const double `NISTConst::lambdabarC` = `ComptonWavelengthOver2Pi`
- const double `NISTConst::lambdaCUncertainty` = `ComptonWavelengthUncertainty`
- const double `NISTConst::lambdaCOver2PiUncertainty` = `ComptonWavelengthOver2PiUncertainty`
- const double `NISTConst::lambdabarCUncertainty` = `ComptonWavelengthOver2PiUncertainty`

3.24.1 Detailed Description

3.24.2 Variable Documentation

3.24.2.1 `ComptonWavelength`

```
const double NISTConst::ComptonWavelength = 2.4263102367e-12
```

λ_C (m) Compton wavelength in meters.

3.24.2.2 `ComptonWavelengthOver2Pi`

```
const double NISTConst::ComptonWavelengthOver2Pi = 386.15926764e-15
```

$\frac{\lambda_C}{2\pi}$ (m) Compton wavelength over 2 pi in meters.

3.24.2.3 `ComptonWavelengthOver2PiUncertainty`

```
const double NISTConst::ComptonWavelengthOver2PiUncertainty = 0.00000018e-15
```

$\frac{\lambda_C}{2\pi}$ (m) Uncertainty in Compton wavelength over 2 pi in meters.

3.24.2.4 `ComptonWavelengthUncertainty`

```
const double NISTConst::ComptonWavelengthUncertainty = 0.0000000011e-12
```

λ_C (m) Uncertainty in Compton wavelength in meters.

3.24.2.5 `lambdabarC`

```
const double NISTConst::lambdabarC = ComptonWavelengthOver2Pi
```

$\frac{\lambda_C}{2\pi}$ (m) Compton wavelength over 2 pi in meters. Alias of `ComptonWavelengthOver2Pi`.

3.24.2.6 `lambdabarCUncertainty`

```
const double NISTConst::lambdabarCUncertainty = ComptonWavelengthOver2PiUncertainty
```

$\frac{\lambda_C}{2\pi}$ (m) Uncertainty in Compton wavelength over 2 pi in meters. Alias of `ComptonWavelengthOver2PiUncertainty`.

3.24.2.7 `lambdaC`

```
const double NISTConst::lambdaC = ComptonWavelength
```

λ_C (m) Compton wavelength in meters. Alias of `ComptonWavelength`.

3.24.2.8 `lambdaCOver2Pi`

```
const double NISTConst::lambdaCOver2Pi = ComptonWavelengthOver2Pi
```

$\frac{\lambda_C}{2\pi}$ (m) Compton wavelength over 2 pi in meters. Alias of `ComptonWavelengthOver2Pi`.

3.24.2.9 `lambdaCOver2PiUncertainty`

```
const double NISTConst::lambdaCOver2PiUncertainty = ComptonWavelengthOver2PiUncertainty
```

$\frac{\lambda_C}{2\pi}$ (m) Uncertainty in Compton wavelength over 2 pi in meters. Alias of `ComptonWavelengthOver2PiUncertainty`.

3.24.2.10 `lambdaCUncertainty`

```
const double NISTConst::lambdaCUncertainty = ComptonWavelengthUncertainty
```

λ_C (m) Uncertainty in Compton wavelength in meters. Alias of `ComptonWavelengthUncertainty`.

3.25 Deuteron (Deuterium/Hydrogen-2 nucleus)

Variables

- const double [NISTConst::deuteronFactor](#) = 0.8574382311
- const double [NISTConst::deuteronElectronMagneticMomentRatio](#) = -4.664345535e-4
- const double [NISTConst::deuteronElectronMassRatio](#) = 3670.48296785
- const double [NISTConst::deuteronMagneticMoment](#) = 0.4330735040e-26
- const double [NISTConst::deuteronMagneticMomentToBohrMagnetonRatio](#) = 0.4669754554e-3
- const double [NISTConst::deuteronMagneticMomentToNuclearMagnetonRatio](#) = 0.8574382311
- const double [NISTConst::deuteronMass](#) = 3.343583719e-27
- const double [NISTConst::deuteronMassInJPercSquared](#) = 3.005063183e-10
- const double [NISTConst::deuteronMassInMeVPercSquared](#) = 1875.612928
- const double [NISTConst::deuteronMassInu](#) = 2.013553212745
- const double [NISTConst::deuteronMolarMass](#) = 2.013553212745e-3
- const double [NISTConst::deuteronNeutronMagneticMomentRatio](#) = -0.44820652
- const double [NISTConst::deuteronProtonMagneticMomentRatio](#) = 0.3070122077
- const double [NISTConst::deuteronProtonMassRatio](#) = 1.99900750087
- const double [NISTConst::deuteronrmsChargeRadius](#) = 2.1413e-15
- const double [NISTConst::deuteronFactorUncertainty](#) = 0.0000000048
- const double [NISTConst::deuteronElectronMagneticMomentRatioUncertainty](#) = 0.000000026e-4
- const double [NISTConst::deuteronElectronMassRatioUncertainty](#) = 0.00000013
- const double [NISTConst::deuteronMagneticMomentUncertainty](#) = 0.000000036e-26
- const double [NISTConst::deuteronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.000000026e-3
- const double [NISTConst::deuteronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.000000048
- const double [NISTConst::deuteronMassUncertainty](#) = 0.000000041e-27
- const double [NISTConst::deuteronMassInJPercSquaredUncertainty](#) = 0.000000037e-10
- const double [NISTConst::deuteronMassInMeVPercSquaredUncertainty](#) = 0.000012
- const double [NISTConst::deuteronMassInuUncertainty](#) = 0.00000000040
- const double [NISTConst::deuteronMolarMassUncertainty](#) = 0.00000000040e-3
- const double [NISTConst::deuteronNeutronMagneticMomentRatioUncertainty](#) = 0.00000011
- const double [NISTConst::deuteronProtonMagneticMomentRatioUncertainty](#) = 0.0000000015
- const double [NISTConst::deuteronProtonMassRatioUncertainty](#) = 0.0000000019
- const double [NISTConst::deuteronrmsChargeRadiusUncertainty](#) = 0.0025e-15

3.25.1 Detailed Description

3.25.2 Variable Documentation

3.25.2.1 [deuteronElectronMagneticMomentRatio](#)

```
const double NISTConst::deuteronElectronMagneticMomentRatio = -4.664345535e-4
```

$\frac{\mu_D}{\mu_e}$ (1) Deuteron-electron magnetic moment ratio.

3.25.2.2 deuteronElectronMagneticMomentRatioUncertainty

```
const double NISTConst::deuteronElectronMagneticMomentRatioUncertainty = 0.000000026e-4
```

$\frac{\mu_D}{\mu_e}$ (1) Uncertainty in deuteron-electron magnetic moment ratio.

3.25.2.3 deuteronElectronMassRatio

```
const double NISTConst::deuteronElectronMassRatio = 3670.48296785
```

$\frac{m_D}{m_e}$ (1) Deuteron-electron mass ratio.

3.25.2.4 deuteronElectronMassRatioUncertainty

```
const double NISTConst::deuteronElectronMassRatioUncertainty = 0.00000013
```

$\frac{m_D}{m_e}$ (1) Uncertainty in deuteron-electron mass ratio.

3.25.2.5 deuterongFactor

```
const double NISTConst::deuterongFactor = 0.8574382311
```

g_D (1) Deuteron g factor.

3.25.2.6 deuterongFactorUncertainty

```
const double NISTConst::deuterongFactorUncertainty = 0.0000000048
```

g_D (1) Uncertainty in deuteron g factor.

3.25.2.7 deuteronMagneticMoment

```
const double NISTConst::deuteronMagneticMoment = 0.4330735040e-26
```

μ_D ($\frac{J}{T}$) Deuteron magnetic moment in joules per tesla.

3.25.2.8 deuteronMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::deuteronMagneticMomentToBohrMagnetonRatio = 0.4669754554e-3
```

$\frac{\mu_D}{\mu_B}$ (1) Deuteron magnetic moment to Bohr magneton ratio.

3.25.2.9 deuteronMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::deuteronMagneticMomentToBohrMagnetonRatioUncertainty = 0.0000000026e-3
```

$\frac{\mu_D}{\mu_B}$ (1) Uncertainty in deuteron magnetic moment to Bohr magneton ratio.

3.25.2.10 deuteronMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::deuteronMagneticMomentToNuclearMagnetonRatio = 0.8574382311
```

$\frac{\mu_D}{\mu_N}$ (1) Deuteron magnetic moment to nuclear magneton ratio.

3.25.2.11 deuteronMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::deuteronMagneticMomentToNuclearMagnetonRatioUncertainty = 0.0000000048
```

$\frac{\mu_D}{\mu_N}$ (1) Uncertainty in deuteron magnetic moment to nuclear magneton ratio.

3.25.2.12 deuteronMagneticMomentUncertainty

```
const double NISTConst::deuteronMagneticMomentUncertainty = 0.0000000036e-26
```

μ_D ($\frac{J}{T}$) Uncertainty in deuteron magnetic moment in joules per tesla.

3.25.2.13 deuteronMass

```
const double NISTConst::deuteronMass = 3.343583719e-27
```

m_D (kg) Deuteron mass in kilograms.

3.25.2.14 deuteronMassInJPercSquared

```
const double NISTConst::deuteronMassInJPercSquared = 3.005063183e-10
```

m_D ($\frac{J}{c^2}$) Deuteron mass in joules per speed of light squared.

3.25.2.15 deuteronMassInJPercSquaredUncertainty

```
const double NISTConst::deuteronMassInJPercSquaredUncertainty = 0.000000037e-10
```

m_D ($\frac{J}{c^2}$) Uncertainty in deuteron mass in joules per speed of light squared.

3.25.2.16 deuteronMassInMeVPercSquared

```
const double NISTConst::deuteronMassInMeVPercSquared = 1875.612928
```

m_D ($\frac{MeV}{c^2}$) Deuteron mass in megaelectron volts per speed of light squared.

3.25.2.17 deuteronMassInMeVPercSquaredUncertainty

```
const double NISTConst::deuteronMassInMeVPercSquaredUncertainty = 0.000012
```

m_D ($\frac{MeV}{c^2}$) Uncertainty in deuteron mass in megaelectron volts per speed of light squared.

3.25.2.18 deuteronMassInu

```
const double NISTConst::deuteronMassInu = 2.013553212745
```

m_D (u) Deuteron mass in unified atomic mass units.

3.25.2.19 deuteronMassInuUncertainty

```
const double NISTConst::deuteronMassInuUncertainty = 0.000000000040
```

m_D (u) Uncertainty in deuteron mass in unified atomic mass units.

3.25.2.20 deuteronMassUncertainty

```
const double NISTConst::deuteronMassUncertainty = 0.000000041e-27
```

m_D (kg) Uncertainty in deuteron mass in kilograms.

3.25.2.21 deuteronMolarMass

```
const double NISTConst::deuteronMolarMass = 2.013553212745e-3
```

M_D ($\frac{1}{mol}$) Deuteron molar mass in inverse mols.

3.25.2.22 deuteronMolarMassUncertainty

```
const double NISTConst::deuteronMolarMassUncertainty = 0.000000000040e-3
```

M_D ($\frac{1}{mol}$) Uncertainty in deuteron molar mass in inverse mols.

3.25.2.23 deuteronNeutronMagneticMomentRatio

```
const double NISTConst::deuteronNeutronMagneticMomentRatio = -0.44820652
```

$\frac{\mu_D}{\mu_n}$ (1) Deuteron-neutron magnetic moment ratio.

3.25.2.24 deuteronNeutronMagneticMomentRatioUncertainty

```
const double NISTConst::deuteronNeutronMagneticMomentRatioUncertainty = 0.00000011
```

$\frac{\mu_D}{\mu_n}$ (1) Uncertainty in deuteron-neutron magnetic moment ratio.

3.25.2.25 deuteronProtonMagneticMomentRatio

```
const double NISTConst::deuteronProtonMagneticMomentRatio = 0.3070122077
```

$\frac{\mu_D}{\mu_p}$ (1) Deuteron-proton magnetic moment ratio.

3.25.2.26 deuteronProtonMagneticMomentRatioUncertainty

```
const double NISTConst::deuteronProtonMagneticMomentRatioUncertainty = 0.0000000015
```

$\frac{\mu_D}{\mu_p}$ (1) Uncertainty in deuteron-proton magnetic moment ratio.

3.25.2.27 deuteronProtonMassRatio

```
const double NISTConst::deuteronProtonMassRatio = 1.99900750087
```

$\frac{m_D}{m_p}$ (1) Deuteron-proton magnetic moment ratio.

3.25.2.28 deuteronProtonMassRatioUncertainty

```
const double NISTConst::deuteronProtonMassRatioUncertainty = 0.00000000019
```

$\frac{m_D}{m_p}$ (1) Uncertainty in deuteron-proton magnetic moment ratio.

3.25.2.29 deuteronrmsChargeRadius

```
const double NISTConst::deuteronrmsChargeRadius = 2.1413e-15
```

r_D (m) Deuteron rms charge radius in meters.

3.25.2.30 deuteronrmsChargeRadiusUncertainty

```
const double NISTConst::deuteronrmsChargeRadiusUncertainty = 0.0025e-15
```

r_D (m) Uncertainty in deuteron rms charge radius in meters.

3.26 Electron particle

Variables

- const double [NISTConst::classicalElectronRadius](#) = 2.8179403227e-15
- const double [NISTConst::classicalElectronRadiusUncertainty](#) = 0.0000000019e-15
- const double [NISTConst::electronChargeToMass](#) = -1.758820024e11
- const double [NISTConst::electronDeuteronMagneticMomentRatio](#) = -2143.923499
- const double [NISTConst::electronDeuteronMassRatio](#) = 2.724437107484e-4
- const double [NISTConst::electronGyromagneticRatio](#) = 1.760859644e11
- const double [NISTConst::electronGyromagneticRatioOver2pi](#) = 28024.95164
- const double [NISTConst::electronHelionMassRatio](#) = 1.819543074854e-4
- const double [NISTConst::electronMagneticMoment](#) = -928.4764620e-26
- const double [NISTConst::electronMagneticMomentAnomaly](#) = 1.15965218091e-3
- const double [NISTConst::electronMagneticMomentToBohrMagnetonRatio](#) = -1.00115965218091
- const double [NISTConst::electronMagneticMomentToNuclearMagnetonRatio](#) = -1838.28197234
- const double [NISTConst::electronMass](#) = 9.10938356e-31
- const double [NISTConst::electronMassInJPercSquared](#) = 8.18710565e-14
- const double [NISTConst::electronMassInMeVPercSquared](#) = 0.5109989461
- const double [NISTConst::electronMassInu](#) = 5.48579909070e-4
- const double [NISTConst::electronMolarMass](#) = 5.48579909070e-7
- const double [NISTConst::electronMuonMagneticMomentRatio](#) = 206.7669880
- const double [NISTConst::electronMuonMassRatio](#) = 4.83633170e-3
- const double [NISTConst::electronNeutronMagneticMomentRatio](#) = 960.92050
- const double [NISTConst::electronNeutronMassRatio](#) = 5.4386734428e-4
- const double [NISTConst::electronProtonMagneticMomentRatio](#) = -658.2106866
- const double [NISTConst::electronProtonMassRatio](#) = 5.44617021352e-4
- const double [NISTConst::electronTauMassRatio](#) = 2.87592e-4
- const double [NISTConst::electronToAlphaParticleMassRatio](#) = 1.370933554798e-4
- const double [NISTConst::electronToShieldedHelionMagneticMomentRatio](#) = 864.058257
- const double [NISTConst::electronToShieldedProtonMagneticMomentRatio](#) = -658.2275971
- const double [NISTConst::electronTritonMassRatio](#) = 1.819200062203e-4
- const double [NISTConst::electronChargeToMassUncertainty](#) = 0.000000011e11
- const double [NISTConst::electronDeuteronMagneticMomentRatioUncertainty](#) = 0.000012
- const double [NISTConst::electronDeuteronMassRatioUncertainty](#) = 0.000000000096e-4
- const double [NISTConst::electronGyromagneticRatioUncertainty](#) = 0.00000000000052
- const double [NISTConst::electronGyromagneticRatioOver2piUncertainty](#) = 0.000000011e11
- const double [NISTConst::electronHelionMassRatioUncertainty](#) = 0.000000000088e-4
- const double [NISTConst::electronMagneticMomentUncertainty](#) = 0.0000057e-26
- const double [NISTConst::electronMagneticMomentAnomalyUncertainty](#) = 0.00000000026e-3
- const double [NISTConst::electronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000000000026
- const double [NISTConst::electronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000017
- const double [NISTConst::electronMassUncertainty](#) = 0.00000011e-31
- const double [NISTConst::electronMassInJPercSquaredUncertainty](#) = 0.00000010e-14
- const double [NISTConst::electronMassInMeVPercSquaredUncertainty](#) = 0.0000000031
- const double [NISTConst::electronMassInuUncertainty](#) = 0.00000000016e-4
- const double [NISTConst::electronMolarMassUncertainty](#) = 0.00000000016e-7
- const double [NISTConst::electronMuonMagneticMomentRatioUncertainty](#) = 0.0000046
- const double [NISTConst::electronMuonMassRatioUncertainty](#) = 0.00000011e-3
- const double [NISTConst::electronNeutronMagneticMomentRatioUncertainty](#) = 0.00023
- const double [NISTConst::electronNeutronMassRatioUncertainty](#) = 0.0000000027e-4
- const double [NISTConst::electronProtonMagneticMomentRatioUncertainty](#) = 0.0000020

- const double `NISTConst::electronProtonMassRatioUncertainty` = 0.00000000052e-4
- const double `NISTConst::electronTauMassRatioUncertainty` = 0.00026e-4
- const double `NISTConst::electronToAlphaParticleMassRatioUncertainty` = 0.000000000045e-4
- const double `NISTConst::electronToShieldedHelionMagneticMomentRatioUncertainty` = 0.000010
- const double `NISTConst::electronToShieldedProtonMagneticMomentRatioUncertainty` = 0.0000072
- const double `NISTConst::electronTritonMassRatioUncertainty` = 0.000000000084e-4

3.26.1 Detailed Description

3.26.2 Variable Documentation

3.26.2.1 `classicalElectronRadius`

```
const double NISTConst::classicalElectronRadius = 2.8179403227e-15
```

r_e (m) Classical electron radius in meters.

3.26.2.2 `classicalElectronRadiusUncertainty`

```
const double NISTConst::classicalElectronRadiusUncertainty = 0.0000000019e-15
```

r_e (m) Uncertainty in classical electron radius in meters.

3.26.2.3 `electronChargeToMass`

```
const double NISTConst::electronChargeToMass = -1.758820024e11
```

$\frac{-e}{m_e}$ ($\frac{C}{kg}$) Electron charge to mass quotient in coulombs per kilogram.

3.26.2.4 `electronChargeToMassUncertainty`

```
const double NISTConst::electronChargeToMassUncertainty = 0.000000011e11
```

$\frac{-e}{m_e}$ ($\frac{C}{kg}$) Uncertainty in electron charge to mass quotient in coulombs per kilogram.

3.26.2.5 `electronDeuteronMagneticMomentRatio`

```
const double NISTConst::electronDeuteronMagneticMomentRatio = -2143.923499
```

$\frac{\mu_e}{\mu_D}$ (1) Electron-deuteron magnetic moment ratio.

3.26.2.6 electronDeuteronMagneticMomentRatioUncertainty

```
const double NISTConst::electronDeuteronMagneticMomentRatioUncertainty = 0.000012
```

$\frac{\mu_e}{\mu_D}$ (1) Uncertainty in electron-deuteron magnetic moment ratio.

3.26.2.7 electronDeuteronMassRatio

```
const double NISTConst::electronDeuteronMassRatio = 2.724437107484e-4
```

$\frac{m_e}{m_D}$ (1) Electron-deuteron mass ratio.

3.26.2.8 electronDeuteronMassRatioUncertainty

```
const double NISTConst::electronDeuteronMassRatioUncertainty = 0.000000000096e-4
```

$\frac{m_e}{m_D}$ (1) Uncertainty in electron-deuteron mass ratio.

3.26.2.9 electrongFactor

```
const double NISTConst::electrongFactor = -2.00231930436182
```

g_e (1) Electron g factor.

3.26.2.10 electrongFactorUncertainty

```
const double NISTConst::electrongFactorUncertainty = 0.000000000000052
```

g_e (1) Uncertainty in electron g factor.

3.26.2.11 electronGyromagneticRatio

```
const double NISTConst::electronGyromagneticRatio = 1.760859644e11
```

$\gamma_e \left(\frac{\text{rad}}{\text{T}} \right)$ Electron gyromagnetic ratio in hertz per tesla. Note that the units of radians are added for clarity.

3.26.2.12 electronGyromagneticRatioOver2pi

```
const double NISTConst::electronGyromagneticRatioOver2pi = 28024.95164
```

$\frac{\gamma_e}{2\pi} \left(\frac{\text{rad}}{\text{T}} \right)$ Electron gyromagnetic ratio over 2 pi in megahertz per tesla. Note that the units of radians are added for clarity.

3.26.2.13 electronGyromagneticRatioOver2piUncertainty

```
const double NISTConst::electronGyromagneticRatioOver2piUncertainty = 0.00017
```

$\frac{\gamma_e}{2\pi} \left(\frac{\text{rad MHz}}{\text{T}} \right)$ Uncertainty in electron gyromagnetic ratio over 2 pi in megahertz per tesla. Note that the units of radians are added for clarity.

3.26.2.14 electronGyromagneticRatioUncertainty

```
const double NISTConst::electronGyromagneticRatioUncertainty = 0.000000011e11
```

$\gamma_e \left(\frac{\text{rad Hz}}{\text{T}} \right)$ Uncertainty in electron gyromagnetic ratio in hertz per tesla. Note that the units of radians are added for clarity.

3.26.2.15 electronHelionMassRatio

```
const double NISTConst::electronHelionMassRatio = 1.819543074854e-4
```

$\frac{m_e}{m_3\text{He}}$ (1) Electron-helion mass ratio.

3.26.2.16 electronHelionMassRatioUncertainty

```
const double NISTConst::electronHelionMassRatioUncertainty = 0.000000000088e-4
```

$\frac{m_e}{m_3\text{He}}$ (1) Uncertainty in electron-helion mass ratio.

3.26.2.17 electronMagneticMoment

```
const double NISTConst::electronMagneticMoment = -928.4764620e-26
```

$\mu_e \left(\frac{\text{J}}{\text{T}} \right)$ Electron magnetic moment in joules per tesla.

3.26.2.18 electronMagneticMomentAnomaly

```
const double NISTConst::electronMagneticMomentAnomaly = 1.15965218091e-3
```

a_e (1) Electron magnetic moment anomaly.

3.26.2.19 electronMagneticMomentAnomalyUncertainty

```
const double NISTConst::electronMagneticMomentAnomalyUncertainty = 0.00000000026e-3
```

a_e (1) Uncertainty in electron magnetic moment anomaly.

3.26.2.20 electronMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::electronMagneticMomentToBohrMagnetonRatio = -1.00115965218091
```

$\frac{\mu_e}{\mu_B}$ (1) Electron magnetic moment to Bohr magneton ratio.

3.26.2.21 electronMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::electronMagneticMomentToBohrMagnetonRatioUncertainty = 0.000000000000026
```

$\frac{\mu_e}{\mu_B}$ (1) Uncertainty in electron magnetic moment to Bohr magneton ratio.

3.26.2.22 electronMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::electronMagneticMomentToNuclearMagnetonRatio = -1838.28197234
```

$\frac{\mu_e}{\mu_N}$ (1) Electron magnetic moment to nuclear magneton ratio.

3.26.2.23 electronMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::electronMagneticMomentToNuclearMagnetonRatioUncertainty = 0.00000017
```

$\frac{\mu_e}{\mu_N}$ (1) Uncertainty in electron magnetic moment to nuclear magneton ratio.

3.26.2.24 electronMagneticMomentUncertainty

```
const double NISTConst::electronMagneticMomentUncertainty = 0.0000057e-26
```

μ_e ($\frac{J}{T}$) Uncertainty in electron magnetic moment in joules per tesla.

3.26.2.25 electronMass

```
const double NISTConst::electronMass = 9.10938356e-31
```

m_e (kg) Electron mass in kilograms.

3.26.2.26 electronMassInJPercSquared

```
const double NISTConst::electronMassInJPercSquared = 8.18710565e-14
```

m_e ($\frac{J}{c^2}$) Electron mass in joules per speed of light squared.

3.26.2.27 electronMassInJPercSquaredUncertainty

```
const double NISTConst::electronMassInJPercSquaredUncertainty = 0.00000010e-14
```

m_e ($\frac{J}{c^2}$) Uncertainty in electron mass in joules per speed of light squared.

3.26.2.28 electronMassInMeVPercSquared

```
const double NISTConst::electronMassInMeVPercSquared = 0.5109989461
```

$m_e \left(\frac{\text{MeV}}{c^2} \right)$ Electron mass in megaelectron volts per speed of light squared.

3.26.2.29 electronMassInMeVPercSquaredUncertainty

```
const double NISTConst::electronMassInMeVPercSquaredUncertainty = 0.0000000031
```

$m_e \left(\frac{\text{MeV}}{c^2} \right)$ Uncertainty in electron mass in megaelectron volts per speed of light squared.

3.26.2.30 electronMassInu

```
const double NISTConst::electronMassInu = 5.48579909070e-4
```

$m_e (u)$ Electron mass in unified atomic mass units.

3.26.2.31 electronMassInuUncertainty

```
const double NISTConst::electronMassInuUncertainty = 0.00000000016e-4
```

$m_e (u)$ Uncertainty in electron mass in unified atomic mass units.

3.26.2.32 electronMassUncertainty

```
const double NISTConst::electronMassUncertainty = 0.00000011e-31
```

$m_e (kg)$ Uncertainty in electron mass in kilograms.

3.26.2.33 electronMolarMass

```
const double NISTConst::electronMolarMass = 5.48579909070e-7
```

$M_e \left(\frac{kg}{mol} \right)$ Electron molar mass in kilograms per mole.

3.26.2.34 electronMolarMassUncertainty

```
const double NISTConst::electronMolarMassUncertainty = 0.00000000016e-7
```

$M_e \left(\frac{kg}{mol} \right)$ Uncertainty in electron molar mass in kilograms per mole.

3.26.2.35 electronMuonMagneticMomentRatio

```
const double NISTConst::electronMuonMagneticMomentRatio = 206.7669880
```

$\frac{\mu_e}{\mu_\mu} (1)$ Electron-muon magnetic moment ratio.

3.26.2.36 electronMuonMagneticMomentRatioUncertainty

```
const double NISTConst::electronMuonMagneticMomentRatioUncertainty = 0.0000046
```

$\frac{\mu_e}{\mu_\mu}$ (1) Uncertainty in electron-muon magnetic moment ratio.

3.26.2.37 electronMuonMassRatio

```
const double NISTConst::electronMuonMassRatio = 4.83633170e-3
```

$\frac{m_e}{m_\mu}$ (1) Electron-muon mass ratio.

3.26.2.38 electronMuonMassRatioUncertainty

```
const double NISTConst::electronMuonMassRatioUncertainty = 0.00000011e-3
```

$\frac{m_e}{m_\mu}$ (1) Uncertainty in electron-muon mass ratio.

3.26.2.39 electronNeutronMagneticMomentRatio

```
const double NISTConst::electronNeutronMagneticMomentRatio = 960.92050
```

$\frac{\mu_e}{\mu_n}$ (1) Electron-neutron magnetic moment ratio.

3.26.2.40 electronNeutronMagneticMomentRatioUncertainty

```
const double NISTConst::electronNeutronMagneticMomentRatioUncertainty = 0.00023
```

$\frac{\mu_e}{\mu_n}$ (1) Uncertainty in electron-neutron magnetic moment ratio.

3.26.2.41 electronNeutronMassRatio

```
const double NISTConst::electronNeutronMassRatio = 5.4386734428e-4
```

$\frac{m_e}{m_n}$ (1) Electron-neutron mass ratio.

3.26.2.42 electronNeutronMassRatioUncertainty

```
const double NISTConst::electronNeutronMassRatioUncertainty = 0.0000000027e-4
```

$\frac{m_e}{m_n}$ (1) Uncertainty in electron-neutron mass ratio.

3.26.2.43 electronProtonMagneticMomentRatio

```
const double NISTConst::electronProtonMagneticMomentRatio = -658.2106866
```

$\frac{\mu_e}{\mu_p}$ (1) Electron-proton magnetic moment ratio.

3.26.2.44 electronProtonMagneticMomentRatioUncertainty

```
const double NISTConst::electronProtonMagneticMomentRatioUncertainty = 0.0000020
```

$\frac{\mu_e}{\mu_p}$ (1) Uncertainty in electron-proton magnetic moment ratio.

3.26.2.45 electronProtonMassRatio

```
const double NISTConst::electronProtonMassRatio = 5.44617021352e-4
```

$\frac{m_e}{m_p}$ (1) Electron-proton mass ratio.

3.26.2.46 electronProtonMassRatioUncertainty

```
const double NISTConst::electronProtonMassRatioUncertainty = 0.00000000052e-4
```

$\frac{m_e}{m_p}$ (1) Uncertainty in electron-proton mass ratio.

3.26.2.47 electronTauMassRatio

```
const double NISTConst::electronTauMassRatio = 2.87592e-4
```

$\frac{m_e}{m_\tau}$ (1) Electron-tau mass ratio.

3.26.2.48 electronTauMassRatioUncertainty

```
const double NISTConst::electronTauMassRatioUncertainty = 0.00026e-4
```

$\frac{m_e}{m_\tau}$ (1) Uncertainty in electron-tau mass ratio.

3.26.2.49 electronToAlphaParticleMassRatio

```
const double NISTConst::electronToAlphaParticleMassRatio = 1.370933554798e-4
```

$\frac{m_e}{m_\alpha}$ (1) Electron to alpha particle mass ratio.

3.26.2.50 electronToAlphaParticleMassRatioUncertainty

```
const double NISTConst::electronToAlphaParticleMassRatioUncertainty = 0.00000000045e-4
```

$\frac{m_e}{m_\alpha}$ (1) Uncertainty in electron to alpha particle mass ratio.

3.26.2.51 electronToShieldedHelionMagneticMomentRatio

```
const double NISTConst::electronToShieldedHelionMagneticMomentRatio = 864.058257
```

$\frac{\mu_e}{\mu_{^3\text{He}}}$ (1) Electron to shielded helion magnetic moment ratio.

3.26.2.52 electronToShieldedHelionMagneticMomentRatioUncertainty

```
const double NISTConst::electronToShieldedHelionMagneticMomentRatioUncertainty = 0.000010
```

$\frac{\mu_e}{\mu'_{^3\text{He}}}$ (1) Uncertainty in electron to shielded helion magnetic moment ratio.

3.26.2.53 electronToShieldedProtonMagneticMomentRatio

```
const double NISTConst::electronToShieldedProtonMagneticMomentRatio = -658.2275971
```

$\frac{\mu_e}{\mu_p}$ (1) Electron to shielded proton magnetic moment ratio.

3.26.2.54 electronToShieldedProtonMagneticMomentRatioUncertainty

```
const double NISTConst::electronToShieldedProtonMagneticMomentRatioUncertainty = 0.0000072
```

$\frac{\mu_e}{\mu'_p}$ (1) Uncertainty in electron to shielded proton magnetic moment ratio.

3.26.2.55 electronTritonMassRatio

```
const double NISTConst::electronTritonMassRatio = 1.819200062203e-4
```

$\frac{m_e}{m_{\text{T}}}$ (1) Electron-triton mass ratio.

3.26.2.56 electronTritonMassRatioUncertainty

```
const double NISTConst::electronTritonMassRatioUncertainty = 0.000000000084e-4
```

$\frac{m_e}{m_{\text{T}}}$ (1) Uncertainty in electron-triton mass ratio.

3.27 Fermi coupling constant

Variables

- const double [NISTConst::FermiCouplingConstant](#) = 1.1663787e-5
- const double [NISTConst::FermiCouplingConstantUncertainty](#) = 0.0000006e-5

3.27.1 Detailed Description

3.27.2 Variable Documentation

3.27.2.1 FermiCouplingConstant

```
const double NISTConst::FermiCouplingConstant = 1.1663787e-5
```

$\frac{G_F}{(\hbar c)^3} \left(\frac{1}{\text{GeV}^2} \right)$ Fermi coupling constant in inverse gigaelectron volts squared.

3.27.2.2 FermiCouplingConstantUncertainty

```
const double NISTConst::FermiCouplingConstantUncertainty = 0.0000006e-5
```

$\frac{G_F}{(\hbar c)^3} \left(\frac{1}{\text{GeV}^2} \right)$ Uncertainty in Fermi coupling constant in inverse gigaelectron volts squared.

3.28 Fine-structure constant

Variables

- const double `NISTConst::fineStructureConstant` = 7.2973525664e-3
- const double `NISTConst::fineStructureConstantUncertainty` = 0.0000000017e-3
- const double `NISTConst::inverseFineStructureConstant` = 137.035999139
- const double `NISTConst::inverseFineStructureConstantUncertainty` = 0.000000031
- const double `NISTConst::alpha` = fineStructureConstant
- const double `NISTConst::SommerfeldsConstant` = fineStructureConstant
- const double `NISTConst::alphaUncertainty` = fineStructureConstantUncertainty
- const double `NISTConst::SommerfeldsConstantUncertainty` = fineStructureConstantUncertainty

3.28.1 Detailed Description

3.28.2 Variable Documentation

3.28.2.1 alpha

```
const double NISTConst::alpha = fineStructureConstant
```

α (1) Fine-structure constant. Alias of fineStructureConstant.

3.28.2.2 alphaUncertainty

```
const double NISTConst::alphaUncertainty = fineStructureConstantUncertainty
```

α (1) Uncertainty in fine-structure constant. Alias of fineStructureConstantUncertainty.

3.28.2.3 fineStructureConstant

```
const double NISTConst::fineStructureConstant = 7.2973525664e-3
```

α (1) Fine-structure constant.

3.28.2.4 fineStructureConstantUncertainty

```
const double NISTConst::fineStructureConstantUncertainty = 0.0000000017e-3
```

α (1) Uncertainty in fine-structure constant.

3.28.2.5 inverseFineStructureConstant

```
const double NISTConst::inverseFineStructureConstant = 137.035999139
```

α^{-1} (1) Inverse fine-structure constant.

3.28.2.6 inverseFineStructureConstantUncertainty

```
const double NISTConst::inverseFineStructureConstantUncertainty = 0.000000031
```

α^{-1} (1) Uncertainty in inverse fine-structure constant.

3.28.2.7 SommerfeldsConstant

```
const double NISTConst::SommerfeldsConstant = fineStructureConstant
```

α (1) Fine-structure constant. Alias of fineStructureConstant.

3.28.2.8 SommerfeldsConstantUncertainty

```
const double NISTConst::SommerfeldsConstantUncertainty = fineStructureConstantUncertainty
```

α (1) Uncertainty in fine-structure constant. Alias of fineStructureConstantUncertainty.

3.29 Hartree energy

Variables

- const double `NISTConst::HartreeEnergy` = 4.359744650e-18
- const double `NISTConst::HartreeEnergyIneV` = 27.21138602
- const double `NISTConst::HartreeEnergyUncertainty` = 0.000000054e-18
- const double `NISTConst::HartreeEnergyIneVUncertainty` = 0.00000017
- const double `NISTConst::Eh` = HartreeEnergy
- const double `NISTConst::EhIneV` = HartreeEnergyIneV
- const double `NISTConst::EhUncertainty` = HartreeEnergyUncertainty
- const double `NISTConst::EhIneVUncertainty` = HartreeEnergyIneVUncertainty

3.29.1 Detailed Description

3.29.2 Variable Documentation

3.29.2.1 Eh

```
const double NISTConst::Eh = HartreeEnergy
```

E_h (J) Hartree energy in joules. Alias of HartreeEnergy.

3.29.2.2 EhIneV

```
const double NISTConst::EhIneV = HartreeEnergyIneV
```

E_h (eV) Hartree energy in electron volts. Alias of HartreeEnergyIneV.

3.29.2.3 EhIneVUncertainty

```
const double NISTConst::EhIneVUncertainty = HartreeEnergyIneVUncertainty
```

E_h (eV) Uncertainty in Hartree energy in electron volts. Alias of HartreeEnergyIneVUncertainty.

3.29.2.4 EhUncertainty

```
const double NISTConst::EhUncertainty = HartreeEnergyUncertainty
```

E_h (J) Uncertainty in Hartree energy in joules. Alias of HartreeEnergyUncertainty.

3.29.2.5 HartreeEnergy

```
const double NISTConst::HartreeEnergy = 4.359744650e-18
```

E_h (J) Hartree energy in joules.

3.29.2.6 HartreeEnergyIneV

```
const double NISTConst::HartreeEnergyIneV = 27.21138602
```

E_h (eV) Hartree energy in electron volts.

3.29.2.7 HartreeEnergyIneVUncertainty

```
const double NISTConst::HartreeEnergyIneVUncertainty = 0.00000017
```

E_h (eV) Uncertainty in hartree energy in electron volts.

3.29.2.8 HartreeEnergyUncertainty

```
const double NISTConst::HartreeEnergyUncertainty = 0.000000054e-18
```

E_h (J) Uncertainty in hartree energy in joules.

3.30 Helion (Helium-3 nucleus)

Variables

- const double [NISTConst::helionElectronMassRatio](#) = 5495.88527922
- const double [NISTConst::heliongFactor](#) = -4.255250616
- const double [NISTConst::helionMagneticMoment](#) = -1.074617522e-26
- const double [NISTConst::helionMagneticMomentToBohrMagnetonRatio](#) = -1.158740958e-3
- const double [NISTConst::helionMagneticMomentToNuclearMagnetonRatio](#) = -2.127625308
- const double [NISTConst::helionMass](#) = 5.006412700e-27
- const double [NISTConst::helionMassInJPercSquared](#) = 4.499539341e-10
- const double [NISTConst::helionMassInMeVPercSquared](#) = 2808.391586
- const double [NISTConst::helionMassInu](#) = 3.01493224673
- const double [NISTConst::helionMolarMass](#) = 3.01493224673e-3
- const double [NISTConst::helionProtonMassRatio](#) = 2.99315267046
- const double [NISTConst::helionElectronMassRatioUncertainty](#) = 0.00000027
- const double [NISTConst::heliongFactorUncertainty](#) = 0.000000050
- const double [NISTConst::helionMagneticMomentUncertainty](#) = 0.000000014e-26
- const double [NISTConst::helionMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.000000014e-3
- const double [NISTConst::helionMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.000000025
- const double [NISTConst::helionMassUncertainty](#) = 0.000000062e-27
- const double [NISTConst::helionMassInJPercSquaredUncertainty](#) = 0.000000055e-10
- const double [NISTConst::helionMassInMeVPercSquaredUncertainty](#) = 0.000017
- const double [NISTConst::helionMassInuUncertainty](#) = 0.00000000012
- const double [NISTConst::helionMolarMassUncertainty](#) = 0.00000000012e-3
- const double [NISTConst::helionProtonMassRatioUncertainty](#) = 0.00000000029
- const double [NISTConst::shieldedHelionGyromagneticRatio](#) = 2.037894585e8
- const double [NISTConst::shieldedHelionGyromagneticRatioOver2Pi](#) = 32.43409966
- const double [NISTConst::shieldedHelionMagneticMoment](#) = -1.074553080e-26
- const double [NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatio](#) = -1.158671471e-3
- const double [NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatio](#) = -2.127497720
- const double [NISTConst::shieldedHelionToProtonMagneticMomentRatio](#) = -0.7617665603
- const double [NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatio](#) = -0.7617861313
- const double [NISTConst::shieldedHelionGyromagneticRatioUncertainty](#) = 0.000000027e8
- const double [NISTConst::shieldedHelionGyromagneticRatioOver2PiUncertainty](#) = 0.00000043
- const double [NISTConst::shieldedHelionMagneticMomentUncertainty](#) = 0.000000014e-26
- const double [NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.↵
000000014e-3
- const double [NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.↵
000000025
- const double [NISTConst::shieldedHelionToProtonMagneticMomentRatioUncertainty](#) = 0.0000000092
- const double [NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatioUncertainty](#) = 0.↵
0000000033

3.30.1 Detailed Description

3.30.2 Variable Documentation

3.30.2.1 helionElectronMassRatio

```
const double NISTConst::helionElectronMassRatio = 5495.88527922
```

$\frac{m_3\text{He}}{m_e}$ (1) Helion-electron mass ratio.

3.30.2.2 helionElectronMassRatioUncertainty

```
const double NISTConst::helionElectronMassRatioUncertainty = 0.00000027
```

$\frac{m_3\text{He}}{m_e}$ (1) Uncertainty in helion-electron mass ratio.

3.30.2.3 heliongFactor

```
const double NISTConst::heliongFactor = -4.255250616
```

$g_3\text{He}$ (1) Helion g factor.

3.30.2.4 heliongFactorUncertainty

```
const double NISTConst::heliongFactorUncertainty = 0.000000050
```

$g_3\text{He}$ (1) Uncertainty in helion g factor.

3.30.2.5 helionMagneticMoment

```
const double NISTConst::helionMagneticMoment = -1.074617522e-26
```

$\mu_3\text{He}$ ($\frac{J}{T}$) Helion magnetic moment in joules per tesla.

3.30.2.6 helionMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::helionMagneticMomentToBohrMagnetonRatio = -1.158740958e-3
```

$\frac{\mu_3\text{He}}{\mu_B}$ (1) Helion magnetic moment to Bohr magneton ratio.

3.30.2.7 helionMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::helionMagneticMomentToBohrMagnetonRatioUncertainty = 0.000000014e-3
```

$\frac{\mu_3\text{He}}{\mu_B}$ (1) Uncertainty in helion magnetic moment to Bohr magneton ratio.

3.30.2.8 helionMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::helionMagneticMomentToNuclearMagnetonRatio = -2.127625308
```

$\frac{\mu_3\text{He}}{\mu_N}$ (1) Helion magnetic moment to nuclear magneton ratio.

3.30.2.9 helionMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::helionMagneticMomentToNuclearMagnetonRatioUncertainty = 0.000000025
```

$\frac{\mu_{^3\text{He}}}{\mu_N}$ (1) Uncertainty in helion magnetic moment to nuclear magneton ratio.

3.30.2.10 helionMagneticMomentUncertainty

```
const double NISTConst::helionMagneticMomentUncertainty = 0.000000014e-26
```

$\mu_{^3\text{He}}$ ($\frac{J}{T}$) Uncertainty in helion magnetic moment in joules per tesla.

3.30.2.11 helionMass

```
const double NISTConst::helionMass = 5.006412700e-27
```

$m_{^3\text{He}}$ (kg) Helion mass in kilograms.

3.30.2.12 helionMassInJPercSquared

```
const double NISTConst::helionMassInJPercSquared = 4.499539341e-10
```

$m_{^3\text{He}}$ ($\frac{J}{c^2}$) Helion mass in joules per speed of light squared.

3.30.2.13 helionMassInJPercSquaredUncertainty

```
const double NISTConst::helionMassInJPercSquaredUncertainty = 0.000000055e-10
```

$m_{^3\text{He}}$ ($\frac{J}{c^2}$) Uncertainty in helion mass in joules per speed of light squared.

3.30.2.14 helionMassInMeVPercSquared

```
const double NISTConst::helionMassInMeVPercSquared = 2808.391586
```

$m_{^3\text{He}}$ ($\frac{MeV}{c^2}$) Helion mass in megaelectron volts per speed of light squared.

3.30.2.15 helionMassInMeVPercSquaredUncertainty

```
const double NISTConst::helionMassInMeVPercSquaredUncertainty = 0.000017
```

$m_{^3\text{He}}$ ($\frac{MeV}{c^2}$) Uncertainty in helion mass in megaelectron volts per speed of light squared.

3.30.2.16 helionMassInu

```
const double NISTConst::helionMassInu = 3.01493224673
```

$m_{^3\text{He}}$ (u) Helion mass in unified atomic mass units.

3.30.2.17 helionMassInuUncertainty

```
const double NISTConst::helionMassInuUncertainty = 0.00000000012
```

$m_3\text{He}$ (u) Uncertainty in helion mass in unified atomic mass units.

3.30.2.18 helionMassUncertainty

```
const double NISTConst::helionMassUncertainty = 0.000000062e-27
```

$m_3\text{He}$ (kg) Uncertainty in helion mass in kilograms.

3.30.2.19 helionMolarMass

```
const double NISTConst::helionMolarMass = 3.01493224673e-3
```

$M_3\text{He}$ ($\frac{kg}{mol}$) Helion molar mass in kilograms per mole.

3.30.2.20 helionMolarMassUncertainty

```
const double NISTConst::helionMolarMassUncertainty = 0.00000000012e-3
```

$M_3\text{He}$ ($\frac{kg}{mol}$) Uncertainty in helion molar mass in kilograms per mole.

3.30.2.21 helionProtonMassRatio

```
const double NISTConst::helionProtonMassRatio = 2.99315267046
```

$\frac{m_3\text{He}}{m_p}$ (1) Helion-proton mass ratio .

3.30.2.22 helionProtonMassRatioUncertainty

```
const double NISTConst::helionProtonMassRatioUncertainty = 0.00000000029
```

$\frac{m_3\text{He}}{m_p}$ (1) Uncertainty in helion-proton mass ratio .

3.30.2.23 shieldedHelionGyromagneticRatio

```
const double NISTConst::shieldedHelionGyromagneticRatio = 2.037894585e8
```

$\gamma'_3\text{He}$ ($\frac{rad\ Hz}{T}$) Shielded helion gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.30.2.24 shieldedHelionGyromagneticRatioOver2Pi

```
const double NISTConst::shieldedHelionGyromagneticRatioOver2Pi = 32.43409966
```

$\frac{\gamma'_3\text{He}}{2\pi} \left(\frac{\text{rad MHz}}{\text{T}} \right)$ Shielded helion gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.30.2.25 shieldedHelionGyromagneticRatioOver2PiUncertainty

```
const double NISTConst::shieldedHelionGyromagneticRatioOver2PiUncertainty = 0.00000043
```

$\frac{\gamma'_3\text{He}}{2\pi} \left(\frac{\text{rad MHz}}{\text{T}} \right)$ Uncertainty in shielded helion gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.30.2.26 shieldedHelionGyromagneticRatioUncertainty

```
const double NISTConst::shieldedHelionGyromagneticRatioUncertainty = 0.000000027e8
```

$\gamma'_3\text{He} \left(\frac{\text{rad Hz}}{\text{T}} \right)$ Uncertainty in shielded helion gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.30.2.27 shieldedHelionMagneticMoment

```
const double NISTConst::shieldedHelionMagneticMoment = -1.074553080e-26
```

$\mu'_3\text{He} \left(\frac{\text{J}}{\text{T}} \right)$ Shielded helion magnetic moment in joules per tesla.

3.30.2.28 shieldedHelionMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatio = -1.158671471e-3
```

$\frac{\mu'_3\text{He}}{\mu_B} (1)$ Shielded helion magnetic moment to Bohr magneton ratio.

3.30.2.29 shieldedHelionMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatioUncertainty = 0.↵
000000014e-3
```

$\frac{\mu'_3\text{He}}{\mu_B} (1)$ Uncertainty in shielded helion magnetic moment to Bohr magneton ratio.

3.30.2.30 shieldedHelionMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatio = -2.127497720
```

$\frac{\mu'_3\text{He}}{\mu_N} (1)$ Shielded helion magnetic moment to nuclear magneton ratio.

3.30.2.31 shieldedHelionMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatioUncertainty = 0.↔
0000000025
```

$\frac{\mu'_{3\text{He}}}{\mu_N}$ (1) Uncertainty in shielded helion magnetic moment to nuclear magneton ratio.

3.30.2.32 shieldedHelionMagneticMomentUncertainty

```
const double NISTConst::shieldedHelionMagneticMomentUncertainty = 0.000000014e-26
```

$\mu'_{3\text{He}}$ ($\frac{J}{T}$) Uncertainty in shielded helion magnetic moment in joules per tesla.

3.30.2.33 shieldedHelionToProtonMagneticMomentRatio

```
const double NISTConst::shieldedHelionToProtonMagneticMomentRatio = -0.7617665603
```

$\frac{\mu'_{3\text{He}}}{\mu_p}$ (1) Shielded helion to proton magnetic moment ratio.

3.30.2.34 shieldedHelionToProtonMagneticMomentRatioUncertainty

```
const double NISTConst::shieldedHelionToProtonMagneticMomentRatioUncertainty = 0.0000000092
```

$\frac{\mu'_{3\text{He}}}{\mu_p}$ (1) Uncertainty in shielded helion to proton magnetic moment ratio.

3.30.2.35 shieldedHelionToShieldedProtonMagneticMomentRatio

```
const double NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatio = -0.7617861313
```

$\frac{\mu'_{3\text{He}}}{\mu'_p}$ (1) Shielded helion to shielded proton magnetic moment ratio.

3.30.2.36 shieldedHelionToShieldedProtonMagneticMomentRatioUncertainty

```
const double NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatioUncertainty = 0.↔
0000000033
```

$\frac{\mu'_{3\text{He}}}{\mu'_p}$ (1) Uncertainty in shielded helion to shielded proton magnetic moment ratio.

3.31 Muon particle

Variables

- const double [NISTConst::muonComptonWavelength](#) = 11.73444111e-15
- const double [NISTConst::muonComptonWavelengthOver2pi](#) = 1.867594308e-15
- const double [NISTConst::muonElectronMassRatio](#) = 206.7682826
- const double [NISTConst::muongFactor](#) = -2.0023318418
- const double [NISTConst::muonMagneticMoment](#) = -4.49044826e-26
- const double [NISTConst::muonMagneticMomentAnomaly](#) = 1.16592089e-3
- const double [NISTConst::muonMagneticMomentToBohrMagnetonRatio](#) = -4.84197048e-3
- const double [NISTConst::muonMagneticMomentToNuclearMagnetonRatio](#) = -8.89059705
- const double [NISTConst::muonMass](#) = 1.883531594e-28
- const double [NISTConst::muonMassInJPercSquared](#) = 1.692833774e-11
- const double [NISTConst::muonMassInMeVPercSquared](#) = 105.6583745
- const double [NISTConst::muonMassInu](#) = 0.1134289257
- const double [NISTConst::muonMolarMass](#) = 0.1134289257e-3
- const double [NISTConst::muonNeutronMassRatio](#) = 0.1124545167
- const double [NISTConst::muonProtonMagneticMomentRatio](#) = -3.183345142
- const double [NISTConst::muonProtonMassRatio](#) = 0.1126095262
- const double [NISTConst::muonTauMassRatio](#) = 5.94649e-2
- const double [NISTConst::muonComptonWavelengthUncertainty](#) = 0.00000026e-15
- const double [NISTConst::muonComptonWavelengthOver2piUncertainty](#) = 0.000000042e-15
- const double [NISTConst::muonElectronMassRatioUncertainty](#) = 0.0000046
- const double [NISTConst::muongFactorUncertainty](#) = 0.0000000013
- const double [NISTConst::muonMagneticMomentUncertainty](#) = 0.00000010e-26
- const double [NISTConst::muonMagneticMomentAnomalyUncertainty](#) = 0.00000063e-3
- const double [NISTConst::muonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000011e-3
- const double [NISTConst::muonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000020
- const double [NISTConst::muonMassUncertainty](#) = 0.000000048e-28
- const double [NISTConst::muonMassInJPercSquaredUncertainty](#) = 0.000000043e-11
- const double [NISTConst::muonMassInMeVPercSquaredUncertainty](#) = 0.0000024
- const double [NISTConst::muonMassInuUncertainty](#) = 0.0000000025
- const double [NISTConst::muonMolarMassUncertainty](#) = 0.0000000025e-3
- const double [NISTConst::muonNeutronMassRatioUncertainty](#) = 0.0000000025
- const double [NISTConst::muonProtonMagneticMomentRatioUncertainty](#) = 0.000000071
- const double [NISTConst::muonProtonMassRatioUncertainty](#) = 0.0000000025
- const double [NISTConst::muonTauMassRatioUncertainty](#) = 0.00054e-2

3.31.1 Detailed Description

3.31.2 Variable Documentation

3.31.2.1 muonComptonWavelength

```
const double NISTConst::muonComptonWavelength = 11.73444111e-15
```

$\lambda_{C,\mu}$ (m) Muon Compton wavelength in meters.

3.31.2.2 muonComptonWavelengthOver2pi

```
const double NISTConst::muonComptonWavelengthOver2pi = 1.867594308e-15
```

$\frac{\lambda_{C,\mu}}{2\pi}$ (m) Muon Compton wavelength over 2 pi in meters.

3.31.2.3 muonComptonWavelengthOver2piUncertainty

```
const double NISTConst::muonComptonWavelengthOver2piUncertainty = 0.000000042e-15
```

$\frac{\lambda_{C,\mu}}{2\pi}$ (m) Uncertainty in muon Compton wavelength over 2 pi in meters.

3.31.2.4 muonComptonWavelengthUncertainty

```
const double NISTConst::muonComptonWavelengthUncertainty = 0.00000026e-15
```

$\lambda_{C,\mu}$ (m) Uncertainty in muon Compton wavelength in meters.

3.31.2.5 muonElectronMassRatio

```
const double NISTConst::muonElectronMassRatio = 206.7682826
```

$\frac{m_\mu}{m_e}$ (1) Muon-electron mass ratio.

3.31.2.6 muonElectronMassRatioUncertainty

```
const double NISTConst::muonElectronMassRatioUncertainty = 0.0000046
```

$\frac{m_\mu}{m_e}$ (1) Uncertainty in muon-electron mass ratio.

3.31.2.7 muongFactor

```
const double NISTConst::muongFactor = -2.0023318418
```

g_μ (1) Muon g factor.

3.31.2.8 muongFactorUncertainty

```
const double NISTConst::muongFactorUncertainty = 0.000000013
```

g_μ (1) Uncertainty in muon g factor.

3.31.2.9 muonMagneticMoment

```
const double NISTConst::muonMagneticMoment = -4.49044826e-26
```

μ_μ ($\frac{J}{T}$) Muon magnetic moment in joules per tesla.

3.31.2.10 muonMagneticMomentAnomaly

```
const double NISTConst::muonMagneticMomentAnomaly = 1.16592089e-3
```

a_μ (1) Muon magnetic moment anomaly.

3.31.2.11 muonMagneticMomentAnomalyUncertainty

```
const double NISTConst::muonMagneticMomentAnomalyUncertainty = 0.00000063e-3
```

a_μ (1) Uncertainty in muon magnetic moment anomaly.

3.31.2.12 muonMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::muonMagneticMomentToBohrMagnetonRatio = -4.84197048e-3
```

$\frac{\mu_\mu}{\mu_B}$ (1) Muon magnetic moment to Bohr magneton ratio.

3.31.2.13 muonMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::muonMagneticMomentToBohrMagnetonRatioUncertainty = 0.00000011e-3
```

$\frac{\mu_\mu}{\mu_B}$ (1) Uncertainty in muon magnetic moment to Bohr magneton ratio.

3.31.2.14 muonMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::muonMagneticMomentToNuclearMagnetonRatio = -8.89059705
```

$\frac{\mu_\mu}{\mu_N}$ (1) Muon magnetic moment to nuclear magneton ratio .

3.31.2.15 muonMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::muonMagneticMomentToNuclearMagnetonRatioUncertainty = 0.00000020
```

$\frac{\mu_\mu}{\mu_N}$ (1) Uncertainty in muon magnetic moment to nuclear magneton ratio .

3.31.2.16 muonMagneticMomentUncertainty

```
const double NISTConst::muonMagneticMomentUncertainty = 0.00000010e-26
```

μ_μ ($\frac{J}{T}$) Uncertainty in muon magnetic moment in joules per tesla.

3.31.2.17 muonMass

```
const double NISTConst::muonMass = 1.883531594e-28
```

m_μ (kg) Muon mass in kilograms.

3.31.2.18 muonMassInJPercSquared

```
const double NISTConst::muonMassInJPercSquared = 1.692833774e-11
```

$m_\mu \left(\frac{J}{c^2} \right)$ Muon mass in joules per speed of light squared.

3.31.2.19 muonMassInJPercSquaredUncertainty

```
const double NISTConst::muonMassInJPercSquaredUncertainty = 0.000000043e-11
```

$m_\mu \left(\frac{J}{c^2} \right)$ Uncertainty in muon mass in joules per speed of light squared.

3.31.2.20 muonMassInMeVPercSquared

```
const double NISTConst::muonMassInMeVPercSquared = 105.6583745
```

$m_\mu \left(\frac{MeV}{c^2} \right)$ Muon mass in megaelectron volts per speed of light squared.

3.31.2.21 muonMassInMeVPercSquaredUncertainty

```
const double NISTConst::muonMassInMeVPercSquaredUncertainty = 0.0000024
```

$m_\mu \left(\frac{MeV}{c^2} \right)$ Uncertainty in muon mass in megaelectron volts per speed of light squared.

3.31.2.22 muonMassInu

```
const double NISTConst::muonMassInu = 0.1134289257
```

$m_\mu (u)$ Muon mass in unified atomic mass units.

3.31.2.23 muonMassInuUncertainty

```
const double NISTConst::muonMassInuUncertainty = 0.0000000025
```

$m_\mu (u)$ Uncertainty in muon mass in unified atomic mass units.

3.31.2.24 muonMassUncertainty

```
const double NISTConst::muonMassUncertainty = 0.000000048e-28
```

$m_\mu (kg)$ Uncertainty in muon mass in kilograms.

3.31.2.25 muonMolarMass

```
const double NISTConst::muonMolarMass = 0.1134289257e-3
```

$M_\mu \left(\frac{kg}{mol} \right)$ Muon molar mass in kilograms per mole.

3.31.2.26 muonMolarMassUncertainty

```
const double NISTConst::muonMolarMassUncertainty = 0.0000000025e-3
```

M_μ ($\frac{kg}{mol}$) Uncertainty in muon molar mass in kilograms per mole.

3.31.2.27 muonNeutronMassRatio

```
const double NISTConst::muonNeutronMassRatio = 0.1124545167
```

$\frac{m_\mu}{m_n}$ (1) Muon-neutron mass ratio.

3.31.2.28 muonNeutronMassRatioUncertainty

```
const double NISTConst::muonNeutronMassRatioUncertainty = 0.0000000025
```

$\frac{m_\mu}{m_n}$ (1) Uncertainty in muon-neutron mass ratio.

3.31.2.29 muonProtonMagneticMomentRatio

```
const double NISTConst::muonProtonMagneticMomentRatio = -3.183345142
```

$\frac{\mu_\mu}{\mu_p}$ (1) Muon-proton magnetic moment ratio.

3.31.2.30 muonProtonMagneticMomentRatioUncertainty

```
const double NISTConst::muonProtonMagneticMomentRatioUncertainty = 0.000000071
```

$\frac{\mu_\mu}{\mu_p}$ (1) Uncertainty in muon-proton magnetic moment ratio.

3.31.2.31 muonProtonMassRatio

```
const double NISTConst::muonProtonMassRatio = 0.1126095262
```

$\frac{m_\mu}{m_p}$ (1) Muon-proton mass ratio.

3.31.2.32 muonProtonMassRatioUncertainty

```
const double NISTConst::muonProtonMassRatioUncertainty = 0.0000000025
```

$\frac{m_\mu}{m_p}$ (1) Uncertainty in muon-proton mass ratio.

3.31.2.33 muonTauMassRatio

```
const double NISTConst::muonTauMassRatio = 5.94649e-2
```

$\frac{m_\mu}{m_\tau}$ (1) Muon-tau mass ratio.

3.31.2.34 muonTauMassRatioUncertainty

```
const double NISTConst::muonTauMassRatioUncertainty = 0.00054e-2
```

$\frac{m_\mu}{m_\tau}$ (1) Uncertainty in muon-tau mass ratio.

3.32 Neutron particle

Variables

- const double [NISTConst::neutronComptonWavelength](#) = 1.31959090481e-15
- const double [NISTConst::neutronComptonWavelengthOver2Pi](#) = 0.21001941536e-15
- const double [NISTConst::neutronElectronMagneticMomentRatio](#) = 1.04066882e-3
- const double [NISTConst::neutronElectronMassRatio](#) = 1838.68366158
- const double [NISTConst::neutrongFactor](#) = -3.82608545
- const double [NISTConst::neutronGyromagneticRatio](#) = 1.83247172e8
- const double [NISTConst::neutronGyromagneticRatioOver2Pi](#) = 29.1646933
- const double [NISTConst::neutronMagneticMoment](#) = -0.96623650e-26
- const double [NISTConst::neutronMagneticMomentToBohrMagnetonRatio](#) = -1.04187563e-3
- const double [NISTConst::neutronMagneticMomentToNuclearMagnetonRatio](#) = -1.91304273
- const double [NISTConst::neutronMass](#) = 1.674927471e-27
- const double [NISTConst::neutronMassInJPercSquared](#) = 1.505349739e-10
- const double [NISTConst::neutronMassInMeVPercSquared](#) = 939.5654133
- const double [NISTConst::neutronMassInu](#) = 1.00866491588
- const double [NISTConst::neutronMolarMass](#) = 1.00866491588e-3
- const double [NISTConst::neutronMuonMassRatio](#) = 8.89248408
- const double [NISTConst::neutronProtonMagneticMomentRatio](#) = -0.68497934
- const double [NISTConst::neutronProtonMassDifference](#) = 2.30557377e-30
- const double [NISTConst::neutronProtonMassDifferenceInJPercSquared](#) = 2.07214637e-13
- const double [NISTConst::neutronProtonMassDifferenceInMeVPercSquared](#) = 1.29333205
- const double [NISTConst::neutronProtonMassDifferenceInu](#) = 0.00138844900
- const double [NISTConst::neutronProtonMassRatio](#) = 1.00137841898
- const double [NISTConst::neutronTauMassRatio](#) = 0.528790
- const double [NISTConst::neutronToShieldedProtonMagneticMomentRatio](#) = -0.68499694
- const double [NISTConst::neutronComptonWavelengthUncertainty](#) = 0.00000000088e-15
- const double [NISTConst::neutronComptonWavelengthOver2PiUncertainty](#) = 0.00000000014e-15
- const double [NISTConst::neutronElectronMagneticMomentRatioUncertainty](#) = 0.00000025e-3
- const double [NISTConst::neutronElectronMassRatioUncertainty](#) = 0.00000090
- const double [NISTConst::neutrongFactorUncertainty](#) = 0.00000090
- const double [NISTConst::neutronGyromagneticRatioUncertainty](#) = 0.00000043e8
- const double [NISTConst::neutronGyromagneticRatioOver2PiUncertainty](#) = 0.0000069
- const double [NISTConst::neutronMagneticMomentUncertainty](#) = 0.00000023e-26
- const double [NISTConst::neutronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000025e-3
- const double [NISTConst::neutronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000045
- const double [NISTConst::neutronMassUncertainty](#) = 0.000000021e-27
- const double [NISTConst::neutronMassInJPercSquaredUncertainty](#) = 0.000000019e-10
- const double [NISTConst::neutronMassInMeVPercSquaredUncertainty](#) = 0.0000058
- const double [NISTConst::neutronMassInuUncertainty](#) = 0.00000000049
- const double [NISTConst::neutronMolarMassUncertainty](#) = 0.00000000049e-3
- const double [NISTConst::neutronMuonMassRatioUncertainty](#) = 0.00000020
- const double [NISTConst::neutronProtonMagneticMomentRatioUncertainty](#) = 0.00000016
- const double [NISTConst::neutronProtonMassDifferenceUncertainty](#) = 0.00000085e-30
- const double [NISTConst::neutronProtonMassDifferenceInJPercSquaredUncertainty](#) = 0.00000076e-13
- const double [NISTConst::neutronProtonMassDifferenceInMeVPercSquaredUncertainty](#) = 0.00000048
- const double [NISTConst::neutronProtonMassDifferenceInuUncertainty](#) = 0.00000000051
- const double [NISTConst::neutronProtonMassRatioUncertainty](#) = 0.00000000051
- const double [NISTConst::neutronTauMassRatioUncertainty](#) = 0.000048
- const double [NISTConst::neutronToShieldedProtonMagneticMomentRatioUncertainty](#) = 0.00000016

3.32.1 Detailed Description

3.32.2 Variable Documentation

3.32.2.1 neutronComptonWavelength

```
const double NISTConst::neutronComptonWavelength = 1.31959090481e-15
```

$\lambda_{C,n}$ (m) Neutron Compton wavelength in meters.

3.32.2.2 neutronComptonWavelengthOver2Pi

```
const double NISTConst::neutronComptonWavelengthOver2Pi = 0.21001941536e-15
```

$\frac{\lambda_{C,n}}{2\pi}$ (m) Neutron Compton wavelength over 2 pi in meters.

3.32.2.3 neutronComptonWavelengthOver2PiUncertainty

```
const double NISTConst::neutronComptonWavelengthOver2PiUncertainty = 0.00000000014e-15
```

$\frac{\lambda_{C,n}}{2\pi}$ (m) Uncertainty in neutron Compton wavelength over 2 pi in meters.

3.32.2.4 neutronComptonWavelengthUncertainty

```
const double NISTConst::neutronComptonWavelengthUncertainty = 0.00000000088e-15
```

$\lambda_{C,n}$ (m) Uncertainty in neutron Compton wavelength in meters.

3.32.2.5 neutronElectronMagneticMomentRatio

```
const double NISTConst::neutronElectronMagneticMomentRatio = 1.04066882e-3
```

$\frac{\mu_n}{\mu_e}$ (1) Neutron-electron magnetic moment ratio.

3.32.2.6 neutronElectronMagneticMomentRatioUncertainty

```
const double NISTConst::neutronElectronMagneticMomentRatioUncertainty = 0.00000025e-3
```

$\frac{\mu_n}{\mu_e}$ (1) Uncertainty in neutron-electron magnetic moment ratio.

3.32.2.7 neutronElectronMassRatio

```
const double NISTConst::neutronElectronMassRatio = 1838.68366158
```

$\frac{m_n}{m_e}$ (1) Neutron-electron mass ratio.

3.32.2.8 neutronElectronMassRatioUncertainty

```
const double NISTConst::neutronElectronMassRatioUncertainty = 0.00000090
```

$\frac{m_n}{m_e}$ (1) Uncertainty in neutron-electron mass ratio .

3.32.2.9 neutrongFactor

```
const double NISTConst::neutrongFactor = -3.82608545
```

g_n (1) Neutron g factor.

3.32.2.10 neutrongFactorUncertainty

```
const double NISTConst::neutrongFactorUncertainty = 0.00000090
```

g_n (1) Uncertainty in neutron g factor.

3.32.2.11 neutronGyromagneticRatio

```
const double NISTConst::neutronGyromagneticRatio = 1.83247172e8
```

$\gamma_n \left(\frac{\text{rad Hz}}{T} \right)$ Neutron gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.32.2.12 neutronGyromagneticRatioOver2Pi

```
const double NISTConst::neutronGyromagneticRatioOver2Pi = 29.1646933
```

$\frac{\gamma_n}{2\pi} \left(\frac{\text{rad MHz}}{T} \right)$ Neutron gyromagnetic ratio over 2 pi in radian megahertz per tesla. Note that the units of radians are added for clarity.

3.32.2.13 neutronGyromagneticRatioOver2PiUncertainty

```
const double NISTConst::neutronGyromagneticRatioOver2PiUncertainty = 0.0000069
```

$\frac{\gamma_n}{2\pi} \left(\frac{\text{rad MHz}}{T} \right)$ Uncertainty in neutron gyromagnetic ratio over 2 pi in radian megahertz per tesla. Note that the units of radians are added for clarity.

3.32.2.14 neutronGyromagneticRatioUncertainty

```
const double NISTConst::neutronGyromagneticRatioUncertainty = 0.00000043e8
```

γ_n ($\frac{\text{rad Hz}}{\text{T}}$) Uncertainty in neutron gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.32.2.15 neutronMagneticMoment

```
const double NISTConst::neutronMagneticMoment = -0.96623650e-26
```

μ_n ($\frac{\text{J}}{\text{T}}$) Neutron magnetic moment in joules per tesla.

3.32.2.16 neutronMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::neutronMagneticMomentToBohrMagnetonRatio = -1.04187563e-3
```

$\frac{\mu_n}{\mu_B}$ (1) Neutron magnetic moment to Bohr magneton ratio.

3.32.2.17 neutronMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::neutronMagneticMomentToBohrMagnetonRatioUncertainty = 0.00000025e-3
```

$\frac{\mu_n}{\mu_B}$ (1) Uncertainty in neutron magnetic moment to Bohr magneton ratio.

3.32.2.18 neutronMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::neutronMagneticMomentToNuclearMagnetonRatio = -1.91304273
```

$\frac{\mu_n}{\mu_N}$ (1) Neutron magnetic moment to nuclear magneton ratio.

3.32.2.19 neutronMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::neutronMagneticMomentToNuclearMagnetonRatioUncertainty = 0.00000045
```

$\frac{\mu_n}{\mu_N}$ (1) Uncertainty in neutron magnetic moment to nuclear magneton ratio.

3.32.2.20 neutronMagneticMomentUncertainty

```
const double NISTConst::neutronMagneticMomentUncertainty = 0.00000023e-26
```

μ_n ($\frac{\text{J}}{\text{T}}$) Uncertainty in neutron magnetic moment in joules per tesla.

3.32.2.21 neutronMass

```
const double NISTConst::neutronMass = 1.674927471e-27
```

m_n (kg) Neutron mass in kilograms.

3.32.2.22 neutronMassInJPercSquared

```
const double NISTConst::neutronMassInJPercSquared = 1.505349739e-10
```

m_n ($\frac{J}{c^2}$) Neutron mass in joules per speed of light squared.

3.32.2.23 neutronMassInJPercSquaredUncertainty

```
const double NISTConst::neutronMassInJPercSquaredUncertainty = 0.000000019e-10
```

m_n ($\frac{J}{c^2}$) Uncertainty in neutron mass in joules per speed of light squared.

3.32.2.24 neutronMassInMeVPercSquared

```
const double NISTConst::neutronMassInMeVPercSquared = 939.5654133
```

m_n ($\frac{MeV}{c^2}$) Neutron mass in megaelectron volts per speed of light squared.

3.32.2.25 neutronMassInMeVPercSquaredUncertainty

```
const double NISTConst::neutronMassInMeVPercSquaredUncertainty = 0.0000058
```

m_n ($\frac{MeV}{c^2}$) Uncertainty in neutron mass in megaelectron volts per speed of light squared.

3.32.2.26 neutronMassInu

```
const double NISTConst::neutronMassInu = 1.00866491588
```

m_n (u) Neutron mass in unified atomic mass unit.

3.32.2.27 neutronMassInuUncertainty

```
const double NISTConst::neutronMassInuUncertainty = 0.0000000049
```

m_n (u) Uncertainty in neutron mass in unified atomic mass unit.

3.32.2.28 neutronMassUncertainty

```
const double NISTConst::neutronMassUncertainty = 0.000000021e-27
```

m_n (kg) Uncertainty in neutron mass in kilograms.

3.32.2.29 neutronMolarMass

```
const double NISTConst::neutronMolarMass = 1.00866491588e-3
```

M_n ($\frac{kg}{mol}$) Neutron molar mass in kilogram per mole.

3.32.2.30 neutronMolarMassUncertainty

```
const double NISTConst::neutronMolarMassUncertainty = 0.00000000049e-3
```

M_n ($\frac{kg}{mol}$) Uncertainty in neutron molar mass in kilogram per mole.

3.32.2.31 neutronMuonMassRatio

```
const double NISTConst::neutronMuonMassRatio = 8.89248408
```

$\frac{m_n}{m_\mu}$ (1) Neutron-muon mass ratio.

3.32.2.32 neutronMuonMassRatioUncertainty

```
const double NISTConst::neutronMuonMassRatioUncertainty = 0.00000020
```

$\frac{m_n}{m_\mu}$ (1) Uncertainty in neutron-muon mass ratio.

3.32.2.33 neutronProtonMagneticMomentRatio

```
const double NISTConst::neutronProtonMagneticMomentRatio = -0.68497934
```

$\frac{\mu_n}{\mu_p}$ (1) Neutron-proton magnetic moment ratio.

3.32.2.34 neutronProtonMagneticMomentRatioUncertainty

```
const double NISTConst::neutronProtonMagneticMomentRatioUncertainty = 0.00000016
```

$\frac{\mu_n}{\mu_p}$ (1) Uncertainty in neutron-proton magnetic moment ratio.

3.32.2.35 neutronProtonMassDifference

```
const double NISTConst::neutronProtonMassDifference = 2.30557377e-30
```

$m_n - m_p$ (kg) Neutron-proton mass difference in kilograms.

3.32.2.36 neutronProtonMassDifferenceInJPercSquared

```
const double NISTConst::neutronProtonMassDifferenceInJPercSquared = 2.07214637e-13
```

$m_n - m_p$ ($\frac{J}{c^2}$) Neutron-proton mass difference in joules per speed of light squared.

3.32.2.37 neutronProtonMassDifferenceInJPercSquaredUncertainty

```
const double NISTConst::neutronProtonMassDifferenceInJPercSquaredUncertainty = 0.00000076e-13
```

$m_n - m_p \left(\frac{J}{c^2} \right)$ Uncertainty in neutron-proton mass difference in joules per speed of light squared.

3.32.2.38 neutronProtonMassDifferenceInMeVPercSquared

```
const double NISTConst::neutronProtonMassDifferenceInMeVPercSquared = 1.29333205
```

$m_n - m_p \left(\frac{MeV}{c^2} \right)$ Neutron-proton mass difference in megaelectron volts per speed of light squared.

3.32.2.39 neutronProtonMassDifferenceInMeVPercSquaredUncertainty

```
const double NISTConst::neutronProtonMassDifferenceInMeVPercSquaredUncertainty = 0.00000048
```

$m_n - m_p \left(\frac{MeV}{c^2} \right)$ Uncertainty in neutron-proton mass difference in megaelectron volts per speed of light squared.

3.32.2.40 neutronProtonMassDifferenceInu

```
const double NISTConst::neutronProtonMassDifferenceInu = 0.00138844900
```

$m_n - m_p (u)$ Neutron-proton mass difference in unified atomic mass unit.

3.32.2.41 neutronProtonMassDifferenceInuUncertainty

```
const double NISTConst::neutronProtonMassDifferenceInuUncertainty = 0.00000000051
```

$m_n - m_p (u)$ Uncertainty in neutron-proton mass difference in unified atomic mass unit.

3.32.2.42 neutronProtonMassDifferenceUncertainty

```
const double NISTConst::neutronProtonMassDifferenceUncertainty = 0.00000085e-30
```

$m_n - m_p (kg)$ Uncertainty in neutron-proton mass difference in kilograms.

3.32.2.43 neutronProtonMassRatio

```
const double NISTConst::neutronProtonMassRatio = 1.00137841898
```

$\frac{m_n}{m_p} (1)$ Neutron-proton mass ratio.

3.32.2.44 neutronProtonMassRatioUncertainty

```
const double NISTConst::neutronProtonMassRatioUncertainty = 0.00000000051
```

$\frac{m_n}{m_p} (1)$ Uncertainty in neutron-proton mass ratio.

3.32.2.45 neutronTauMassRatio

```
const double NISTConst::neutronTauMassRatio = 0.528790
```

$\frac{m_n}{m_\tau}$ (1) Neutron-tau mass ratio.

3.32.2.46 neutronTauMassRatioUncertainty

```
const double NISTConst::neutronTauMassRatioUncertainty = 0.000048
```

$\frac{m_n}{m_\tau}$ (1) Uncertainty in neutron-tau mass ratio.

3.32.2.47 neutronToShieldedProtonMagneticMomentRatio

```
const double NISTConst::neutronToShieldedProtonMagneticMomentRatio = -0.68499694
```

$\frac{\mu_n}{\mu'_p}$ (1) Neutron to shielded proton magnetic moment ratio.

3.32.2.48 neutronToShieldedProtonMagneticMomentRatioUncertainty

```
const double NISTConst::neutronToShieldedProtonMagneticMomentRatioUncertainty = 0.00000016
```

$\frac{\mu_n}{\mu'_p}$ (1) Uncertainty in neutron to shielded proton magnetic moment ratio.

3.33 Proton particle

Variables

- const double [NISTConst::protonChargeToMassQuotient](#) = 9.578833226e7
- const double [NISTConst::protonComptonWavelength](#) = 1.32140985396e-15
- const double [NISTConst::protonComptonWavelengthOver2Pi](#) = 0.210308910109e-15
- const double [NISTConst::protonElectronMassRatio](#) = 1836.15267389
- const double [NISTConst::protongFactor](#) = 5.585694702
- const double [NISTConst::protonGyromagneticRatio](#) = 2.675221900e8
- const double [NISTConst::protonGyromagneticRatioOver2pi](#) = 42.57747892
- const double [NISTConst::protonMagneticMoment](#) = 1.4106067873e-26
- const double [NISTConst::protonMagneticMomentToBohrMagnetonRatio](#) = 1.5210322053e-3
- const double [NISTConst::protonMagneticMomentToNuclearMagnetonRatio](#) = 2.7928473508
- const double [NISTConst::protonMagneticShieldingCorrection](#) = 25.691e-6
- const double [NISTConst::protonMass](#) = 1.672621898e-27
- const double [NISTConst::protonMassInJPercSquared](#) = 1.503277593e-10
- const double [NISTConst::protonMassInMeVPercSquared](#) = 938.2720813
- const double [NISTConst::protonMassInu](#) = 1.007276466879
- const double [NISTConst::protonMolarMass](#) = 1.007276466879e-3
- const double [NISTConst::protonMuonMassRatio](#) = 8.88024338
- const double [NISTConst::protonNeutronMagneticMomentRatio](#) = -1.45989805
- const double [NISTConst::protonNeutronMassRatio](#) = 0.99862347844
- const double [NISTConst::protonrmsChargeRadius](#) = 0.8751e-15
- const double [NISTConst::protonTauMassRatio](#) = 0.528063
- const double [NISTConst::protonChargeToMassQuotientUncertainty](#) = 0.000000059e7
- const double [NISTConst::protonComptonWavelengthUncertainty](#) = 0.0000000061e-15
- const double [NISTConst::protonComptonWavelengthOver2PiUncertainty](#) = 0.00000000097e-15
- const double [NISTConst::protonElectronMassRatioUncertainty](#) = 0.00000017
- const double [NISTConst::protongFactorUncertainty](#) = 0.000000017
- const double [NISTConst::protonGyromagneticRatioUncertainty](#) = 0.000000018e8
- const double [NISTConst::protonGyromagneticRatioOver2piUncertainty](#) = 0.00000029
- const double [NISTConst::protonMagneticMomentUncertainty](#) = 0.0000000097e-26
- const double [NISTConst::protonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.0000000046e-3
- const double [NISTConst::protonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.0000000085
- const double [NISTConst::protonMagneticShieldingCorrectionUncertainty](#) = 0.011e-6
- const double [NISTConst::protonMassUncertainty](#) = 0.000000021e-27
- const double [NISTConst::protonMassInJPercSquaredUncertainty](#) = 0.000000018e-10
- const double [NISTConst::protonMassInMeVPercSquaredUncertainty](#) = 0.0000058
- const double [NISTConst::protonMassInuUncertainty](#) = 0.00000000091
- const double [NISTConst::protonMolarMassUncertainty](#) = 0.00000000091e-3
- const double [NISTConst::protonMuonMassRatioUncertainty](#) = 0.00000020
- const double [NISTConst::protonNeutronMagneticMomentRatioUncertainty](#) = 0.00000034
- const double [NISTConst::protonNeutronMassRatioUncertainty](#) = 0.0000000051
- const double [NISTConst::protonrmsChargeRadiusUncertainty](#) = 0.0061e-15
- const double [NISTConst::protonTauMassRatioUncertainty](#) = 0.000048
- const double [NISTConst::shieldedProtonGyromagneticRatio](#) = 2.675153171e8
- const double [NISTConst::shieldedProtonGyromagneticRatioOver2Pi](#) = 42.57638507
- const double [NISTConst::shieldedProtonMagneticMoment](#) = 1.410570547e-26
- const double [NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatio](#) = 1.520993128e-3
- const double [NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatio](#) = 2.792775600
- const double [NISTConst::shieldedProtonGyromagneticRatioUncertainty](#) = 0.000000033e8
- const double [NISTConst::shieldedProtonGyromagneticRatioOver2PiUncertainty](#) = 0.00000053
- const double [NISTConst::shieldedProtonMagneticMomentUncertainty](#) = 0.000000018e-26
- const double [NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.↵
000000017e-3
- const double [NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.↵
000000030

3.33.1 Detailed Description

3.33.2 Variable Documentation

3.33.2.1 protonChargeToMassQuotient

```
const double NISTConst::protonChargeToMassQuotient = 9.578833226e7
```

$\frac{e}{m_p} \left(\frac{C}{kg} \right)$ Proton charge to mass quotient in coulombs per kilogram.

3.33.2.2 protonChargeToMassQuotientUncertainty

```
const double NISTConst::protonChargeToMassQuotientUncertainty = 0.000000059e7
```

$\frac{e}{m_p} \left(\frac{C}{kg} \right)$ Uncertainty in proton charge to mass quotient in coulombs per kilogram.

3.33.2.3 protonComptonWavelength

```
const double NISTConst::protonComptonWavelength = 1.32140985396e-15
```

$\lambda_{C,p} \text{ (m)}$ Proton Compton wavelength in meters.

3.33.2.4 protonComptonWavelengthOver2Pi

```
const double NISTConst::protonComptonWavelengthOver2Pi = 0.210308910109e-15
```

$\frac{\lambda_{C,p}}{2\pi} \text{ (m)}$ Proton Compton wavelength over 2 pi in meters.

3.33.2.5 protonComptonWavelengthOver2PiUncertainty

```
const double NISTConst::protonComptonWavelengthOver2PiUncertainty = 0.00000000097e-15
```

$\frac{\lambda_{C,p}}{2\pi} \text{ (m)}$ Uncertainty in proton Compton wavelength over 2 pi in meters.

3.33.2.6 protonComptonWavelengthUncertainty

```
const double NISTConst::protonComptonWavelengthUncertainty = 0.00000000061e-15
```

$\lambda_{C,p} \text{ (m)}$ Uncertainty in proton Compton wavelength in meters.

3.33.2.7 protonElectronMassRatio

```
const double NISTConst::protonElectronMassRatio = 1836.15267389
```

$\frac{m_p}{m_e}$ (1) Proton-electron mass ratio.

3.33.2.8 protonElectronMassRatioUncertainty

```
const double NISTConst::protonElectronMassRatioUncertainty = 0.00000017
```

$\frac{m_p}{m_e}$ (1) Uncertainty in proton-electron mass ratio.

3.33.2.9 protongFactor

```
const double NISTConst::protongFactor = 5.585694702
```

g_p (1) Proton g factor.

3.33.2.10 protongFactorUncertainty

```
const double NISTConst::protongFactorUncertainty = 0.000000017
```

g_p (1) Uncertainty in proton g factor.

3.33.2.11 protonGyromagneticRatio

```
const double NISTConst::protonGyromagneticRatio = 2.675221900e8
```

γ_p ($\frac{\text{rad Hz}}{\text{T}}$) Proton gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.33.2.12 protonGyromagneticRatioOver2pi

```
const double NISTConst::protonGyromagneticRatioOver2pi = 42.57747892
```

$\frac{\gamma_p}{2\pi}$ ($\frac{\text{rad MHz}}{\text{T}}$) Proton gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.33.2.13 protonGyromagneticRatioOver2piUncertainty

```
const double NISTConst::protonGyromagneticRatioOver2piUncertainty = 0.00000029
```

$\frac{\gamma_p}{2\pi}$ ($\frac{\text{rad MHz}}{\text{T}}$) Uncertainty in proton gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.33.2.14 protonGyromagneticRatioUncertainty

```
const double NISTConst::protonGyromagneticRatioUncertainty = 0.000000018e8
```

$\gamma_p \left(\frac{\text{rad Hz}}{\text{T}} \right)$ Uncertainty in proton gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.33.2.15 protonMagneticMoment

```
const double NISTConst::protonMagneticMoment = 1.4106067873e-26
```

$\mu_p \left(\frac{\text{J}}{\text{T}} \right)$ Proton magnetic moment in joules per tesla.

3.33.2.16 protonMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::protonMagneticMomentToBohrMagnetonRatio = 1.5210322053e-3
```

$\frac{\mu_p}{\mu_B}$ (1) Proton magnetic moment to Bohr magneton ratio.

3.33.2.17 protonMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::protonMagneticMomentToBohrMagnetonRatioUncertainty = 0.0000000046e-3
```

$\frac{\mu_p}{\mu_B}$ (1) Uncertainty in proton magnetic moment to Bohr magneton ratio.

3.33.2.18 protonMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::protonMagneticMomentToNuclearMagnetonRatio = 2.7928473508
```

$\frac{\mu_p}{\mu_N}$ (1) Proton magnetic moment to nuclear magneton ratio.

3.33.2.19 protonMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::protonMagneticMomentToNuclearMagnetonRatioUncertainty = 0.0000000085
```

$\frac{\mu_p}{\mu_N}$ (1) Uncertainty in proton magnetic moment to nuclear magneton ratio.

3.33.2.20 protonMagneticMomentUncertainty

```
const double NISTConst::protonMagneticMomentUncertainty = 0.0000000097e-26
```

$\mu_p \left(\frac{\text{J}}{\text{T}} \right)$ Uncertainty in proton magnetic moment in joules per tesla.

3.33.2.21 protonMagneticShieldingCorrection

```
const double NISTConst::protonMagneticShieldingCorrection = 25.691e-6
```

σ'_p (1) Proton magnetic shielding correction.

3.33.2.22 protonMagneticShieldingCorrectionUncertainty

```
const double NISTConst::protonMagneticShieldingCorrectionUncertainty = 0.011e-6
```

σ'_p (1) Uncertainty in proton magnetic shielding correction.

3.33.2.23 protonMass

```
const double NISTConst::protonMass = 1.672621898e-27
```

m_p (kg) Proton mass in kilograms.

3.33.2.24 protonMassInJPercSquared

```
const double NISTConst::protonMassInJPercSquared = 1.503277593e-10
```

m_p ($\frac{J}{c^2}$) Proton mass in joules per speed of light squared.

3.33.2.25 protonMassInJPercSquaredUncertainty

```
const double NISTConst::protonMassInJPercSquaredUncertainty = 0.000000018e-10
```

m_p ($\frac{J}{c^2}$) Uncertainty in proton mass in joules per speed of light squared.

3.33.2.26 protonMassInMeVPercSquared

```
const double NISTConst::protonMassInMeVPercSquared = 938.2720813
```

m_p ($\frac{MeV}{c^2}$) Proton mass in megaelectron volts per speed of light squared.

3.33.2.27 protonMassInMeVPercSquaredUncertainty

```
const double NISTConst::protonMassInMeVPercSquaredUncertainty = 0.0000058
```

m_p ($\frac{MeV}{c^2}$) Uncertainty in proton mass in megaelectron volts per speed of light squared.

3.33.2.28 protonMassInu

```
const double NISTConst::protonMassInu = 1.007276466879
```

m_p (u) Proton mass in unified atomic mass unit.

3.33.2.29 protonMassInuUncertainty

```
const double NISTConst::protonMassInuUncertainty = 0.000000000091
```

m_p (u) Uncertainty in proton mass in unified atomic mass unit.

3.33.2.30 protonMassUncertainty

```
const double NISTConst::protonMassUncertainty = 0.000000021e-27
```

m_p (kg) Uncertainty in proton mass in kilograms.

3.33.2.31 protonMolarMass

```
const double NISTConst::protonMolarMass = 1.007276466879e-3
```

M_p ($\frac{kg}{mol}$) Proton molar mass in kilograms per mole.

3.33.2.32 protonMolarMassUncertainty

```
const double NISTConst::protonMolarMassUncertainty = 0.000000000091e-3
```

M_p ($\frac{kg}{mol}$) Uncertainty in proton molar mass in kilograms per mole.

3.33.2.33 protonMuonMassRatio

```
const double NISTConst::protonMuonMassRatio = 8.88024338
```

$\frac{m_p}{m_\mu}$ (1) Proton-muon mass ratio.

3.33.2.34 protonMuonMassRatioUncertainty

```
const double NISTConst::protonMuonMassRatioUncertainty = 0.00000020
```

$\frac{m_p}{m_\mu}$ (1) Uncertainty in proton-muon mass ratio.

3.33.2.35 protonNeutronMagneticMomentRatio

```
const double NISTConst::protonNeutronMagneticMomentRatio = -1.45989805
```

$\frac{\mu_p}{\mu_n}$ (1) Proton-neutron magnetic moment ratio.

3.33.2.36 protonNeutronMagneticMomentRatioUncertainty

```
const double NISTConst::protonNeutronMagneticMomentRatioUncertainty = 0.00000034
```

$\frac{\mu_p}{\mu_n}$ (1) Uncertainty in proton-neutron magnetic moment ratio.

3.33.2.37 protonNeutronMassRatio

```
const double NISTConst::protonNeutronMassRatio = 0.99862347844
```

$\frac{m_p}{m_n}$ (1) Proton-neutron mass ratio.

3.33.2.38 protonNeutronMassRatioUncertainty

```
const double NISTConst::protonNeutronMassRatioUncertainty = 0.00000000051
```

$\frac{m_p}{m_n}$ (1) Uncertainty in proton-neutron mass ratio.

3.33.2.39 protonrmsChargeRadius

```
const double NISTConst::protonrmsChargeRadius = 0.8751e-15
```

r_p (m) Proton rms charge radius in meters.

3.33.2.40 protonrmsChargeRadiusUncertainty

```
const double NISTConst::protonrmsChargeRadiusUncertainty = 0.0061e-15
```

r_p (m) Uncertainty in proton rms charge radius in meters.

3.33.2.41 protonTauMassRatio

```
const double NISTConst::protonTauMassRatio = 0.528063
```

$\frac{m_p}{m_\tau}$ (1) Proton-tau mass ratio.

3.33.2.42 protonTauMassRatioUncertainty

```
const double NISTConst::protonTauMassRatioUncertainty = 0.000048
```

$\frac{m_p}{m_\tau}$ (1) Uncertainty in proton-tau mass ratio.

3.33.2.43 shieldedProtonGyromagneticRatio

```
const double NISTConst::shieldedProtonGyromagneticRatio = 2.675153171e8
```

γ'_p ($\frac{\text{rad Hz}}{\text{T}}$) Shielded proton gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.33.2.44 shieldedProtonGyromagneticRatioOver2Pi

```
const double NISTConst::shieldedProtonGyromagneticRatioOver2Pi = 42.57638507
```

$\frac{\gamma'_p}{2\pi} \left(\frac{\text{rad MHz}}{\text{T}} \right)$ Shielded proton gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.33.2.45 shieldedProtonGyromagneticRatioOver2PiUncertainty

```
const double NISTConst::shieldedProtonGyromagneticRatioOver2PiUncertainty = 0.00000053
```

$\frac{\gamma'_p}{2\pi} \left(\frac{\text{rad MHz}}{\text{T}} \right)$ Uncertainty in shielded proton gyromagnetic ratio over 2 pi in radian megaahertz per tesla. Note that the units of radians are added for clarity.

3.33.2.46 shieldedProtonGyromagneticRatioUncertainty

```
const double NISTConst::shieldedProtonGyromagneticRatioUncertainty = 0.000000033e8
```

$\gamma'_p \left(\frac{\text{rad Hz}}{\text{T}} \right)$ Uncertainty in shielded proton gyromagnetic ratio in radian hertz per tesla. Note that the units of radians are added for clarity.

3.33.2.47 shieldedProtonMagneticMoment

```
const double NISTConst::shieldedProtonMagneticMoment = 1.410570547e-26
```

$\mu'_p \left(\frac{\text{J}}{\text{T}} \right)$ Shielded proton magnetic moment in joules per tesla.

3.33.2.48 shieldedProtonMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatio = 1.520993128e-3
```

$\frac{\mu'_p}{\mu_B}$ (1) Shielded proton magnetic moment to Bohr magneton ratio.

3.33.2.49 shieldedProtonMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatioUncertainty = 0.↵  
000000017e-3
```

$\frac{\mu'_p}{\mu_B}$ (1) Uncertainty in shielded proton magnetic moment to Bohr magneton ratio.

3.33.2.50 shieldedProtonMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatio = 2.792775600
```

$\frac{\mu'_p}{\mu_N}$ (1) Shielded proton magnetic moment to nuclear magneton ratio.

3.33.2.51 shieldedProtonMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatioUncertainty = 0.↵  
000000030
```

$\frac{\mu'_p}{\mu_N}$ (1) Uncertainty in shielded proton magnetic moment to nuclear magneton ratio.

3.33.2.52 shieldedProtonMagneticMomentUncertainty

```
const double NISTConst::shieldedProtonMagneticMomentUncertainty = 0.000000018e-26
```

$\mu'_p \left(\frac{\text{J}}{\text{T}} \right)$ Uncertainty in shielded proton magnetic moment in joules per tesla.

3.34 Quantum of circulation

Variables

- const double [NISTConst::quantumOfCirculation](#) = 3.6369475486e-4
- const double [NISTConst::quantumOfCirculationTimes2](#) = 7.2738950972e-4
- const double [NISTConst::quantumOfCirculationUncertainty](#) = 0.0000000017e-4
- const double [NISTConst::quantumOfCirculationTimes2Uncertainty](#) = 0.0000000033e-4

3.34.1 Detailed Description

3.34.2 Variable Documentation

3.34.2.1 quantumOfCirculation

```
const double NISTConst::quantumOfCirculation = 3.6369475486e-4
```

$\frac{h}{2m_e} \left(\frac{m^2}{s} \right)$ Quantum of circulation in meters squared per second.

3.34.2.2 quantumOfCirculationTimes2

```
const double NISTConst::quantumOfCirculationTimes2 = 7.2738950972e-4
```

$\frac{h}{m_e} \left(\frac{m^2}{s} \right)$ Quantum of circulation times 2 in meters squared per second.

3.34.2.3 quantumOfCirculationTimes2Uncertainty

```
const double NISTConst::quantumOfCirculationTimes2Uncertainty = 0.0000000033e-4
```

$\frac{h}{m_e} \left(\frac{m^2}{s} \right)$ Uncertainty in quantum of circulation times 2 in meters squared per second.

3.34.2.4 quantumOfCirculationUncertainty

```
const double NISTConst::quantumOfCirculationUncertainty = 0.0000000017e-4
```

$\frac{h}{2m_e} \left(\frac{m^2}{s} \right)$ Uncertainty in quantum of circulation in meters squared per second.

3.35 Rydberg constant

Variables

- const double [NISTConst::RydbergConstant](#) = 10973731.568508
- const double [NISTConst::RydbergConstantTimescInHz](#) = 3.289841960355e15
- const double [NISTConst::RydbergConstantTimeshcIneV](#) = 13.605693009
- const double [NISTConst::RydbergConstantTimeshcInJ](#) = 2.179872325e-18
- const double [NISTConst::RydbergConstantUncertainty](#) = 0.000065
- const double [NISTConst::RydbergConstantTimescInHzUncertainty](#) = 0.000000000019e15
- const double [NISTConst::RydbergConstantTimeshcIneVUncertainty](#) = 0.000000084
- const double [NISTConst::RydbergConstantTimeshcInJUncertainty](#) = 0.000000027e-18

3.35.1 Detailed Description

3.35.2 Variable Documentation

3.35.2.1 RydbergConstant

```
const double NISTConst::RydbergConstant = 10973731.568508
```

R_{∞} ($\frac{1}{m}$) Rydberg constant in inverse meters.

3.35.2.2 RydbergConstantTimescInHz

```
const double NISTConst::RydbergConstantTimescInHz = 3.289841960355e15
```

$R_{\infty}c$ (Hz) Rydberg constant times c in hertz.

3.35.2.3 RydbergConstantTimescInHzUncertainty

```
const double NISTConst::RydbergConstantTimescInHzUncertainty = 0.000000000019e15
```

$R_{\infty}c$ (Hz) Uncertainty in Rydberg constant times c in hertz.

3.35.2.4 RydbergConstantTimeshcIneV

```
const double NISTConst::RydbergConstantTimeshcIneV = 13.605693009
```

$R_{\infty}hc$ (eV) Rydberg constant times hc in electron volts.

3.35.2.5 RydbergConstantTimeshcIneVUncertainty

```
const double NISTConst::RydbergConstantTimeshcIneVUncertainty = 0.000000084
```

$R_{\infty}hc$ (eV) Uncertainty in Rydberg constant times hc in electron volts.

3.35.2.6 RydbergConstantTimeshcInJ

```
const double NISTConst::RydbergConstantTimeshcInJ = 2.179872325e-18
```

$R_{\infty}hc$ (J) Rydberg constant times hc in joules.

3.35.2.7 RydbergConstantTimeshcInJUncertainty

```
const double NISTConst::RydbergConstantTimeshcInJUncertainty = 0.000000027e-18
```

$R_{\infty}hc$ (J) Uncertainty in Rydberg constant times hc in joules.

3.35.2.8 RydbergConstantUncertainty

```
const double NISTConst::RydbergConstantUncertainty = 0.000065
```

R_{∞} ($\frac{1}{m}$) Uncertainty in Rydberg constant in inverse meters.

3.36 Tau particle

Variables

- const double `NISTConst::tauComptonWavelength` = 0.697787e-15
- const double `NISTConst::tauComptonWavelengthOver2Pi` = 0.111056e-15
- const double `NISTConst::tauElectronMassRatio` = 3477.15
- const double `NISTConst::tauMass` = 3.16747e-27
- const double `NISTConst::tauMassInJPercSquared` = 2.84678e-10
- const double `NISTConst::tauMassInMeVPercSquared` = 1776.82
- const double `NISTConst::tauMassInu` = 1.90749
- const double `NISTConst::tauMolarMass` = 1.90749e-3
- const double `NISTConst::tauMuonMassRatio` = 16.8167
- const double `NISTConst::tauNeutronMassRatio` = 1.89111
- const double `NISTConst::tauProtonMassRatio` = 1.89372
- const double `NISTConst::tauComptonWavelengthUncertainty` = 0.000063e-15
- const double `NISTConst::tauComptonWavelengthOver2PiUncertainty` = 0.000010e-15
- const double `NISTConst::tauElectronMassRatioUncertainty` = 0.31
- const double `NISTConst::tauMassUncertainty` = 0.00029e-27
- const double `NISTConst::tauMassInJPercSquaredUncertainty` = 0.00026e-10
- const double `NISTConst::tauMassInMeVPercSquaredUncertainty` = 0.16
- const double `NISTConst::tauMassInuUncertainty` = 0.00017
- const double `NISTConst::tauMolarMassUncertainty` = 0.00017e-3
- const double `NISTConst::tauMuonMassRatioUncertainty` = 0.0015
- const double `NISTConst::tauNeutronMassRatioUncertainty` = 0.00017
- const double `NISTConst::tauProtonMassRatioUncertainty` = 0.00017

3.36.1 Detailed Description

3.36.2 Variable Documentation

3.36.2.1 `tauComptonWavelength`

```
const double NISTConst::tauComptonWavelength = 0.697787e-15
```

$\lambda_{C,\tau}$ (m) Tau Compton wavelength in meters.

3.36.2.2 `tauComptonWavelengthOver2Pi`

```
const double NISTConst::tauComptonWavelengthOver2Pi = 0.111056e-15
```

$\frac{\lambda_{C,\tau}}{2\pi}$ (m) Tau Compton wavelength over 2 pi in meters.

3.36.2.3 `tauComptonWavelengthOver2PiUncertainty`

```
const double NISTConst::tauComptonWavelengthOver2PiUncertainty = 0.000010e-15
```

$\frac{\lambda_{C,\tau}}{2\pi}$ (m) Uncertainty in tau Compton wavelength over 2 pi in meters.

3.36.2.4 tauComptonWavelengthUncertainty

```
const double NISTConst::tauComptonWavelengthUncertainty = 0.000063e-15
```

$\lambda_{C,\tau}$ (m) Uncertainty in tau Compton wavelength in meters.

3.36.2.5 tauElectronMassRatio

```
const double NISTConst::tauElectronMassRatio = 3477.15
```

$\frac{m_\tau}{m_e}$ (1) Tau-electron mass ratio.

3.36.2.6 tauElectronMassRatioUncertainty

```
const double NISTConst::tauElectronMassRatioUncertainty = 0.31
```

$\frac{m_\tau}{m_e}$ (1) Uncertainty in tau-electron mass ratio.

3.36.2.7 tauMass

```
const double NISTConst::tauMass = 3.16747e-27
```

m_τ (kg) Tau mass in kilograms.

3.36.2.8 tauMassInJPercSquared

```
const double NISTConst::tauMassInJPercSquared = 2.84678e-10
```

m_τ ($\frac{J}{c^2}$) Tau mass in joules per speed of light squared.

3.36.2.9 tauMassInJPercSquaredUncertainty

```
const double NISTConst::tauMassInJPercSquaredUncertainty = 0.00026e-10
```

m_τ ($\frac{J}{c^2}$) Uncertainty in tau mass in joules per speed of light squared.

3.36.2.10 tauMassInMeVPercSquared

```
const double NISTConst::tauMassInMeVPercSquared = 1776.82
```

m_τ ($\frac{MeV}{c^2}$) Tau mass in megaelectron volts per speed of light squared.

3.36.2.11 tauMassInMeVPercSquaredUncertainty

```
const double NISTConst::tauMassInMeVPercSquaredUncertainty = 0.16
```

m_τ ($\frac{MeV}{c^2}$) Uncertainty in tau mass in megaelectron volts per speed of light squared.

3.36.2.12 tauMassInu

```
const double NISTConst::tauMassInu = 1.90749
```

m_τ (u) Tau mass in unified atomic mass units.

3.36.2.13 tauMassInuUncertainty

```
const double NISTConst::tauMassInuUncertainty = 0.00017
```

m_τ (u) Uncertainty in tau mass in unified atomic mass units.

3.36.2.14 tauMassUncertainty

```
const double NISTConst::tauMassUncertainty = 0.00029e-27
```

m_τ (kg) Uncertainty in tau mass in kilograms.

3.36.2.15 tauMolarMass

```
const double NISTConst::tauMolarMass = 1.90749e-3
```

M_τ ($\frac{kg}{mol}$) Tau molar mass in kilograms per mole.

3.36.2.16 tauMolarMassUncertainty

```
const double NISTConst::tauMolarMassUncertainty = 0.00017e-3
```

M_τ ($\frac{kg}{mol}$) Uncertainty in tau molar mass in kilograms per mole.

3.36.2.17 tauMuonMassRatio

```
const double NISTConst::tauMuonMassRatio = 16.8167
```

$\frac{m_\tau}{m_\mu}$ (1) Tau-muon mass ratio.

3.36.2.18 tauMuonMassRatioUncertainty

```
const double NISTConst::tauMuonMassRatioUncertainty = 0.0015
```

$\frac{m_\tau}{m_\mu}$ (1) Uncertainty in tau-muon mass ratio.

3.36.2.19 tauNeutronMassRatio

```
const double NISTConst::tauNeutronMassRatio = 1.89111
```

$\frac{m_\tau}{m_n}$ (1) Tau-neutron mass ratio.

3.36.2.20 tauNeutronMassRatioUncertainty

```
const double NISTConst::tauNeutronMassRatioUncertainty = 0.00017
```

$\frac{m_\tau}{m_n}$ (1) Uncertainty in tau-neutron mass ratio.

3.36.2.21 tauProtonMassRatio

```
const double NISTConst::tauProtonMassRatio = 1.89372
```

$\frac{m_\tau}{m_p}$ (1) Tau-proton mass ratio.

3.36.2.22 tauProtonMassRatioUncertainty

```
const double NISTConst::tauProtonMassRatioUncertainty = 0.00017
```

$\frac{m_\tau}{m_p}$ (1) Uncertainty in tau-proton mass ratio.

3.37 Thomson cross section

Variables

- const double [NISTConst::ThomsonCrossSection](#) = 0.66524587158e-28
- const double [NISTConst::ThomsonCrossSectionUncertainty](#) = 0.00000000091e-28

3.37.1 Detailed Description

3.37.2 Variable Documentation

3.37.2.1 ThomsonCrossSection

```
const double NISTConst::ThomsonCrossSection = 0.66524587158e-28
```

σ_e (m^2) Thomson cross section in meters squared.

3.37.2.2 ThomsonCrossSectionUncertainty

```
const double NISTConst::ThomsonCrossSectionUncertainty = 0.00000000091e-28
```

σ_e (m^2) Uncertainty in Thomson cross section in meters squared.

3.38 Triton (Tritium/Hydrogen-3 nucleus)

Variables

- const double `NISTConst::tritonElectronMassRatio` = 5496.92153588
- const double `NISTConst::tritongFactor` = 5.957924920
- const double `NISTConst::tritonMagneticMoment` = 1.504609503e-26
- const double `NISTConst::tritonMagneticMomentToBohrMagnetonRatio` = 1.6223936616e-3
- const double `NISTConst::tritonMagneticMomentToNuclearMagnetonRatio` = 2.978962460
- const double `NISTConst::tritonMass` = 5.007356665e-27
- const double `NISTConst::tritonMassInJPercSquared` = 4.500387735e-10
- const double `NISTConst::tritonMassInMeVPercSquared` = 2808.921112
- const double `NISTConst::tritonMassInu` = 3.01550071632
- const double `NISTConst::tritonMolarMass` = 3.01550071632e-3
- const double `NISTConst::tritonProtonMassRatio` = 2.99371703348
- const double `NISTConst::tritonElectronMassRatioUncertainty` = 0.00000026
- const double `NISTConst::tritongFactorUncertainty` = 0.000000028
- const double `NISTConst::tritonMagneticMomentUncertainty` = 0.000000012e-26
- const double `NISTConst::tritonMagneticMomentToBohrMagnetonRatioUncertainty` = 0.0000000076e-3
- const double `NISTConst::tritonMagneticMomentToNuclearMagnetonRatioUncertainty` = 0.000000014
- const double `NISTConst::tritonMassUncertainty` = 0.000000062e-27
- const double `NISTConst::tritonMassInJPercSquaredUncertainty` = 0.000000055e-10
- const double `NISTConst::tritonMassInMeVPercSquaredUncertainty` = 0.000017
- const double `NISTConst::tritonMassInuUncertainty` = 0.00000000011
- const double `NISTConst::tritonMolarMassUncertainty` = 0.00000000011e-3
- const double `NISTConst::tritonProtonMassRatioUncertainty` = 0.00000000022

3.38.1 Detailed Description

3.38.2 Variable Documentation

3.38.2.1 `tritonElectronMassRatio`

```
const double NISTConst::tritonElectronMassRatio = 5496.92153588
```

$\frac{m_T}{m_e}$ (1) Triton-electron mass ratio.

3.38.2.2 `tritonElectronMassRatioUncertainty`

```
const double NISTConst::tritonElectronMassRatioUncertainty = 0.00000026
```

$\frac{m_T}{m_e}$ (1) Uncertainty in triton-electron mass ratio.

3.38.2.3 `tritongFactor`

```
const double NISTConst::tritongFactor = 5.957924920
```

g_T (1) Triton g factor.

3.38.2.4 tritongFactorUncertainty

```
const double NISTConst::tritongFactorUncertainty = 0.000000028
```

g_T (1) Uncertainty in triton g factor.

3.38.2.5 tritonMagneticMoment

```
const double NISTConst::tritonMagneticMoment = 1.504609503e-26
```

μ_T ($\frac{J}{T}$) Triton magnetic moment in joules per tesla.

3.38.2.6 tritonMagneticMomentToBohrMagnetonRatio

```
const double NISTConst::tritonMagneticMomentToBohrMagnetonRatio = 1.6223936616e-3
```

$\frac{\mu_T}{\mu_B}$ (1) Triton magnetic moment to Bohr magneton ratio.

3.38.2.7 tritonMagneticMomentToBohrMagnetonRatioUncertainty

```
const double NISTConst::tritonMagneticMomentToBohrMagnetonRatioUncertainty = 0.0000000076e-3
```

$\frac{\mu_T}{\mu_B}$ (1) Uncertainty in triton magnetic moment to Bohr magneton ratio.

3.38.2.8 tritonMagneticMomentToNuclearMagnetonRatio

```
const double NISTConst::tritonMagneticMomentToNuclearMagnetonRatio = 2.978962460
```

$\frac{\mu_T}{\mu_N}$ (1) Triton magnetic moment to nuclear magneton ratio

3.38.2.9 tritonMagneticMomentToNuclearMagnetonRatioUncertainty

```
const double NISTConst::tritonMagneticMomentToNuclearMagnetonRatioUncertainty = 0.000000014
```

$\frac{\mu_T}{\mu_N}$ (1) Uncertainty in triton magnetic moment to nuclear magneton ratio.

3.38.2.10 tritonMagneticMomentUncertainty

```
const double NISTConst::tritonMagneticMomentUncertainty = 0.000000012e-26
```

μ_T ($\frac{J}{T}$) Uncertainty in triton magnetic moment in joules per tesla.

3.38.2.11 tritonMass

```
const double NISTConst::tritonMass = 5.007356665e-27
```

m_T (kg) Triton mass in kilograms.

3.38.2.12 tritonMassInJPercSquared

```
const double NISTConst::tritonMassInJPercSquared = 4.500387735e-10
```

$m_{\text{T}} \left(\frac{\text{J}}{c^2} \right)$ Triton mass in joules per speed of light squared.

3.38.2.13 tritonMassInJPercSquaredUncertainty

```
const double NISTConst::tritonMassInJPercSquaredUncertainty = 0.000000055e-10
```

$m_{\text{T}} \left(\frac{\text{J}}{c^2} \right)$ Uncertainty in triton mass in joules per speed of light squared.

3.38.2.14 tritonMassInMeVPercSquared

```
const double NISTConst::tritonMassInMeVPercSquared = 2808.921112
```

$m_{\text{T}} \left(\frac{\text{MeV}}{c^2} \right)$ Triton mass in megaelectron volts per speed of light squared.

3.38.2.15 tritonMassInMeVPercSquaredUncertainty

```
const double NISTConst::tritonMassInMeVPercSquaredUncertainty = 0.000017
```

$m_{\text{T}} \left(\frac{\text{MeV}}{c^2} \right)$ Uncertainty in triton mass in megaelectron volts per speed of light squared.

3.38.2.16 tritonMassInu

```
const double NISTConst::tritonMassInu = 3.01550071632
```

$m_{\text{T}} (u)$ Triton mass in unified atomic mass units.

3.38.2.17 tritonMassInuUncertainty

```
const double NISTConst::tritonMassInuUncertainty = 0.00000000011
```

$m_{\text{T}} (u)$ Uncertainty in triton mass in unified atomic mass units.

3.38.2.18 tritonMassUncertainty

```
const double NISTConst::tritonMassUncertainty = 0.000000062e-27
```

$m_{\text{T}} (kg)$ Uncertainty in triton mass in kilograms.

3.38.2.19 tritonMolarMass

```
const double NISTConst::tritonMolarMass = 3.01550071632e-3
```

$M_{\text{T}} \left(\frac{\text{kg}}{\text{mol}} \right)$ Triton molar mass in kilograms per mole.

3.38.2.20 tritonMolarMassUncertainty

```
const double NISTConst::tritonMolarMassUncertainty = 0.00000000011e-3
```

M_{T} ($\frac{\text{kg}}{\text{mol}}$) Uncertainty in triton molar mass in kilograms per mole.

3.38.2.21 tritonProtonMassRatio

```
const double NISTConst::tritonProtonMassRatio = 2.99371703348
```

$\frac{m_{\text{T}}}{m_{\text{p}}}$ (1) Triton-proton mass ratio.

3.38.2.22 tritonProtonMassRatioUncertainty

```
const double NISTConst::tritonProtonMassRatioUncertainty = 0.00000000022
```

$\frac{m_{\text{T}}}{m_{\text{p}}}$ (1) Uncertainty in triton-proton mass ratio.

3.39 Weak mixing angle

Variables

- const double `NISTConst::weakMixingAngle` = 0.2223
- const double `NISTConst::weakMixingAngleUncertainty` = 0.0021
- const double `NISTConst::WeinbergAngle` = `weakMixingAngle`
- const double `NISTConst::WeinbergAngleUncertainty` = `weakMixingAngleUncertainty`

3.39.1 Detailed Description

3.39.2 Variable Documentation

3.39.2.1 `weakMixingAngle`

```
const double NISTConst::weakMixingAngle = 0.2223
```

$\sin^2\theta_W$ (1) Weak mixing angle.

3.39.2.2 `weakMixingAngleUncertainty`

```
const double NISTConst::weakMixingAngleUncertainty = 0.0021
```

$\sin^2\theta_W$ (1) Uncertainty in weak mixing angle.

3.39.2.3 `WeinbergAngle`

```
const double NISTConst::WeinbergAngle = weakMixingAngle
```

$\sin^2\theta_W$ (1) Weak mixing angle. Alias of `weakMixingAngle`.

3.39.2.4 `WeinbergAngleUncertainty`

```
const double NISTConst::WeinbergAngleUncertainty = weakMixingAngleUncertainty
```

$\sin^2\theta_W$ (1) Uncertainty in weak mixing angle. Alias of `weakMixingAngleUncertainty`.

3.40 Physico-Chemical

Modules

- [Atomic mass constant](#)
- [Avogadro constant](#)
- [Boltzmann constant](#)
- [Faraday constant](#)
- [First radiation constant](#)
- [Loschmidt constant](#)
- [Molar gas constant](#)
- [Molar Planck constant](#)
- [Molar volume of ideal gas](#)
- [Sackur-Tetrode constant](#)
- [Second radiation constant](#)
- [Stefan-Boltzmann constant](#)
- [Wien displacement law constant](#)

3.40.1 Detailed Description

3.41 Atomic mass constant

Variables

- const double `NISTConst::atomicMassConstant` = 1.660539040e-27
- const double `NISTConst::atomicMassConstantInJPercSquared` = 1.492418062e-10
- const double `NISTConst::atomicMassConstantInMeVPercSquared` = 931.4940954
- const double `NISTConst::atomicMassConstantUncertainty` = 0.000000020e-27
- const double `NISTConst::atomicMassConstantInJPercSquaredUncertainty` = 0.000000018e-10
- const double `NISTConst::atomicMassConstantInMeVPercSquaredUncertainty` = 0.0000057

3.41.1 Detailed Description

3.41.2 Variable Documentation

3.41.2.1 `atomicMassConstant`

```
const double NISTConst::atomicMassConstant = 1.660539040e-27
```

m_u (*kg*) Atomic mass constant in kilograms.

3.41.2.2 `atomicMassConstantInJPercSquared`

```
const double NISTConst::atomicMassConstantInJPercSquared = 1.492418062e-10
```

m_u ($\frac{J}{c^2}$) Atomic mass constant in joules per speed of light squared.

3.41.2.3 `atomicMassConstantInJPercSquaredUncertainty`

```
const double NISTConst::atomicMassConstantInJPercSquaredUncertainty = 0.000000018e-10
```

m_u ($\frac{J}{c^2}$) Uncertainty in atomic mass constant in joules per speed of light squared.

3.41.2.4 `atomicMassConstantInMeVPercSquared`

```
const double NISTConst::atomicMassConstantInMeVPercSquared = 931.4940954
```

m_u ($\frac{MeV}{c^2}$) Atomic mass constant in megaelectron volts per speed of light squared.

3.41.2.5 `atomicMassConstantInMeVPercSquaredUncertainty`

```
const double NISTConst::atomicMassConstantInMeVPercSquaredUncertainty = 0.0000057
```

m_u ($\frac{MeV}{c^2}$) Uncertainty in atomic mass constant in megaelectron volts per speed of light squared.

3.41.2.6 `atomicMassConstantUncertainty`

```
const double NISTConst::atomicMassConstantUncertainty = 0.000000020e-27
```

m_u (*kg*) Uncertainty in atomic mass constant in kilograms.

3.42 Avogadro constant

Variables

- const double `NISTConst::AvogadroConstant` = 6.022140857e23
- const double `NISTConst::AvogadroConstantUncertainty` = 0.000000074e23
- const double `NISTConst::L` = AvogadroConstant
- const double `NISTConst::NA` = AvogadroConstant
- const double `NISTConst::LUncertainty` = AvogadroConstantUncertainty
- const double `NISTConst::NAUncertainty` = AvogadroConstantUncertainty

3.42.1 Detailed Description

3.42.2 Variable Documentation

3.42.2.1 AvogadroConstant

```
const double NISTConst::AvogadroConstant = 6.022140857e23
```

$N_A \left(\frac{1}{\text{mol}} \right)$ Avogadro constant.

3.42.2.2 AvogadroConstantUncertainty

```
const double NISTConst::AvogadroConstantUncertainty = 0.000000074e23
```

$N_A \left(\frac{1}{\text{mol}} \right)$ Uncertainty in Avogadro constant.

3.42.2.3 L

```
const double NISTConst::L = AvogadroConstant
```

$L \left(\frac{1}{\text{mol}} \right)$ Avogadro constant. Alias of AvogadroConstant.

3.42.2.4 LUncertainty

```
const double NISTConst::LUncertainty = AvogadroConstantUncertainty
```

$L \left(\frac{1}{\text{mol}} \right)$ Uncertainty in Avogadro constant. Alias of AvogadroConstantUncertainty.

3.42.2.5 NA

```
const double NISTConst::NA = AvogadroConstant
```

$N_A \left(\frac{1}{\text{mol}} \right)$ Avogadro constant. Alias of AvogadroConstant.

3.42.2.6 NAUncertainty

```
const double NISTConst::NAUncertainty = AvogadroConstantUncertainty
```

$N_A \left(\frac{1}{\text{mol}} \right)$ Uncertainty in Avogadro constant. Alias of AvogadroConstantUncertainty.

3.43 Boltzmann constant

Variables

- const double `NISTConst::BoltzmannConstant` = 1.38064852e-23
- const double `NISTConst::BoltzmannConstantIneVPerK` = 8.6173303e-5
- const double `NISTConst::BoltzmannConstantInHzPerK` = 2.0836612e10
- const double `NISTConst::BoltzmannConstantInInversemK` = 69.503457
- const double `NISTConst::BoltzmannConstantUncertainty` = 0.00000079e-23
- const double `NISTConst::BoltzmannConstantIneVPerKUncertainty` = 0.0000050e-5
- const double `NISTConst::BoltzmannConstantInHzPerKUncertainty` = 0.0000012e10
- const double `NISTConst::BoltzmannConstantInInversemKUncertainty` = 0.000040
- const double `NISTConst::kB` = BoltzmannConstant
- const double `NISTConst::kBIneVPerK` = BoltzmannConstantIneVPerK
- const double `NISTConst::kBInHzPerK` = BoltzmannConstantInHzPerK
- const double `NISTConst::kBInInversemK` = BoltzmannConstantInInversemK
- const double `NISTConst::kBUncertainty` = BoltzmannConstantUncertainty
- const double `NISTConst::kBIneVPerKUncertainty` = BoltzmannConstantIneVPerKUncertainty
- const double `NISTConst::kBInHzPerKUncertainty` = BoltzmannConstantInHzPerKUncertainty
- const double `NISTConst::kBInInversemKUncertainty` = BoltzmannConstantInInversemKUncertainty

3.43.1 Detailed Description

3.43.2 Variable Documentation

3.43.2.1 BoltzmannConstant

```
const double NISTConst::BoltzmannConstant = 1.38064852e-23
```

$k \left(\frac{J}{K} \right)$ Boltzmann constant in joules per kelvin.

3.43.2.2 BoltzmannConstantIneVPerK

```
const double NISTConst::BoltzmannConstantIneVPerK = 8.6173303e-5
```

$k \left(\frac{J}{K} \right)$ Boltzmann constant in electron volts per kelvin.

3.43.2.3 BoltzmannConstantIneVPerKUncertainty

```
const double NISTConst::BoltzmannConstantIneVPerKUncertainty = 0.0000050e-5
```

$k \left(\frac{J}{K} \right)$ Uncertainty in Boltzmann constant in electron volts per kelvin.

3.43.2.4 BoltzmannConstantInHzPerK

```
const double NISTConst::BoltzmannConstantInHzPerK = 2.0836612e10
```

$\frac{k}{h} \left(\frac{\text{Hz}}{\text{K}} \right)$ Boltzmann constant in hertz per kelvin.

3.43.2.5 BoltzmannConstantInHzPerKUncertainty

```
const double NISTConst::BoltzmannConstantInHzPerKUncertainty = 0.0000012e10
```

$\frac{k}{h} \left(\frac{\text{Hz}}{\text{K}} \right)$ Uncertainty in Boltzmann constant in hertz per kelvin.

3.43.2.6 BoltzmannConstantInInversemK

```
const double NISTConst::BoltzmannConstantInInversemK = 69.503457
```

$\frac{k}{hc} \left(\frac{1}{\text{m K}} \right)$ Boltzmann constant in inverse meters kelvin.

3.43.2.7 BoltzmannConstantInInversemKUncertainty

```
const double NISTConst::BoltzmannConstantInInversemKUncertainty = 0.000040
```

$\frac{k}{hc} \left(\frac{1}{\text{m K}} \right)$ Uncertainty in Boltzmann constant in inverse meters kelvin.

3.43.2.8 BoltzmannConstantUncertainty

```
const double NISTConst::BoltzmannConstantUncertainty = 0.00000079e-23
```

$k \left(\frac{\text{J}}{\text{K}} \right)$ Uncertainty in Boltzmann constant in joules per kelvin.

3.43.2.9 kB

```
const double NISTConst::kB = BoltzmannConstant
```

$k \left(\frac{\text{J}}{\text{K}} \right)$ Boltzmann constant in joules per kelvin. Alias of BoltzmannConstant.

3.43.2.10 kBIneVPerK

```
const double NISTConst::kBIneVPerK = BoltzmannConstantIneVPerK
```

$k \left(\frac{\text{J}}{\text{K}} \right)$ Boltzmann constant in electron volts per kelvin. Alias of BoltzmannConstantIneVPerK.

3.43.2.11 kBIneVPerKUncertainty

```
const double NISTConst::kBIneVPerKUncertainty = BoltzmannConstantIneVPerKUncertainty
```

$k \left(\frac{\text{J}}{\text{K}} \right)$ Uncertainty in Boltzmann constant in electron volts per kelvin. Alias of BoltzmannConstantIneVPerK↔
Uncertainty.

3.43.2.12 kBinHzPerK

```
const double NISTConst::kBinHzPerK = BoltzmannConstantInHzPerK
```

$\frac{k}{h} \left(\frac{\text{Hz}}{\text{K}} \right)$ Boltzmann constant in hertz per kelvin. Alias of BoltzmannConstantInHzPerK.

3.43.2.13 kBinHzPerKUncertainty

```
const double NISTConst::kBinHzPerKUncertainty = BoltzmannConstantInHzPerKUncertainty
```

$\frac{k}{h} \left(\frac{\text{Hz}}{\text{K}} \right)$ Uncertainty in Boltzmann constant in hertz per kelvin. Alias of BoltzmannConstantInHzPerKUncertainty.

3.43.2.14 kBinInversemK

```
const double NISTConst::kBinInversemK = BoltzmannConstantInInversemK
```

$\frac{k}{hc} \left(\frac{1}{\text{m K}} \right)$ Boltzmann constant in inverse meters kelvin. Alias of BoltzmannConstantInInversemK.

3.43.2.15 kBinInversemKUncertainty

```
const double NISTConst::kBinInversemKUncertainty = BoltzmannConstantInInversemKUncertainty
```

$\frac{k}{hc} \left(\frac{1}{\text{m K}} \right)$ Uncertainty in Boltzmann constant in inverse meters kelvin. Alias of BoltzmannConstantInInversemKUncertainty.

3.43.2.16 kBUncertainty

```
const double NISTConst::kBUncertainty = BoltzmannConstantUncertainty
```

$k \left(\frac{\text{J}}{\text{K}} \right)$ Uncertainty in Boltzmann constant in joules per kelvin. Alias of BoltzmannConstantUncertainty.

3.44 Faraday constant

Variables

- const double `NISTConst::FaradayConstant` = 96485.33289
- const double `NISTConst::FaradayConstantForConventionalElectricCurrent` = 96485.3251
- const double `NISTConst::FaradayConstantUncertainty` = 0.00059
- const double `NISTConst::FaradayConstantForConventionalElectricCurrentUncertainty` = 0.0012
- const double `NISTConst::F` = FaradayConstant
- const double `NISTConst::FUncertainty` = FaradayConstantUncertainty

3.44.1 Detailed Description

3.44.2 Variable Documentation

3.44.2.1 F

```
const double NISTConst::F = FaradayConstant
```

$F \left(\frac{C}{mol} \right)$ Faraday constant in coulombs per mole. Alias of FaradayConstant.

3.44.2.2 FaradayConstant

```
const double NISTConst::FaradayConstant = 96485.33289
```

$F \left(\frac{C}{mol} \right)$ Faraday constant in coulombs per mole.

3.44.2.3 FaradayConstantForConventionalElectricCurrent

```
const double NISTConst::FaradayConstantForConventionalElectricCurrent = 96485.3251
```

$F^* \left(\frac{C_{90}}{mol} \right)$ Faraday constant for conventional electric current in coulombs per mole.

3.44.2.4 FaradayConstantForConventionalElectricCurrentUncertainty

```
const double NISTConst::FaradayConstantForConventionalElectricCurrentUncertainty = 0.0012
```

$F^* \left(\frac{C_{90}}{mol} \right)$ Uncertainty in Faraday constant for conventional electric current in coulombs per mole.

3.44.2.5 FaradayConstantUncertainty

```
const double NISTConst::FaradayConstantUncertainty = 0.00059
```

$F \left(\frac{C}{mol} \right)$ Uncertainty in Faraday constant in coulombs per mole.

3.44.2.6 FUncertainty

```
const double NISTConst::FUncertainty = FaradayConstantUncertainty
```

$F \left(\frac{C}{mol} \right)$ Uncertainty in Faraday constant in coulombs per mole. Alias of FaradayConstantUncertainty.

3.45 First radiation constant

Variables

- const double `NISTConst::firstRadiationConstant` = 3.741771790e-16
- const double `NISTConst::firstRadiationConstantForSpectralRadiance` = 1.191042953e-16
- const double `NISTConst::firstRadiationConstantUncertainty` = 0.000000046e-16
- const double `NISTConst::firstRadiationConstantForSpectralRadianceUncertainty` = 0.000000015e-16

3.45.1 Detailed Description

3.45.2 Variable Documentation

3.45.2.1 `firstRadiationConstant`

```
const double NISTConst::firstRadiationConstant = 3.741771790e-16
```

$c_1 \left(\frac{W}{m^2} \right)$ First radiation constant in watts per meter squared.

3.45.2.2 `firstRadiationConstantForSpectralRadiance`

```
const double NISTConst::firstRadiationConstantForSpectralRadiance = 1.191042953e-16
```

$c_{1L} \left(\frac{W}{m^2 sr} \right)$ First radiation constant for spectral radiance in watts per meter squared steradian.

3.45.2.3 `firstRadiationConstantForSpectralRadianceUncertainty`

```
const double NISTConst::firstRadiationConstantForSpectralRadianceUncertainty = 0.000000015e-16
```

$c_{1L} \left(\frac{W}{m^2 sr} \right)$ Uncertainty in first radiation constant for spectral radiance in watts per meter squared steradian.

3.45.2.4 `firstRadiationConstantUncertainty`

```
const double NISTConst::firstRadiationConstantUncertainty = 0.000000046e-16
```

$c_1 \left(\frac{W}{m^2} \right)$ Uncertainty in first radiation constant in watts per meter squared.

3.46 Loschmidt constant

Variables

- const double `NISTConst::LoschmidtConstant` = 2.6516467e25
- const double `NISTConst::LoschmidtConstantatm` = 2.6867811e25
- const double `NISTConst::LoschmidtConstantUncertainty` = 0.0000015e25
- const double `NISTConst::LoschmidtConstantatmUncertainty` = 0.0000015e25
- const double `NISTConst::n0` = LoschmidtConstant
- const double `NISTConst::LoschmidtsNumber` = LoschmidtConstant
- const double `NISTConst::n0Uncertainty` = LoschmidtConstantUncertainty
- const double `NISTConst::LoschmidtsNumberUncertainty` = LoschmidtConstantUncertainty

3.46.1 Detailed Description

3.46.2 Variable Documentation

3.46.2.1 LoschmidtConstant

```
const double NISTConst::LoschmidtConstant = 2.6516467e25
```

$n_0 \left(\frac{1}{m^3} \right)$ Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed.

3.46.2.2 LoschmidtConstantatm

```
const double NISTConst::LoschmidtConstantatm = 2.6867811e25
```

$n_0 \left(\frac{1}{m^3} \right)$ Loschmidt constant at 273.15 K, 101.325 kPa (1 atm) in inverse meters cubed.

3.46.2.3 LoschmidtConstantatmUncertainty

```
const double NISTConst::LoschmidtConstantatmUncertainty = 0.0000015e25
```

$n_0 \left(\frac{1}{m^3} \right)$ Uncertainty in Loschmidt constant at 273.15 K, 101.325 kPa (1 atm) in inverse meters cubed.

3.46.2.4 LoschmidtConstantUncertainty

```
const double NISTConst::LoschmidtConstantUncertainty = 0.0000015e25
```

$n_0 \left(\frac{1}{m^3} \right)$ Uncertainty in Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed.

3.46.2.5 LoschmidtsNumber

```
const double NISTConst::LoschmidtsNumber = LoschmidtConstant
```

$n_0 \left(\frac{1}{m^3} \right)$ Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed. Alias of LoschmidtConstant.

3.46.2.6 LoschmidtsNumberUncertainty

```
const double NISTConst::LoschmidtsNumberUncertainty = LoschmidtConstantUncertainty
```

$n_0 \left(\frac{1}{m^3} \right)$ Uncertainty in Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed. Alias of Loschmidt↔ConstantUncertainty.

3.46.2.7 n0

```
const double NISTConst::n0 = LoschmidtConstant
```

$n_0 \left(\frac{1}{m^3} \right)$ Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed. Alias of LoschmidtConstant.

3.46.2.8 n0Uncertainty

```
const double NISTConst::n0Uncertainty = LoschmidtConstantUncertainty
```

$n_0 \left(\frac{1}{m^3} \right)$ Uncertainty in Loschmidt constant at 273.15 K, 100 kPa in inverse meters cubed. Alias of Loschmidt↔ConstantUncertainty.

3.47 Molar gas constant

Variables

- const double `NISTConst::molarGasConstant` = 8.3144598
- const double `NISTConst::molarGasConstantUncertainty` = 0.0000048
- const double `NISTConst::R` = molarGasConstant
- const double `NISTConst::gasConstant` = molarGasConstant
- const double `NISTConst::universalGasConstant` = molarGasConstant
- const double `NISTConst::idealGasConstant` = molarGasConstant
- const double `NISTConst::RUncertainty` = molarGasConstantUncertainty
- const double `NISTConst::gasConstantUncertainty` = molarGasConstantUncertainty
- const double `NISTConst::universalGasConstantUncertainty` = molarGasConstantUncertainty
- const double `NISTConst::idealGasConstantUncertainty` = molarGasConstantUncertainty

3.47.1 Detailed Description

3.47.2 Variable Documentation

3.47.2.1 gasConstant

```
const double NISTConst::gasConstant = molarGasConstant
```

$R \left(\frac{J}{mol \cdot K} \right)$ Molar gas constant in joules per mole kelvin. Alias of molarGasConstant.

3.47.2.2 gasConstantUncertainty

```
const double NISTConst::gasConstantUncertainty = molarGasConstantUncertainty
```

$R \left(\frac{J}{mol \cdot K} \right)$ Uncertainty in molar gas constant in joules per mole kelvin. Alias of molarGasConstantUncertainty.

3.47.2.3 idealGasConstant

```
const double NISTConst::idealGasConstant = molarGasConstant
```

$R \left(\frac{J}{mol \cdot K} \right)$ Molar gas constant in joules per mole kelvin. Alias of molarGasConstant.

3.47.2.4 idealGasConstantUncertainty

```
const double NISTConst::idealGasConstantUncertainty = molarGasConstantUncertainty
```

$R \left(\frac{J}{mol \cdot K} \right)$ Uncertainty in molar gas constant in joules per mole kelvin. Alias of molarGasConstantUncertainty.

3.47.2.5 molarGasConstant

```
const double NISTConst::molarGasConstant = 8.3144598
```

$R \left(\frac{J}{mol\ K} \right)$ Molar gas constant in joules per mole kelvin.

3.47.2.6 molarGasConstantUncertainty

```
const double NISTConst::molarGasConstantUncertainty = 0.0000048
```

$R \left(\frac{J}{mol\ K} \right)$ Uncertainty in molar gas constant in joules per mole kelvin.

3.47.2.7 R

```
const double NISTConst::R = molarGasConstant
```

$R \left(\frac{J}{mol\ K} \right)$ Molar gas constant in joules per mole kelvin. Alias of molarGasConstant.

3.47.2.8 RUncertainty

```
const double NISTConst::RUncertainty = molarGasConstantUncertainty
```

$R \left(\frac{J}{mol\ K} \right)$ Uncertainty in molar gas constant in joules per mole kelvin. Alias of molarGasConstantUncertainty.

3.47.2.9 universalGasConstant

```
const double NISTConst::universalGasConstant = molarGasConstant
```

$R \left(\frac{J}{mol\ K} \right)$ Molar gas constant in joules per mole kelvin. Alias of molarGasConstant.

3.47.2.10 universalGasConstantUncertainty

```
const double NISTConst::universalGasConstantUncertainty = molarGasConstantUncertainty
```

$R \left(\frac{J}{mol\ K} \right)$ Uncertainty in molar gas constant in joules per mole kelvin. Alias of molarGasConstantUncertainty.

3.48 Molar Planck constant

Variables

- const double [NISTConst::molarPlanckConstant](#) = 3.9903127110e-10
- const double [NISTConst::molarPlanckConstantTimesc](#) = 0.119626565582
- const double [NISTConst::molarPlanckConstantUncertainty](#) = 0.0000000018e-10
- const double [NISTConst::molarPlanckConstantTimescUncertainty](#) = 0.000000000054

3.48.1 Detailed Description

3.48.2 Variable Documentation

3.48.2.1 molarPlanckConstant

```
const double NISTConst::molarPlanckConstant = 3.9903127110e-10
```

$N_A h \left(\frac{J s}{mol} \right)$ Molar Planck constant in joules second per mole.

3.48.2.2 molarPlanckConstantTimesc

```
const double NISTConst::molarPlanckConstantTimesc = 0.119626565582
```

$N_A h c \left(\frac{J m}{mol} \right)$ Molar Planck constant times c in joules meter per mole.

3.48.2.3 molarPlanckConstantTimescUncertainty

```
const double NISTConst::molarPlanckConstantTimescUncertainty = 0.000000000054
```

$N_A h c \left(\frac{J m}{mol} \right)$ Uncertainty in molar Planck constant times c in joules meter per mole.

3.48.2.4 molarPlanckConstantUncertainty

```
const double NISTConst::molarPlanckConstantUncertainty = 0.0000000018e-10
```

$N_A h \left(\frac{J s}{mol} \right)$ Uncertainty in molar Planck constant in joules second per mole.

3.49 Molar volume of ideal gas

Variables

- const double [NISTConst::molarVolumeOfIdealGas](#) = 22.710947e-3
- const double [NISTConst::molarVolumeOfIdealGasatm](#) = 22.413962e-3
- const double [NISTConst::molarVolumeOfIdealGasUncertainty](#) = 0.000013e-3
- const double [NISTConst::molarVolumeOfIdealGasatmUncertainty](#) = 0.000013e-3

3.49.1 Detailed Description

3.49.2 Variable Documentation

3.49.2.1 molarVolumeOfIdealGas

```
const double NISTConst::molarVolumeOfIdealGas = 22.710947e-3
```

$V_m \left(\frac{\text{m}^3}{\text{mol}} \right)$ Molar volume of ideal gas at 273.15 K, 100 kPa in meters cubed per mole.

3.49.2.2 molarVolumeOfIdealGasatm

```
const double NISTConst::molarVolumeOfIdealGasatm = 22.413962e-3
```

$V_m \left(\frac{\text{m}^3}{\text{mol}} \right)$ Molar volume of ideal gas at 273.15 K, 101.325 kPa (1 atm) in meters cubed per mole.

3.49.2.3 molarVolumeOfIdealGasatmUncertainty

```
const double NISTConst::molarVolumeOfIdealGasatmUncertainty = 0.000013e-3
```

$V_m \left(\frac{\text{m}^3}{\text{mol}} \right)$ Uncertainty in molar volume of ideal gas at 273.15 K, 101.325 kPa (1 atm) in meters cubed per mole.

3.49.2.4 molarVolumeOfIdealGasUncertainty

```
const double NISTConst::molarVolumeOfIdealGasUncertainty = 0.000013e-3
```

$V_m \left(\frac{\text{m}^3}{\text{mol}} \right)$ Uncertainty in molar volume of ideal gas at 273.15 K, 100 kPa in meters cubed per mole.

3.50 Sackur-Tetrode constant

Variables

- const double `NISTConst::SackurTetrodeConstant` = -1.1517084
- const double `NISTConst::SackurTetrodeConstantatm` = -1.1648714
- const double `NISTConst::SackurTetrodeConstantUncertainty` = 0.0000014
- const double `NISTConst::SackurTetrodeConstantatmUncertainty` = 0.0000014

3.50.1 Detailed Description

3.50.2 Variable Documentation

3.50.2.1 `SackurTetrodeConstant`

```
const double NISTConst::SackurTetrodeConstant = -1.1517084
```

$\frac{S_0}{R}$ (1) Sackur-Tetrode constant at 1 K and 100 kPa.

3.50.2.2 `SackurTetrodeConstantatm`

```
const double NISTConst::SackurTetrodeConstantatm = -1.1648714
```

$\frac{S_0}{R}$ (1) Sackur-Tetrode constant at 1 K and 101.325 kPa (1atm).

3.50.2.3 `SackurTetrodeConstantatmUncertainty`

```
const double NISTConst::SackurTetrodeConstantatmUncertainty = 0.0000014
```

$\frac{S_0}{R}$ (1) Uncertainty in Sackur-Tetrode constant at 1 K and 101.325 kPa (1atm).

3.50.2.4 `SackurTetrodeConstantUncertainty`

```
const double NISTConst::SackurTetrodeConstantUncertainty = 0.0000014
```

$\frac{S_0}{R}$ (1) Uncertainty in Sackur-Tetrode constant at 1 K and 100 kPa.

3.51 Second radiation constant

Variables

- const double [NISTConst::secondRadiationConstant](#) = 1.43877736e-2
- const double [NISTConst::secondRadiationConstantUncertainty](#) = 0.00000083e-2

3.51.1 Detailed Description

3.51.2 Variable Documentation

3.51.2.1 `secondRadiationConstant`

```
const double NISTConst::secondRadiationConstant = 1.43877736e-2
```

c_2 ($m\ K$) Second radiation constant in meters kelvin.

3.51.2.2 `secondRadiationConstantUncertainty`

```
const double NISTConst::secondRadiationConstantUncertainty = 0.00000083e-2
```

c_2 ($m\ K$) Uncertainty in second radiation constant in meters kelvin.

3.52 Stefan-Boltzmann constant

Variables

- const double `NISTConst::StefanBoltzmannConstant` = 5.670367e-8
- const double `NISTConst::StefanBoltzmannConstantUncertainty` = 0.000013e-8
- const double `NISTConst::sigma` = `StefanBoltzmannConstant`
- const double `NISTConst::sigmaUncertainty` = `StefanBoltzmannConstantUncertainty`

3.52.1 Detailed Description

3.52.2 Variable Documentation

3.52.2.1 `sigma`

```
const double NISTConst::sigma = StefanBoltzmannConstant
```

$\sigma \left(\frac{W}{m^2 K^4} \right)$ Stefan-Boltzmann constant in watts per meter squared kelvin to the 4th. Alias of `StefanBoltzmannConstant`.

3.52.2.2 `sigmaUncertainty`

```
const double NISTConst::sigmaUncertainty = StefanBoltzmannConstantUncertainty
```

$\sigma \left(\frac{W}{m^2 K^4} \right)$ Uncertainty in Stefan-Boltzmann constant in watts per meter squared kelvin to the 4th. Alias of `StefanBoltzmannConstantUncertainty`.

3.52.2.3 `StefanBoltzmannConstant`

```
const double NISTConst::StefanBoltzmannConstant = 5.670367e-8
```

$\sigma \left(\frac{W}{m^2 K^4} \right)$ Stefan-Boltzmann constant in watts per meter squared kelvin to the 4th.

3.52.2.4 `StefanBoltzmannConstantUncertainty`

```
const double NISTConst::StefanBoltzmannConstantUncertainty = 0.000013e-8
```

$\sigma \left(\frac{W}{m^2 K^4} \right)$ Uncertainty in Stefan-Boltzmann constant in watts per meter squared kelvin to the 4th.

3.53 Wien displacement law constant

Variables

- const double [NISTConst::WienFrequencyDisplacementLawConstant](#) = 5.8789238e10
- const double [NISTConst::WienWavelengthDisplacementLawConstant](#) = 2.8977729e-3
- const double [NISTConst::WienFrequencyDisplacementLawConstantUncertainty](#) = 0.0000034e10
- const double [NISTConst::WienWavelengthDisplacementLawConstantUncertainty](#) = 0.0000017e-3

3.53.1 Detailed Description

3.53.2 Variable Documentation

3.53.2.1 WienFrequencyDisplacementLawConstant

```
const double NISTConst::WienFrequencyDisplacementLawConstant = 5.8789238e10
```

b' ($\frac{\text{Hz}}{\text{K}}$) Wien frequency displacement law constant in hertz per kelvin.

3.53.2.2 WienFrequencyDisplacementLawConstantUncertainty

```
const double NISTConst::WienFrequencyDisplacementLawConstantUncertainty = 0.0000034e10
```

b' ($\frac{\text{Hz}}{\text{K}}$) Uncertainty in Wien frequency displacement law constant in hertz per kelvin.

3.53.2.3 WienWavelengthDisplacementLawConstant

```
const double NISTConst::WienWavelengthDisplacementLawConstant = 2.8977729e-3
```

b ($m\ K$) Wien wavelength displacement law constant in meters kelvin.

3.53.2.4 WienWavelengthDisplacementLawConstantUncertainty

```
const double NISTConst::WienWavelengthDisplacementLawConstantUncertainty = 0.0000017e-3
```

b ($m\ K$) Uncertainty in Wien wavelength displacement law constant in meters kelvin.

3.54 Adopted

Modules

- [Conventional Josephson constant](#)
- [Conventional von Klitzing constant](#)
- [Molar mass constant](#)
- [Gravity acceleration](#)
- [Standard atmosphere](#)
- [Standard state pressure](#)

3.54.1 Detailed Description

3.55 Conventional Josephson constant

Variables

- const double `NISTConst::conventionalJosephsonConstant` = 483597.9e9
- const double `NISTConst::conventionalJosephsonConstantUncertainty` = 0.0

3.55.1 Detailed Description

3.55.2 Variable Documentation

3.55.2.1 `conventionalJosephsonConstant`

```
const double NISTConst::conventionalJosephsonConstant = 483597.9e9
```

$K_{J-90} \left(\frac{\text{Hz}}{\text{V}} \right)$ Conventional value of Josephson constant in hertz per volt.

3.55.2.2 `conventionalJosephsonConstantUncertainty`

```
const double NISTConst::conventionalJosephsonConstantUncertainty = 0.0
```

$K_{J-90} \left(\frac{\text{Hz}}{\text{V}} \right)$ Uncertainty in conventional value of Josephson constant in hertz per volt. Note should be 0.0 since it is a defined value.

3.56 Conventional von Klitzing constant

Variables

- const double [NISTConst::conventionalvonKlitzingConstant](#) = 25812.807
- const double [NISTConst::conventionalvonKlitzingConstantUncertainty](#) = 25812.807

3.56.1 Detailed Description

3.56.2 Variable Documentation

3.56.2.1 `conventionalvonKlitzingConstant`

```
const double NISTConst::conventionalvonKlitzingConstant = 25812.807
```

R_{K-90} (Ω) Conventional value of von Klitzing constant.

3.56.2.2 `conventionalvonKlitzingConstantUncertainty`

```
const double NISTConst::conventionalvonKlitzingConstantUncertainty = 25812.807
```

R_{K-90} (Ω) Uncertainty in conventional value of von Klitzing constant. Note should be 0.0 since it is a defined value.

3.57 Molar mass constant

Variables

- const double `NISTConst::molarMassConstant` = 1e-3
- const double `NISTConst::molarMassOfCarbon12` = 12e-3
- const double `NISTConst::molarMassConstantUncertainty` = 0.0
- const double `NISTConst::molarMassOfCarbon12Uncertainty` = 0.0
- const double `NISTConst::Mu` = molarMassConstant
- const double `NISTConst::MuUncertainty` = molarMassConstantUncertainty

3.57.1 Detailed Description

3.57.2 Variable Documentation

3.57.2.1 molarMassConstant

```
const double NISTConst::molarMassConstant = 1e-3
```

M_u ($\frac{kg}{mol}$) Molar mass constant in kilograms per mole.

3.57.2.2 molarMassConstantUncertainty

```
const double NISTConst::molarMassConstantUncertainty = 0.0
```

M_u ($\frac{kg}{mol}$) Uncertainty in molar mass constant in kilograms per mole. Note should be 0.0 since it is a defined value.

3.57.2.3 molarMassOfCarbon12

```
const double NISTConst::molarMassOfCarbon12 = 12e-3
```

$M(^{12}C)$ ($\frac{kg}{mol}$) Molar mass of carbon-12 in kilograms per mole.

3.57.2.4 molarMassOfCarbon12Uncertainty

```
const double NISTConst::molarMassOfCarbon12Uncertainty = 0.0
```

$M(^{12}C)$ ($\frac{kg}{mol}$) Uncertainty in molar mass of carbon-12 in kilograms per mole. Note should be 0.0 since it is a defined value.

3.57.2.5 Mu

```
const double NISTConst::Mu = molarMassConstant
```

M_u ($\frac{kg}{mol}$) Molar mass constant in kilograms per mole. Alias of molarMassConstant.

3.57.2.6 MuUncertainty

```
const double NISTConst::MuUncertainty = molarMassConstantUncertainty
```

M_u ($\frac{kg}{mol}$) Uncertainty in molar mass constant in kilograms per mole. Alias of molarMassConstantUncertainty.

3.58 Gravity acceleration

Variables

- const double `NISTConst::standardAccelerationOfGravity` = 9.80665
- const double `NISTConst::standardAccelerationOfGravityUncertainty` = 0.0
- const double `NISTConst::g0` = `standardAccelerationOfGravity`
- const double `NISTConst::standardAccelerationDueToGravity` = `standardAccelerationOfGravity`
- const double `NISTConst::g0Uncertainty` = `standardAccelerationOfGravityUncertainty`
- const double `NISTConst::standardAccelerationDueToGravityUncertainty` = `standardAccelerationOfGravity`↔
Uncertainty

3.58.1 Detailed Description

3.58.2 Variable Documentation

3.58.2.1 g0

```
const double NISTConst::g0 = standardAccelerationOfGravity
```

$g_n \left(\frac{m}{s^2} \right)$ Standard acceleration of gravity in meters per second squared. Alias of `standardAccelerationOfGravity`.

3.58.2.2 g0Uncertainty

```
const double NISTConst::g0Uncertainty = standardAccelerationOfGravityUncertainty
```

$g_n \left(\frac{m}{s^2} \right)$ Uncertainty in standard acceleration of gravity in meters per second squared. Alias of `standardAccelerationOfGravityUncertainty`.

3.58.2.3 standardAccelerationDueToGravity

```
const double NISTConst::standardAccelerationDueToGravity = standardAccelerationOfGravity
```

$g_n \left(\frac{m}{s^2} \right)$ Standard acceleration of gravity in meters per second squared. Alias of `standardAccelerationOfGravity`.

3.58.2.4 standardAccelerationDueToGravityUncertainty

```
const double NISTConst::standardAccelerationDueToGravityUncertainty = standardAccelerationOfGravityUncertainty
```

$g_n \left(\frac{m}{s^2} \right)$ Uncertainty in standard acceleration of gravity in meters per second squared. Alias of `standardAccelerationOfGravityUncertainty`.

3.58.2.5 standardAccelerationOfGravity

```
const double NISTConst::standardAccelerationOfGravity = 9.80665
```

$g_n \left(\frac{m}{s^2} \right)$ Standard acceleration of gravity in meters per second squared.

3.58.2.6 standardAccelerationOfGravityUncertainty

```
const double NISTConst::standardAccelerationOfGravityUncertainty = 0.0
```

$g_n \left(\frac{m}{s^2} \right)$ Uncertainty in standard acceleration of gravity in meters per second squared. Note should be 0.0 since it is a defined value.

3.59 Standard atmosphere

Variables

- const double `NISTConst::standardAtmosphere` = 101325.0
- const double `NISTConst::standardAtmosphereUncertainty` = 0.0
- const double `NISTConst::atm` = `standardAtmosphere`
- const double `NISTConst::atmosphericPressure` = `standardAtmosphere`
- const double `NISTConst::barometricPressure` = `standardAtmosphere`
- const double `NISTConst::atmUncertainty` = `standardAtmosphereUncertainty`
- const double `NISTConst::atmosphericPressureUncertainty` = `standardAtmosphereUncertainty`
- const double `NISTConst::barometricPressureUncertainty` = `standardAtmosphereUncertainty`

3.59.1 Detailed Description

3.59.2 Variable Documentation

3.59.2.1 atm

```
const double NISTConst::atm = standardAtmosphere
```

atm (*Pa*) Standard atmosphere in pascals. Alias of `standardAtmosphere`.

3.59.2.2 atmosphericPressure

```
const double NISTConst::atmosphericPressure = standardAtmosphere
```

atm (*Pa*) Standard atmosphere in pascals. Alias of `standardAtmosphere`.

3.59.2.3 atmosphericPressureUncertainty

```
const double NISTConst::atmosphericPressureUncertainty = standardAtmosphereUncertainty
```

atm (*Pa*) Uncertainty in standard atmosphere in pascals. Alias of `standardAtmosphereUncertainty`.

3.59.2.4 atmUncertainty

```
const double NISTConst::atmUncertainty = standardAtmosphereUncertainty
```

atm (*Pa*) Uncertainty in standard atmosphere in pascals. Alias of `standardAtmosphereUncertainty`.

3.59.2.5 barometricPressure

```
const double NISTConst::barometricPressure = standardAtmosphere
```

atm (Pa) Standard atmosphere in pascals. Alias of standardAtmosphere.

3.59.2.6 barometricPressureUncertainty

```
const double NISTConst::barometricPressureUncertainty = standardAtmosphereUncertainty
```

atm (Pa) Uncertainty in standard atmosphere in pascals. Alias of standardAtmosphereUncertainty.

3.59.2.7 standardAtmosphere

```
const double NISTConst::standardAtmosphere = 101325.0
```

atm (Pa) Standard atmosphere in pascals.

3.59.2.8 standardAtmosphereUncertainty

```
const double NISTConst::standardAtmosphereUncertainty = 0.0
```

atm (Pa) Uncertainty in standard atmosphere in pascals. Note should be 0.0 since it is a defined value.

3.60 Standard state pressure

Variables

- const double `NISTConst::standardStatePressure` = 100000.0
- const double `NISTConst::standardStatePressureUncertainty` = 0.0

3.60.1 Detailed Description

3.60.2 Variable Documentation

3.60.2.1 `standardStatePressure`

```
const double NISTConst::standardStatePressure = 100000.0
```

ssp (*Pa*) Standard-state pressure in pascals.

3.60.2.2 `standardStatePressureUncertainty`

```
const double NISTConst::standardStatePressureUncertainty = 0.0
```

ssp (*Pa*) Uncertainty in standard-state pressure in pascals. Note should be 0.0 since it is a defined value.

3.61 Non-SI units

Modules

- [Atomic units](#)
- [Electron Volt unit](#)
- [Natural units](#)
- [Unified atomic mass unit](#)

3.61.1 Detailed Description

3.62 Atomic units

Variables

- const double [NISTConst::atomicUnitOf1stHyperpolarizability](#) = 3.206361329e-53
- const double [NISTConst::atomicUnitOf2ndHyperpolarizability](#) = 6.235380085e-65
- const double [NISTConst::atomicUnitOfAction](#) = 1.054571800e-34
- const double [NISTConst::atomicUnitOfCharge](#) = 1.6021766208e-19
- const double [NISTConst::atomicUnitOfChargeDensity](#) = 1.0812023770e12
- const double [NISTConst::atomicUnitOfCurrent](#) = 6.623618183e-3
- const double [NISTConst::atomicUnitOfElectricDipoleMoment](#) = 8.478353552e-30
- const double [NISTConst::atomicUnitOfElectricField](#) = 5.142206707e11
- const double [NISTConst::atomicUnitOfElectricFieldGradient](#) = 9.717362356e21
- const double [NISTConst::atomicUnitOfElectricPolarizability](#) = 1.6487772731e-41
- const double [NISTConst::atomicUnitOfElectricPotential](#) = 27.21138602
- const double [NISTConst::atomicUnitOfElectricQuadrupoleMoment](#) = 4.486551484e-40
- const double [NISTConst::atomicUnitOfEnergy](#) = 4.359744650e-18
- const double [NISTConst::atomicUnitOfForce](#) = 8.23872336e-8
- const double [NISTConst::atomicUnitOfLength](#) = 0.52917721067e-10
- const double [NISTConst::atomicUnitOfMagneticDipoleMoment](#) = 1.854801999e-23
- const double [NISTConst::atomicUnitOfMagneticFluxDensity](#) = 2.350517550e5
- const double [NISTConst::atomicUnitOfMagnetizability](#) = 7.8910365886e-29
- const double [NISTConst::atomicUnitOfMass](#) = 9.10938356e-31
- const double [NISTConst::atomicUnitOfMomentum](#) = 1.992851882e-24
- const double [NISTConst::atomicUnitOfPermittivity](#) = 1.112650056e-10
- const double [NISTConst::atomicUnitOfTime](#) = 2.418884326509e-17
- const double [NISTConst::atomicUnitOfVelocity](#) = 2.18769126277e6
- const double [NISTConst::atomicUnitOf1stHyperpolarizabilityUncertainty](#) = 0.000000020e-53
- const double [NISTConst::atomicUnitOf2ndHyperpolarizabilityUncertainty](#) = 0.000000077e-65
- const double [NISTConst::atomicUnitOfActionUncertainty](#) = 0.000000013e-34
- const double [NISTConst::atomicUnitOfChargeUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::atomicUnitOfChargeDensityUncertainty](#) = 0.0000000067e12
- const double [NISTConst::atomicUnitOfCurrentUncertainty](#) = 0.000000041e-3
- const double [NISTConst::atomicUnitOfElectricDipoleMomentUncertainty](#) = 0.000000052e-30
- const double [NISTConst::atomicUnitOfElectricFieldUncertainty](#) = 0.000000032e11
- const double [NISTConst::atomicUnitOfElectricFieldGradientUncertainty](#) = 0.000000060e21
- const double [NISTConst::atomicUnitOfElectricPolarizabilityUncertainty](#) = 0.0000000011e-41
- const double [NISTConst::atomicUnitOfElectricPotentialUncertainty](#) = 0.00000017
- const double [NISTConst::atomicUnitOfElectricQuadrupoleMomentUncertainty](#) = 0.000000028e-40
- const double [NISTConst::atomicUnitOfEnergyUncertainty](#) = 0.000000054e-18
- const double [NISTConst::atomicUnitOfForceUncertainty](#) = 0.00000010e-8
- const double [NISTConst::atomicUnitOfLengthUncertainty](#) = 0.00000000012e-10
- const double [NISTConst::atomicUnitOfMagneticDipoleMomentUncertainty](#) = 0.000000011e-23
- const double [NISTConst::atomicUnitOfMagneticFluxDensityUncertainty](#) = 0.000000014e5
- const double [NISTConst::atomicUnitOfMagnetizabilityUncertainty](#) = 0.0000000090e-29
- const double [NISTConst::atomicUnitOfMassUncertainty](#) = 0.00000011e-31
- const double [NISTConst::atomicUnitOfMomentumUncertainty](#) = 0.000000024e-24
- const double [NISTConst::atomicUnitOfPermittivityUncertainty](#) = 0.0
- const double [NISTConst::atomicUnitOfTimeUncertainty](#) = 0.000000000014e-17
- const double [NISTConst::atomicUnitOfVelocityUncertainty](#) = 0.00000000050e6

3.62.1 Detailed Description

3.62.2 Variable Documentation

3.62.2.1 atomicUnitOf1stHyperpolarizability

```
const double NISTConst::atomicUnitOf1stHyperpolarizability = 3.206361329e-53
```

$\frac{e^3 a_0^3}{E_h^2} \left(\frac{C^3 m^3}{J^2} \right)$ Atomic unit of 1st hyperpolarizability in coulombs cubed meter cubed per joules squared.

3.62.2.2 atomicUnitOf1stHyperpolarizabilityUncertainty

```
const double NISTConst::atomicUnitOf1stHyperpolarizabilityUncertainty = 0.000000020e-53
```

$\frac{e^3 a_0^3}{E_h^2} \left(\frac{C^3 m^3}{J^2} \right)$ Uncertainty in atomic unit of 1st hyperpolarizability in coulombs cubed meter cubed per joules squared.

3.62.2.3 atomicUnitOf2ndHyperpolarizability

```
const double NISTConst::atomicUnitOf2ndHyperpolarizability = 6.235380085e-65
```

$\frac{e^4 a_0^4}{E_h^3} \left(\frac{C^4 m^4}{J^3} \right)$ Atomic unit of 2nd hyperpolarizability in coulombs to the 4th meter to the 4th per joules cubed.

3.62.2.4 atomicUnitOf2ndHyperpolarizabilityUncertainty

```
const double NISTConst::atomicUnitOf2ndHyperpolarizabilityUncertainty = 0.000000077e-65
```

$\frac{e^4 a_0^4}{E_h^3} \left(\frac{C^4 m^4}{J^3} \right)$ Uncertainty in atomic unit of 2nd hyperpolarizability in coulombs to the 4th meter to the 4th per joules cubed.

3.62.2.5 atomicUnitOfAction

```
const double NISTConst::atomicUnitOfAction = 1.054571800e-34
```

\hbar (J s) Atomic unit of action in joules second.

3.62.2.6 atomicUnitOfActionUncertainty

```
const double NISTConst::atomicUnitOfActionUncertainty = 0.000000013e-34
```

\hbar (J s) Uncertainty in atomic unit of action in joules second.

3.62.2.7 atomicUnitOfCharge

```
const double NISTConst::atomicUnitOfCharge = 1.6021766208e-19
```

e (C) Atomic unit of charge in coulombs.

3.62.2.8 atomicUnitOfChargeDensity

```
const double NISTConst::atomicUnitOfChargeDensity = 1.0812023770e12
```

$\frac{e}{a_0^3} \left(\frac{C}{m^3} \right)$ Atomic unit of charge density in coulombs per meter cubed.

3.62.2.9 atomicUnitOfChargeDensityUncertainty

```
const double NISTConst::atomicUnitOfChargeDensityUncertainty = 0.0000000067e12
```

$\frac{e}{a_0^3} \left(\frac{C}{m^3} \right)$ Uncertainty in atomic unit of charge density in coulombs per meter cubed.

3.62.2.10 atomicUnitOfChargeUncertainty

```
const double NISTConst::atomicUnitOfChargeUncertainty = 0.0000000098e-19
```

e (C) Uncertainty in atomic unit of charge in coulombs.

3.62.2.11 atomicUnitOfCurrent

```
const double NISTConst::atomicUnitOfCurrent = 6.623618183e-3
```

$\frac{eE_h}{h}$ (A) Atomic unit of current in amperes.

3.62.2.12 atomicUnitOfCurrentUncertainty

```
const double NISTConst::atomicUnitOfCurrentUncertainty = 0.000000041e-3
```

$\frac{eE_h}{h}$ (A) Uncertainty in atomic unit of current in amperes.

3.62.2.13 atomicUnitOfElectricDipoleMoment

```
const double NISTConst::atomicUnitOfElectricDipoleMoment = 8.478353552e-30
```

ea_0 (C m) Atomic unit of electric dipole moment in coulombs meter.

3.62.2.14 atomicUnitOfElectricDipoleMomentUncertainty

```
const double NISTConst::atomicUnitOfElectricDipoleMomentUncertainty = 0.000000052e-30
```

ea_0 (C m) Uncertainty in atomic unit of electric dipole moment in coulombs meter.

3.62.2.15 atomicUnitOfElectricField

```
const double NISTConst::atomicUnitOfElectricField = 5.142206707e11
```

$\frac{E_h}{ea_0} \left(\frac{V}{m} \right)$ Atomic unit of electric field in volts per meter.

3.62.2.16 atomicUnitOfElectricFieldGradient

```
const double NISTConst::atomicUnitOfElectricFieldGradient = 9.717362356e21
```

$\frac{E_h}{ea_0^2} \left(\frac{V}{m^2} \right)$ Atomic unit of electric field gradient in volts per meter squared.

3.62.2.17 atomicUnitOfElectricFieldGradientUncertainty

```
const double NISTConst::atomicUnitOfElectricFieldGradientUncertainty = 0.000000060e21
```

$\frac{E_h}{ea_0^2} \left(\frac{V}{m^2} \right)$ Uncertainty in atomic unit of electric field gradient in volts per meter squared.

3.62.2.18 atomicUnitOfElectricFieldUncertainty

```
const double NISTConst::atomicUnitOfElectricFieldUncertainty = 0.000000032e11
```

$\frac{E_h}{ea_0} \left(\frac{V}{m} \right)$ Uncertainty in atomic unit of electric field in volts per meter.

3.62.2.19 atomicUnitOfElectricPolarizability

```
const double NISTConst::atomicUnitOfElectricPolarizability = 1.6487772731e-41
```

$\frac{e^2 a_0^2}{E_h} \left(\frac{C^2 m^2}{J} \right)$ Atomic unit of electric polarizability in coulombs squared meter squared per joule.

3.62.2.20 atomicUnitOfElectricPolarizabilityUncertainty

```
const double NISTConst::atomicUnitOfElectricPolarizabilityUncertainty = 0.0000000011e-41
```

$\frac{e^2 a_0^2}{E_h} \left(\frac{C^2 m^2}{J} \right)$ Uncertainty in atomic unit of electric polarizability in coulombs squared meter squared per joule.

3.62.2.21 atomicUnitOfElectricPotential

```
const double NISTConst::atomicUnitOfElectricPotential = 27.21138602
```

$\frac{E_h}{e} (V)$ Atomic unit of electric potential in volts.

3.62.2.22 atomicUnitOfElectricPotentialUncertainty

```
const double NISTConst::atomicUnitOfElectricPotentialUncertainty = 0.00000017
```

$\frac{E_h}{e} (V)$ Uncertainty in atomic unit of electric potential in volts.

3.62.2.23 atomicUnitOfElectricQuadrupoleMoment

```
const double NISTConst::atomicUnitOfElectricQuadrupoleMoment = 4.486551484e-40
```

ea_0^2 ($C\ m^2$) Atomic unit of electric quadrupole moment in coulombs meter squared.

3.62.2.24 atomicUnitOfElectricQuadrupoleMomentUncertainty

```
const double NISTConst::atomicUnitOfElectricQuadrupoleMomentUncertainty = 0.000000028e-40
```

ea_0^2 ($C\ m^2$) Uncertainty in atomic unit of electric quadrupole moment in coulombs meter squared.

3.62.2.25 atomicUnitOfEnergy

```
const double NISTConst::atomicUnitOfEnergy = 4.359744650e-18
```

E_h (J) Atomic unit of energy in joules.

3.62.2.26 atomicUnitOfEnergyUncertainty

```
const double NISTConst::atomicUnitOfEnergyUncertainty = 0.000000054e-18
```

E_h (J) Uncertainty in atomic unit of energy in joules.

3.62.2.27 atomicUnitOfForce

```
const double NISTConst::atomicUnitOfForce = 8.23872336e-8
```

$\frac{E_h}{a_0}$ (N) Atomic unit of force in newtons.

3.62.2.28 atomicUnitOfForceUncertainty

```
const double NISTConst::atomicUnitOfForceUncertainty = 0.00000010e-8
```

$\frac{E_h}{a_0}$ (N) Uncertainty in atomic unit of force in newtons.

3.62.2.29 atomicUnitOfLength

```
const double NISTConst::atomicUnitOfLength = 0.52917721067e-10
```

a_0 (m) Atomic unit of length in meters.

3.62.2.30 atomicUnitOfLengthUncertainty

```
const double NISTConst::atomicUnitOfLengthUncertainty = 0.00000000012e-10
```

a_0 (m) Uncertainty in atomic unit of length in meters.

3.62.2.31 atomicUnitOfMagneticDipoleMoment

```
const double NISTConst::atomicUnitOfMagneticDipoleMoment = 1.854801999e-23
```

$\frac{\hbar e}{m_e} \left(\frac{J}{T} \right)$ Atomic unit of magnetic dipole moment in joules per tesla.

3.62.2.32 atomicUnitOfMagneticDipoleMomentUncertainty

```
const double NISTConst::atomicUnitOfMagneticDipoleMomentUncertainty = 0.000000011e-23
```

$\frac{\hbar e}{m_e} \left(\frac{J}{T} \right)$ Uncertainty in atomic unit of magnetic dipole moment in joules per tesla.

3.62.2.33 atomicUnitOfMagneticFluxDensity

```
const double NISTConst::atomicUnitOfMagneticFluxDensity = 2.350517550e5
```

$\frac{\hbar}{e a_0^2} (T)$ Atomic unit of magnetic flux density in tesla.

3.62.2.34 atomicUnitOfMagneticFluxDensityUncertainty

```
const double NISTConst::atomicUnitOfMagneticFluxDensityUncertainty = 0.000000014e5
```

$\frac{\hbar}{e a_0^2} (T)$ Uncertainty in atomic unit of magnetic flux density in tesla.

3.62.2.35 atomicUnitOfMagnetizability

```
const double NISTConst::atomicUnitOfMagnetizability = 7.8910365886e-29
```

$\frac{e^2 a_0^2}{m_e} \left(\frac{J}{T^2} \right)$ Atomic unit of magnetizability in joules per tesla squared.

3.62.2.36 atomicUnitOfMagnetizabilityUncertainty

```
const double NISTConst::atomicUnitOfMagnetizabilityUncertainty = 0.0000000090e-29
```

$\frac{e^2 a_0^2}{m_e} \left(\frac{J}{T^2} \right)$ Uncertainty in atomic unit of magnetizability in joules per tesla squared.

3.62.2.37 atomicUnitOfMass

```
const double NISTConst::atomicUnitOfMass = 9.10938356e-31
```

$m_e (kg)$ Atomic unit of mass in kilograms.

3.62.2.38 atomicUnitOfMassUncertainty

```
const double NISTConst::atomicUnitOfMassUncertainty = 0.000000011e-31
```

$m_e (kg)$ Uncertainty in atomic unit of mass in kilograms.

3.62.2.39 atomicUnitOfMomentum

```
const double NISTConst::atomicUnitOfMomentum = 1.992851882e-24
```

$\frac{\hbar}{a_0} \left(\frac{kg\ m}{s} \right)$ Atomic unit of momentum in kilograms meter per second.

3.62.2.40 atomicUnitOfMomentumUncertainty

```
const double NISTConst::atomicUnitOfMomentumUncertainty = 0.000000024e-24
```

$\frac{\hbar}{a_0} \left(\frac{kg\ m}{s} \right)$ Uncertainty in atomic unit of momentum in kilograms meter per second.

3.62.2.41 atomicUnitOfPermittivity

```
const double NISTConst::atomicUnitOfPermittivity = 1.112650056e-10
```

$\frac{e^2}{a_0 E_h} \left(\frac{F}{m} \right)$ Atomic unit of permittivity in farads per meter.

3.62.2.42 atomicUnitOfPermittivityUncertainty

```
const double NISTConst::atomicUnitOfPermittivityUncertainty = 0.0
```

$\frac{e^2}{a_0 E_h} \left(\frac{F}{m} \right)$ Uncertainty in atomic unit of permittivity in farads per meter. Note should be 0.0 since it is a defined value.

3.62.2.43 atomicUnitOfTime

```
const double NISTConst::atomicUnitOfTime = 2.418884326509e-17
```

$\frac{\hbar}{E_h} (s)$ Atomic unit of time in seconds.

3.62.2.44 atomicUnitOfTimeUncertainty

```
const double NISTConst::atomicUnitOfTimeUncertainty = 0.000000000014e-17
```

$\frac{\hbar}{E_h} (s)$ Uncertainty in atomic unit of time in seconds.

3.62.2.45 atomicUnitOfVelocity

```
const double NISTConst::atomicUnitOfVelocity = 2.18769126277e6
```

$\frac{a_0 E_h}{\hbar} \left(\frac{m}{s} \right)$ Atomic unit of velocity in meters per second.

3.62.2.46 atomicUnitOfVelocityUncertainty

```
const double NISTConst::atomicUnitOfVelocityUncertainty = 0.00000000050e6
```

$\frac{a_0 E_h}{\hbar} \left(\frac{m}{s} \right)$ Uncertainty in atomic unit of velocity in meters per second.

3.63 Electron Volt unit

Variables

- const double [NISTConst::electronVolt](#) = 1.6021766208e-19
- const double [NISTConst::electronVoltUncertainty](#) = 0.0000000098e-19

3.63.1 Detailed Description

3.63.2 Variable Documentation

3.63.2.1 electronVolt

```
const double NISTConst::electronVolt = 1.6021766208e-19
```

eV (*J*) Electron volt in joules.

3.63.2.2 electronVoltUncertainty

```
const double NISTConst::electronVoltUncertainty = 0.0000000098e-19
```

eV (*J*) Uncertainty in electron volt in joules.

3.64 Natural units

Variables

- const double `NISTConst::naturalUnitOfAction` = 1.054571800e-34
- const double `NISTConst::naturalUnitOfActionIneVs` = 6.582119514e-16
- const double `NISTConst::naturalUnitOfEnergy` = 8.18710565e-14
- const double `NISTConst::naturalUnitOfEnergyInMeV` = 0.5109989461
- const double `NISTConst::naturalUnitOfLength` = 386.15926764e-15
- const double `NISTConst::naturalUnitOfMass` = 9.10938356e-31
- const double `NISTConst::naturalUnitOfMomentum` = 2.730924488e-22
- const double `NISTConst::naturalUnitOfMomentumInMeVPerc` = 0.5109989461
- const double `NISTConst::naturalUnitOfTime` = 1.28808866712e-21
- const double `NISTConst::naturalUnitOfVelocity` = 299792458
- const double `NISTConst::naturalUnitOfActionUncertainty` = 0.000000013e-34
- const double `NISTConst::naturalUnitOfActionIneVsUncertainty` = 0.000000040e-16
- const double `NISTConst::naturalUnitOfEnergyUncertainty` = 0.00000010e-14
- const double `NISTConst::naturalUnitOfEnergyInMeVUncertainty` = 0.0000000031
- const double `NISTConst::naturalUnitOfLengthUncertainty` = 0.00000018e-15
- const double `NISTConst::naturalUnitOfMassUncertainty` = 0.00000011e-31
- const double `NISTConst::naturalUnitOfMomentumUncertainty` = 0.000000034e-22
- const double `NISTConst::naturalUnitOfMomentumInMeVPercUncertainty` = 0.0000000031
- const double `NISTConst::naturalUnitOfTimeUncertainty` = 0.00000000058e-21
- const double `NISTConst::naturalUnitOfVelocityUncertainty` = 0.0

3.64.1 Detailed Description

3.64.2 Variable Documentation

3.64.2.1 `naturalUnitOfAction`

```
const double NISTConst::naturalUnitOfAction = 1.054571800e-34
```

\hbar ($J\ s$) Natural unit of action in joules second.

3.64.2.2 `naturalUnitOfActionIneVs`

```
const double NISTConst::naturalUnitOfActionIneVs = 6.582119514e-16
```

\hbar ($eV\ s$) Natural unit of action in electron volts second.

3.64.2.3 `naturalUnitOfActionIneVsUncertainty`

```
const double NISTConst::naturalUnitOfActionIneVsUncertainty = 0.000000040e-16
```

\hbar ($eV\ s$) Uncertainty in natural unit of action in electron volts second.

3.64.2.4 naturalUnitOfActionUncertainty

```
const double NISTConst::naturalUnitOfActionUncertainty = 0.000000013e-34
```

\hbar ($J\ s$) Uncertainty in natural unit of action in joules second.

3.64.2.5 naturalUnitOfEnergy

```
const double NISTConst::naturalUnitOfEnergy = 8.18710565e-14
```

$m_e c^2$ (J) Natural unit of energy in joules.

3.64.2.6 naturalUnitOfEnergyInMeV

```
const double NISTConst::naturalUnitOfEnergyInMeV = 0.5109989461
```

$m_e c^2$ (MeV) Natural unit of energy in megaelectron volts.

3.64.2.7 naturalUnitOfEnergyInMeVUncertainty

```
const double NISTConst::naturalUnitOfEnergyInMeVUncertainty = 0.0000000031
```

$m_e c^2$ (MeV) Uncertainty in natural unit of energy in megaelectron volts.

3.64.2.8 naturalUnitOfEnergyUncertainty

```
const double NISTConst::naturalUnitOfEnergyUncertainty = 0.00000010e-14
```

$m_e c^2$ (J) Uncertainty in natural unit of energy in joules.

3.64.2.9 naturalUnitOfLength

```
const double NISTConst::naturalUnitOfLength = 386.15926764e-15
```

$\frac{\lambda_C}{2\pi}$ (m) Natural unit of length in meters.

3.64.2.10 naturalUnitOfLengthUncertainty

```
const double NISTConst::naturalUnitOfLengthUncertainty = 0.00000018e-15
```

$\frac{\lambda_C}{2\pi}$ (m) Uncertainty in natural unit of length in meters.

3.64.2.11 naturalUnitOfMass

```
const double NISTConst::naturalUnitOfMass = 9.10938356e-31
```

m_e (kg) Natural unit of mass in kilograms.

3.64.2.12 naturalUnitOfMassUncertainty

```
const double NISTConst::naturalUnitOfMassUncertainty = 0.00000011e-31
```

m_e (kg) Uncertainty in natural unit of mass in kilograms.

3.64.2.13 naturalUnitOfMomentum

```
const double NISTConst::naturalUnitOfMomentum = 2.730924488e-22
```

$m_e c$ ($\frac{kg \cdot m}{s}$) Natural unit of momentum in kilogram meters per second.

3.64.2.14 naturalUnitOfMomentumInMeVPerc

```
const double NISTConst::naturalUnitOfMomentumInMeVPerc = 0.5109989461
```

$m_e c$ ($\frac{MeV}{c}$) Natural unit of momentum in megaelectron volts per speed of light.

3.64.2.15 naturalUnitOfMomentumInMeVPercUncertainty

```
const double NISTConst::naturalUnitOfMomentumInMeVPercUncertainty = 0.0000000031
```

$m_e c$ ($\frac{MeV}{c}$) Uncertainty in natural unit of momentum in megaelectron volts per speed of light.

3.64.2.16 naturalUnitOfMomentumUncertainty

```
const double NISTConst::naturalUnitOfMomentumUncertainty = 0.000000034e-22
```

$m_e c$ ($\frac{kg \cdot m}{s}$) Uncertainty in natural unit of momentum in kilogram meters per second.

3.64.2.17 naturalUnitOfTime

```
const double NISTConst::naturalUnitOfTime = 1.28808866712e-21
```

$\frac{\hbar}{m_e c^2}$ (s) Natural unit of time in seconds.

3.64.2.18 naturalUnitOfTimeUncertainty

```
const double NISTConst::naturalUnitOfTimeUncertainty = 0.00000000058e-21
```

$\frac{\hbar}{m_e c^2}$ (s) Uncertainty in natural unit of time in seconds.

3.64.2.19 naturalUnitOfVelocity

```
const double NISTConst::naturalUnitOfVelocity = 299792458
```

c ($\frac{m}{s}$) Natural unit of velocity in meters per second.

3.64.2.20 naturalUnitOfVelocityUncertainty

```
const double NISTConst::naturalUnitOfVelocityUncertainty = 0.0
```

c ($\frac{m}{s}$) Uncertainty in natural unit of velocity in meters per second. Note should be 0.0 since it is a defined value.

3.65 Unified atomic mass unit

Variables

- const double [NISTConst::unifiedAtomicMassUnit](#) = 1.660539040e-27
- const double [NISTConst::unifiedAtomicMassUnitUncertainty](#) = 0.000000020e-27

3.65.1 Detailed Description

3.65.2 Variable Documentation

3.65.2.1 unifiedAtomicMassUnit

```
const double NISTConst::unifiedAtomicMassUnit = 1.660539040e-27
```

u (kg) Unified atomic mass unit in kilograms.

3.65.2.2 unifiedAtomicMassUnitUncertainty

```
const double NISTConst::unifiedAtomicMassUnitUncertainty = 0.000000020e-27
```

u (kg) Uncertainty in unified atomic mass unit in kilograms.

3.66 Conversion factors

Modules

- [Unified atomic mass unit](#)
- [Electron volt](#)
- [Hartree](#)
- [Hertz](#)
- [inverse meter](#)
- [Joule](#)
- [Kelvin](#)
- [Kilogram](#)

3.66.1 Detailed Description

3.67 Unified atomic mass unit

Variables

- const double `NISTConst::atomicMassUnitToElectronVolt` = 931.4940954e6
- const double `NISTConst::atomicMassUnitToHartree` = 3.4231776902e7
- const double `NISTConst::atomicMassUnitToHertz` = 2.2523427206e23
- const double `NISTConst::atomicMassUnitToInverseMeter` = 7.5130066166e14
- const double `NISTConst::atomicMassUnitToJoule` = 1.492418062e-10
- const double `NISTConst::atomicMassUnitToKelvin` = 1.08095438e13
- const double `NISTConst::atomicMassUnitToKilogram` = 1.660539040e-27
- const double `NISTConst::atomicMassUnitToElectronVoltUncertainty` = 0.0000057e6
- const double `NISTConst::atomicMassUnitToHartreeUncertainty` = 0.000000016e7
- const double `NISTConst::atomicMassUnitToHertzUncertainty` = 0.000000010e23
- const double `NISTConst::atomicMassUnitToInverseMeterUncertainty` = 0.000000034e14
- const double `NISTConst::atomicMassUnitToJouleUncertainty` = 0.00000018e-10
- const double `NISTConst::atomicMassUnitToKelvinUncertainty` = 0.0000062e13
- const double `NISTConst::atomicMassUnitToKilogramUncertainty` = 0.00000020e-27

3.67.1 Detailed Description

3.67.2 Variable Documentation

3.67.2.1 `atomicMassUnitToElectronVolt`

```
const double NISTConst::atomicMassUnitToElectronVolt = 931.4940954e6
```

$(1\ u)c^2\ (eV)$ Unified atomic mass unit-electron volt relationship in electron volts.

3.67.2.2 `atomicMassUnitToElectronVoltUncertainty`

```
const double NISTConst::atomicMassUnitToElectronVoltUncertainty = 0.0000057e6
```

$(1\ u)c^2\ (eV)$ Uncertainty in unified atomic mass unit-electron volt relationship in electron volts.

3.67.2.3 `atomicMassUnitToHartree`

```
const double NISTConst::atomicMassUnitToHartree = 3.4231776902e7
```

$(1\ u)c^2\ (E_h)$ Unified atomic mass unit-hartree relationship in hartree.

3.67.2.4 `atomicMassUnitToHartreeUncertainty`

```
const double NISTConst::atomicMassUnitToHartreeUncertainty = 0.000000016e7
```

$(1\ u)c^2\ (E_h)$ Uncertainty in unified atomic mass unit-hartree relationship in hartree.

3.67.2.5 atomicMassUnitToHertz

```
const double NISTConst::atomicMassUnitToHertz = 2.2523427206e23
```

$\frac{(1\text{ u})c^2}{h}$ (Hz) Unified atomic mass unit-hertz relationship in hertz.

3.67.2.6 atomicMassUnitToHertzUncertainty

```
const double NISTConst::atomicMassUnitToHertzUncertainty = 0.0000000010e23
```

$\frac{(1\text{ u})c^2}{h}$ (Hz) Uncertainty in unified atomic mass unit-hertz relationship in hertz.

3.67.2.7 atomicMassUnitToInverseMeter

```
const double NISTConst::atomicMassUnitToInverseMeter = 7.5130066166e14
```

$\frac{(1\text{ u})c}{h}$ ($\frac{1}{m}$) Unified atomic mass unit-inverse meter relationship in inverse meters.

3.67.2.8 atomicMassUnitToInverseMeterUncertainty

```
const double NISTConst::atomicMassUnitToInverseMeterUncertainty = 0.0000000034e14
```

$\frac{(1\text{ u})c}{h}$ ($\frac{1}{m}$) Uncertainty in unified atomic mass unit-inverse meter relationship in inverse meters.

3.67.2.9 atomicMassUnitToJoule

```
const double NISTConst::atomicMassUnitToJoule = 1.492418062e-10
```

$(1\text{ u})c^2$ (J) Unified atomic mass unit-joule relationship in joules.

3.67.2.10 atomicMassUnitToJouleUncertainty

```
const double NISTConst::atomicMassUnitToJouleUncertainty = 0.0000000018e-10
```

$(1\text{ u})c^2$ (J) Uncertainty in unified atomic mass unit-joule relationship in joules.

3.67.2.11 atomicMassUnitToKelvin

```
const double NISTConst::atomicMassUnitToKelvin = 1.08095438e13
```

$\frac{(1\text{ u})c^2}{k}$ (K) Unified atomic mass unit-kelvin relationship in kelvin.

3.67.2.12 atomicMassUnitToKelvinUncertainty

```
const double NISTConst::atomicMassUnitToKelvinUncertainty = 0.00000062e13
```

$\frac{(1\text{ u})c^2}{k}$ (K) Uncertainty in unified atomic mass unit-kelvin relationship in kelvin.

3.67.2.13 atomicMassUnitToKilogram

```
const double NISTConst::atomicMassUnitToKilogram = 1.660539040e-27
```

1 u (kg) Unified atomic mass unit-kilogram relationship in kilograms.

3.67.2.14 atomicMassUnitToKilogramUncertainty

```
const double NISTConst::atomicMassUnitToKilogramUncertainty = 0.000000020e-27
```

1 u (kg) Uncertainty in unified atomic mass unit-kilogram relationship in kilograms.

3.68 Electron volt

Variables

- const double [NISTConst::electronVoltToAtomicMassUnit](#) = 1.0735441105e-9
- const double [NISTConst::electronVoltToHartree](#) = 3.674932248e-2
- const double [NISTConst::electronVoltToHertz](#) = 2.417989262e14
- const double [NISTConst::electronVoltToInverseMeter](#) = 8.065544005e5
- const double [NISTConst::electronVoltToJoule](#) = 1.6021766208e-19
- const double [NISTConst::electronVoltToKelvin](#) = 1.16045221e4
- const double [NISTConst::electronVoltToKilogram](#) = 1.782661907e-36
- const double [NISTConst::electronVoltToAtomicMassUnitUncertainty](#) = 0.0000000066e-9
- const double [NISTConst::electronVoltToHartreeUncertainty](#) = 0.000000023e-2
- const double [NISTConst::electronVoltToHertzUncertainty](#) = 0.000000015e14
- const double [NISTConst::electronVoltToInverseMeterUncertainty](#) = 0.000000050e5
- const double [NISTConst::electronVoltToJouleUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::electronVoltToKelvinUncertainty](#) = 0.00000067e4
- const double [NISTConst::electronVoltToKilogramUncertainty](#) = 0.000000011e-36

3.68.1 Detailed Description

3.68.2 Variable Documentation

3.68.2.1 electronVoltToAtomicMassUnit

```
const double NISTConst::electronVoltToAtomicMassUnit = 1.0735441105e-9
```

$\frac{(1 \text{ eV})}{c^2}$ (u) Electron volt-unified atomic mass unit relationship .

3.68.2.2 electronVoltToAtomicMassUnitUncertainty

```
const double NISTConst::electronVoltToAtomicMassUnitUncertainty = 0.0000000066e-9
```

$\frac{(1 \text{ eV})}{c^2}$ (u) Uncertainty in electron volt-unified atomic mass unit relationship .

3.68.2.3 electronVoltToHartree

```
const double NISTConst::electronVoltToHartree = 3.674932248e-2
```

(1 eV) (E_h) Electron volt-hartree relationship.

3.68.2.4 electronVoltToHartreeUncertainty

```
const double NISTConst::electronVoltToHartreeUncertainty = 0.000000023e-2
```

(1 eV) (E_h) Uncertainty in electron volt-hartree relationship.

3.68.2.5 electronVoltToHertz

```
const double NISTConst::electronVoltToHertz = 2.417989262e14
```

$$\frac{(1 \text{ eV})}{h} \text{ (Hz) Electron volt-hertz relationship.}$$
3.68.2.6 electronVoltToHertzUncertainty

```
const double NISTConst::electronVoltToHertzUncertainty = 0.000000015e14
```

$$\frac{(1 \text{ eV})}{h} \text{ (Hz) Uncertainty in electron volt-hertz relationship.}$$
3.68.2.7 electronVoltToInverseMeter

```
const double NISTConst::electronVoltToInverseMeter = 8.065544005e5
```

$$\frac{(1 \text{ eV})}{hc} \left(\frac{1}{m} \right) \text{ Electron volt-inverse meter relationship.}$$
3.68.2.8 electronVoltToInverseMeterUncertainty

```
const double NISTConst::electronVoltToInverseMeterUncertainty = 0.000000050e5
```

$$\frac{(1 \text{ eV})}{hc} \left(\frac{1}{m} \right) \text{ Uncertainty in electron volt-inverse meter relationship.}$$
3.68.2.9 electronVoltToJoule

```
const double NISTConst::electronVoltToJoule = 1.6021766208e-19
```

$$(1 \text{ eV}) \text{ (J) Electron volt-joule relationship.}$$
3.68.2.10 electronVoltToJouleUncertainty

```
const double NISTConst::electronVoltToJouleUncertainty = 0.0000000098e-19
```

$$(1 \text{ eV}) \text{ (J) Uncertainty in electron volt-joule relationship.}$$
3.68.2.11 electronVoltToKelvin

```
const double NISTConst::electronVoltToKelvin = 1.16045221e4
```

$$\frac{(1 \text{ eV})}{k} \text{ (K) Electron volt-kelvin relationship .}$$
3.68.2.12 electronVoltToKelvinUncertainty

```
const double NISTConst::electronVoltToKelvinUncertainty = 0.00000067e4
```

$$\frac{(1 \text{ eV})}{k} \text{ (K) Uncertainty in electron volt-kelvin relationship .}$$
3.68.2.13 electronVoltToKilogram

```
const double NISTConst::electronVoltToKilogram = 1.782661907e-36
```

$$\frac{(1 \text{ eV})}{c^2} \text{ (kg) Electron volt-kilogram relationship.}$$
3.68.2.14 electronVoltToKilogramUncertainty

```
const double NISTConst::electronVoltToKilogramUncertainty = 0.000000011e-36
```

$$\frac{(1 \text{ eV})}{c^2} \text{ (kg) Uncertainty in electron volt-kilogram relationship.}$$

3.69 Hartree

Variables

- const double `NISTConst::hartreeToAtomicMassUnit` = 2.9212623197e-8
- const double `NISTConst::hartreeToElectronVolt` = 27.21138602
- const double `NISTConst::hartreeToHertz` = 6.579683920711e15
- const double `NISTConst::hartreeToInverseMeter` = 2.194746313702e7
- const double `NISTConst::hartreeToJoule` = 4.359744650e-18
- const double `NISTConst::hartreeToKelvin` = 3.1577513e5
- const double `NISTConst::hartreeToKilogram` = 4.850870129e-35
- const double `NISTConst::hartreeToAtomicMassUnitUncertainty` = 0.0000000013e-8
- const double `NISTConst::hartreeToElectronVoltUncertainty` = 0.00000017
- const double `NISTConst::hartreeToHertzUncertainty` = 0.000000000039e15
- const double `NISTConst::hartreeToInverseMeterUncertainty` = 0.00000000013e7
- const double `NISTConst::hartreeToJouleUncertainty` = 0.000000054e-18
- const double `NISTConst::hartreeToKelvinUncertainty` = 0.0000018e5
- const double `NISTConst::hartreeToKilogramUncertainty` = 0.000000060e-35

3.69.1 Detailed Description

3.69.2 Variable Documentation

3.69.2.1 `hartreeToAtomicMassUnit`

```
const double NISTConst::hartreeToAtomicMassUnit = 2.9212623197e-8
```

$\frac{(1 E_h)}{c^2}$ (*u*) Hartree-unified atomic mass unit relationship.

3.69.2.2 `hartreeToAtomicMassUnitUncertainty`

```
const double NISTConst::hartreeToAtomicMassUnitUncertainty = 0.0000000013e-8
```

$\frac{(1 E_h)}{c^2}$ (*u*) Uncertainty in hartree-unified atomic mass unit relationship.

3.69.2.3 `hartreeToElectronVolt`

```
const double NISTConst::hartreeToElectronVolt = 27.21138602
```

$(1 E_h)$ (*eV*) Hartree-electron volt relationship .

3.69.2.4 `hartreeToElectronVoltUncertainty`

```
const double NISTConst::hartreeToElectronVoltUncertainty = 0.00000017
```

$(1 E_h)$ (*eV*) Uncertainty in hartree-electron volt relationship .

3.69.2.5 hartreeToHertz

```
const double NISTConst::hartreeToHertz = 6.579683920711e15
```

$\frac{(1 E_h)}{h}$ (Hz) Hartree-hertz relationship .

3.69.2.6 hartreeToHertzUncertainty

```
const double NISTConst::hartreeToHertzUncertainty = 0.000000000039e15
```

$\frac{(1 E_h)}{h}$ (Hz) Uncertainty in hartree-hertz relationship .

3.69.2.7 hartreeToInverseMeter

```
const double NISTConst::hartreeToInverseMeter = 2.194746313702e7
```

$\frac{(1 E_h)}{hc}$ ($\frac{1}{m}$) Hartree-inverse meter relationship.

3.69.2.8 hartreeToInverseMeterUncertainty

```
const double NISTConst::hartreeToInverseMeterUncertainty = 0.000000000013e7
```

$\frac{(1 E_h)}{hc}$ ($\frac{1}{m}$) Uncertainty in hartree-inverse meter relationship.

3.69.2.9 hartreeToJoule

```
const double NISTConst::hartreeToJoule = 4.359744650e-18
```

$(1 E_h)$ (J) Hartree-joule relationship.

3.69.2.10 hartreeToJouleUncertainty

```
const double NISTConst::hartreeToJouleUncertainty = 0.000000054e-18
```

$(1 E_h)$ (J) Uncertainty in hartree-joule relationship.

3.69.2.11 hartreeToKelvin

```
const double NISTConst::hartreeToKelvin = 3.1577513e5
```

$\frac{(1 E_h)}{k}$ (K) Hartree-kelvin relationship .

3.69.2.12 hartreeToKelvinUncertainty

```
const double NISTConst::hartreeToKelvinUncertainty = 0.0000018e5
```

$\frac{(1 E_h)}{k}$ (K) Uncertainty in hartree-kelvin relationship .

3.69.2.13 hartreeToKilogram

```
const double NISTConst::hartreeToKilogram = 4.850870129e-35
```

$\frac{(1 E_h)}{c^2}$ (kg) Hartree-kilogram relationship.

3.69.2.14 hartreeToKilogramUncertainty

```
const double NISTConst::hartreeToKilogramUncertainty = 0.000000060e-35
```

$\frac{(1 E_h)}{c^2}$ (kg) Uncertainty in hartree-kilogram relationship.

3.70 Hertz

Variables

- const double [NISTConst::hertzToAtomicMassUnit](#) = 4.4398216616e-24
- const double [NISTConst::hertzToElectronVolt](#) = 4.135667662e-15
- const double [NISTConst::hertzToHartree](#) = 1.5198298460088e-16
- const double [NISTConst::hertzToInverseMeter](#) = 3.335640951e-9
- const double [NISTConst::hertzToJoule](#) = 6.626070040e-34
- const double [NISTConst::hertzToKelvin](#) = 4.7992447e-11
- const double [NISTConst::hertzToKilogram](#) = 7.372497201e-51
- const double [NISTConst::hertzToAtomicMassUnitUncertainty](#) = 0.0000000020e-24
- const double [NISTConst::hertzToElectronVoltUncertainty](#) = 0.000000025e-15
- const double [NISTConst::hertzToHartreeUncertainty](#) = 0.0000000000090e-16
- const double [NISTConst::hertzToInverseMeterUncertainty](#) = 0.0
- const double [NISTConst::hertzToJouleUncertainty](#) = 0.000000081e-34
- const double [NISTConst::hertzToKelvinUncertainty](#) = 0.0000028e-11
- const double [NISTConst::hertzToKilogramUncertainty](#) = 0.000000091e-51

3.70.1 Detailed Description

3.70.2 Variable Documentation

3.70.2.1 hertzToAtomicMassUnit

```
const double NISTConst::hertzToAtomicMassUnit = 4.4398216616e-24
```

$\frac{(1\text{Hz})h}{c^2}$ (*u*) Hertz-unified atomic mass unit relationship.

3.70.2.2 hertzToAtomicMassUnitUncertainty

```
const double NISTConst::hertzToAtomicMassUnitUncertainty = 0.0000000020e-24
```

$\frac{(1\text{Hz})h}{c^2}$ (*u*) Uncertainty in hertz-unified atomic mass unit relationship.

3.70.2.3 hertzToElectronVolt

```
const double NISTConst::hertzToElectronVolt = 4.135667662e-15
```

$(1\text{Hz})h$ (*eV*) Hertz-electron volt relationship.

3.70.2.4 hertzToElectronVoltUncertainty

```
const double NISTConst::hertzToElectronVoltUncertainty = 0.000000025e-15
```

$(1\text{Hz})h$ (*eV*) Uncertainty in hertz-electron volt relationship.

3.70.2.5 hertzToHartree

```
const double NISTConst::hertzToHartree = 1.5198298460088e-16
```

$(1\text{Hz})h(E_h)$ Hertz-hartree relationship.

3.70.2.6 hertzToHartreeUncertainty

```
const double NISTConst::hertzToHartreeUncertainty = 0.0000000000090e-16
```

$(1\text{Hz})h(E_h)$ Uncertainty in hertz-hartree relationship.

3.70.2.7 hertzToInverseMeter

```
const double NISTConst::hertzToInverseMeter = 3.335640951e-9
```

$\frac{(1\text{Hz})}{c} (\frac{1}{m})$ Hertz-inverse meter relationship.

3.70.2.8 hertzToInverseMeterUncertainty

```
const double NISTConst::hertzToInverseMeterUncertainty = 0.0
```

$\frac{(1\text{Hz})}{c} (\frac{1}{m})$ Uncertainty in hertz-inverse meter relationship. Note should be 0.0 since it is a defined value.

3.70.2.9 hertzToJoule

```
const double NISTConst::hertzToJoule = 6.626070040e-34
```

$(1\text{Hz})h(J)$ Hertz-joule relationship.

3.70.2.10 hertzToJouleUncertainty

```
const double NISTConst::hertzToJouleUncertainty = 0.000000081e-34
```

$(1\text{Hz})h(J)$ Uncertainty in hertz-joule relationship.

3.70.2.11 hertzToKelvin

```
const double NISTConst::hertzToKelvin = 4.7992447e-11
```

$\frac{(1\text{Hz})h}{k} (K)$ Hertz-kelvin relationship.

3.70.2.12 hertzToKelvinUncertainty

```
const double NISTConst::hertzToKelvinUncertainty = 0.0000028e-11
```

$\frac{(1\text{Hz})h}{k} (K)$ Uncertainty in hertz-kelvin relationship.

3.70.2.13 hertzToKilogram

```
const double NISTConst::hertzToKilogram = 7.372497201e-51
```

$\frac{(1\text{Hz})h}{c^2} (kg)$ Hertz-kilogram relationship.

3.70.2.14 hertzToKilogramUncertainty

```
const double NISTConst::hertzToKilogramUncertainty = 0.000000091e-51
```

$\frac{(1\text{Hz})h}{c^2} (kg)$ Uncertainty in hertz-kilogram relationship.

3.71 inverse meter

Variables

- const double `NISTConst::inverseMeterToAtomicMassUnit` = 1.33102504900e-15
- const double `NISTConst::inverseMeterToElectronVolt` = 1.2398419739e-6
- const double `NISTConst::inverseMeterToHartree` = 4.556335252767e-8
- const double `NISTConst::inverseMeterToHertz` = 299792458
- const double `NISTConst::inverseMeterToJoule` = 1.986445824e-25
- const double `NISTConst::inverseMeterToKelvin` = 1.43877736e-2
- const double `NISTConst::inverseMeterToKilogram` = 2.210219057e-42
- const double `NISTConst::inverseMeterToAtomicMassUnitUncertainty` = 0.00000000061e-15
- const double `NISTConst::inverseMeterToElectronVoltUncertainty` = 0.0000000076e-6
- const double `NISTConst::inverseMeterToHartreeUncertainty` = 0.00000000027e-8
- const double `NISTConst::inverseMeterToHertzUncertainty` = 0.0
- const double `NISTConst::inverseMeterToJouleUncertainty` = 0.000000024e-25
- const double `NISTConst::inverseMeterToKelvinUncertainty` = 0.00000083e-2
- const double `NISTConst::inverseMeterToKilogramUncertainty` = 0.000000027e-42

3.71.1 Detailed Description

3.71.2 Variable Documentation

3.71.2.1 `inverseMeterToAtomicMassUnit`

```
const double NISTConst::inverseMeterToAtomicMassUnit = 1.33102504900e-15
```

$\frac{(1\ m^{-1})h}{c}$ (*u*) Inverse meter-unified atomic mass unit relationship.

3.71.2.2 `inverseMeterToAtomicMassUnitUncertainty`

```
const double NISTConst::inverseMeterToAtomicMassUnitUncertainty = 0.00000000061e-15
```

$\frac{(1\ m^{-1})h}{c}$ (*u*) Uncertainty in inverse meter-unified atomic mass unit relationship.

3.71.2.3 `inverseMeterToElectronVolt`

```
const double NISTConst::inverseMeterToElectronVolt = 1.2398419739e-6
```

$(1\ m^{-1})hc$ (*eV*) Inverse meter-electron volt relationship.

3.71.2.4 `inverseMeterToElectronVoltUncertainty`

```
const double NISTConst::inverseMeterToElectronVoltUncertainty = 0.0000000076e-6
```

$(1\ m^{-1})hc$ (*eV*) Uncertainty in inverse meter-electron volt relationship.

3.71.2.5 inverseMeterToHartree

```
const double NISTConst::inverseMeterToHartree = 4.556335252767e-8
```

$(1\text{ m}^{-1})hc (E_h)$ Inverse meter-hartree relationship.

3.71.2.6 inverseMeterToHartreeUncertainty

```
const double NISTConst::inverseMeterToHartreeUncertainty = 0.000000000027e-8
```

$(1\text{ m}^{-1})hc (E_h)$ Uncertainty in inverse meter-hartree relationship.

3.71.2.7 inverseMeterToHertz

```
const double NISTConst::inverseMeterToHertz = 299792458
```

$(1\text{ m}^{-1})c (Hz)$ Inverse meter-hertz relationship.

3.71.2.8 inverseMeterToHertzUncertainty

```
const double NISTConst::inverseMeterToHertzUncertainty = 0.0
```

$(1\text{ m}^{-1})c (Hz)$ Uncertainty in inverse meter-hertz relationship. Note should be 0.0 since it is a defined value.

3.71.2.9 inverseMeterToJoule

```
const double NISTConst::inverseMeterToJoule = 1.986445824e-25
```

$(1\text{ m}^{-1})hc (J)$ Inverse meter-joule relationship.

3.71.2.10 inverseMeterToJouleUncertainty

```
const double NISTConst::inverseMeterToJouleUncertainty = 0.000000024e-25
```

$(1\text{ m}^{-1})hc (J)$ Uncertainty in inverse meter-joule relationship.

3.71.2.11 inverseMeterToKelvin

```
const double NISTConst::inverseMeterToKelvin = 1.43877736e-2
```

$\frac{(1\text{ m}^{-1})hc}{k} (K)$ Inverse meter-kelvin relationship.

3.71.2.12 inverseMeterToKelvinUncertainty

```
const double NISTConst::inverseMeterToKelvinUncertainty = 0.00000083e-2
```

$\frac{(1\text{ m}^{-1})hc}{k} (K)$ Uncertainty in inverse meter-kelvin relationship.

3.71.2.13 inverseMeterToKilogram

```
const double NISTConst::inverseMeterToKilogram = 2.210219057e-42
```

$\frac{(1\text{ m}^{-1})h}{c} (kg)$ Inverse meter-kilogram relationship.

3.71.2.14 inverseMeterToKilogramUncertainty

```
const double NISTConst::inverseMeterToKilogramUncertainty = 0.000000027e-42
```

$\frac{(1\text{ m}^{-1})h}{c} (kg)$ Uncertainty in inverse meter-kilogram relationship.

3.72 Joule

Variables

- const double [NISTConst::jouleToAtomicMassUnit](#) = 6.700535363e9
- const double [NISTConst::jouleToElectronVolt](#) = 6.241509126e18
- const double [NISTConst::jouleToHartree](#) = 2.293712317e17
- const double [NISTConst::jouleToHertz](#) = 1.509190205e33
- const double [NISTConst::jouleToInverseMeter](#) = 5.034116651e24
- const double [NISTConst::jouleToKelvin](#) = 7.2429731e22
- const double [NISTConst::jouleToKilogram](#) = 1.112650056e-17
- const double [NISTConst::jouleToAtomicMassUnitUncertainty](#) = 0.000000082e9
- const double [NISTConst::jouleToElectronVoltUncertainty](#) = 0.000000038e18
- const double [NISTConst::jouleToHartreeUncertainty](#) = 0.000000028e17
- const double [NISTConst::jouleToHertzUncertainty](#) = 0.000000019e33
- const double [NISTConst::jouleToInverseMeterUncertainty](#) = 0.000000062e24
- const double [NISTConst::jouleToKelvinUncertainty](#) = 0.0000042e22
- const double [NISTConst::jouleToKilogramUncertainty](#) = 0.0

3.72.1 Detailed Description

3.72.2 Variable Documentation

3.72.2.1 jouleToAtomicMassUnit

```
const double NISTConst::jouleToAtomicMassUnit = 6.700535363e9
```

$\frac{(1\text{ J})}{c^2}$ (u) joule-unified atomic mass unit relationship.

3.72.2.2 jouleToAtomicMassUnitUncertainty

```
const double NISTConst::jouleToAtomicMassUnitUncertainty = 0.000000082e9
```

$\frac{(1\text{ J})}{c^2}$ (u) Uncertainty in joule-unified atomic mass unit relationship.

3.72.2.3 jouleToElectronVolt

```
const double NISTConst::jouleToElectronVolt = 6.241509126e18
```

(1 J) (eV) joule-electron volt relationship.

3.72.2.4 jouleToElectronVoltUncertainty

```
const double NISTConst::jouleToElectronVoltUncertainty = 0.000000038e18
```

(1 J) (eV) Uncertainty in joule-electron volt relationship.

3.72.2.5 jouleToHartree

```
const double NISTConst::jouleToHartree = 2.293712317e17
```

$(1\text{ J}) (E_h)$ joule-hartree relationship.

3.72.2.6 jouleToHartreeUncertainty

```
const double NISTConst::jouleToHartreeUncertainty = 0.000000028e17
```

$(1\text{ J}) (E_h)$ Uncertainty in joule-hartree relationship.

3.72.2.7 jouleToHertz

```
const double NISTConst::jouleToHertz = 1.509190205e33
```

$\frac{(1\text{ J})}{h} (Hz)$ joule-hertz relationship.

3.72.2.8 jouleToHertzUncertainty

```
const double NISTConst::jouleToHertzUncertainty = 0.000000019e33
```

$\frac{(1\text{ J})}{h} (Hz)$ Uncertainty in joule-hertz relationship.

3.72.2.9 jouleToInverseMeter

```
const double NISTConst::jouleToInverseMeter = 5.034116651e24
```

$\frac{(1\text{ J})}{hc} (\frac{1}{m})$ joule-inverse meter relationship.

3.72.2.10 jouleToInverseMeterUncertainty

```
const double NISTConst::jouleToInverseMeterUncertainty = 0.000000062e24
```

$\frac{(1\text{ J})}{hc} (\frac{1}{m})$ Uncertainty in joule-inverse meter relationship.

3.72.2.11 jouleToKelvin

```
const double NISTConst::jouleToKelvin = 7.2429731e22
```

$\frac{(1\text{ J})}{k} (K)$ joule-kelvin relationship.

3.72.2.12 jouleToKelvinUncertainty

```
const double NISTConst::jouleToKelvinUncertainty = 0.0000042e22
```

$\frac{(1\text{ J})}{k} (K)$ Uncertainty in joule-kelvin relationship.

3.72.2.13 jouleToKilogram

```
const double NISTConst::jouleToKilogram = 1.112650056e-17
```

$\frac{(1\text{ J})}{c^2} (kg)$ joule-kilogram relationship.

3.72.2.14 jouleToKilogramUncertainty

```
const double NISTConst::jouleToKilogramUncertainty = 0.0
```

$\frac{(1\text{ J})}{c^2} (kg)$ Uncertainty in joule-kilogram relationship. Note should be 0.0 since it is a defined value.

3.73 Kelvin

Variables

- const double `NISTConst::kelvinToAtomicMassUnit` = 9.2510842e-14
- const double `NISTConst::kelvinToElectronVolt` = 8.6173303e-5
- const double `NISTConst::kelvinToHartree` = 3.1668105e-6
- const double `NISTConst::kelvinToHertz` = 2.0836612e10
- const double `NISTConst::kelvinToInverseMeter` = 69.503457
- const double `NISTConst::kelvinToJoule` = 1.38064852e-23
- const double `NISTConst::kelvinToKilogram` = 1.53617865e-40
- const double `NISTConst::kelvinToAtomicMassUnitUncertainty` = 0.0000053e-14
- const double `NISTConst::kelvinToElectronVoltUncertainty` = 0.0000050e-5
- const double `NISTConst::kelvinToHartreeUncertainty` = 0.0000018e-6
- const double `NISTConst::kelvinToHertzUncertainty` = 0.0000012e10
- const double `NISTConst::kelvinToInverseMeterUncertainty` = 0.000040
- const double `NISTConst::kelvinToJouleUncertainty` = 0.00000079e-23
- const double `NISTConst::kelvinToKilogramUncertainty` = 0.00000088e-40

3.73.1 Detailed Description

3.73.2 Variable Documentation

3.73.2.1 kelvinToAtomicMassUnit

```
const double NISTConst::kelvinToAtomicMassUnit = 9.2510842e-14
```

$\frac{(1\text{ K})k}{c^2}$ (*u*) Kelvin-unified atomic mass unit relationship.

3.73.2.2 kelvinToAtomicMassUnitUncertainty

```
const double NISTConst::kelvinToAtomicMassUnitUncertainty = 0.0000053e-14
```

$\frac{(1\text{ K})k}{c^2}$ (*u*) Uncertainty in kelvin-unified atomic mass unit relationship.

3.73.2.3 kelvinToElectronVolt

```
const double NISTConst::kelvinToElectronVolt = 8.6173303e-5
```

$(1\text{ K})k$ (*eV*) Kelvin-electron volt relationship.

3.73.2.4 kelvinToElectronVoltUncertainty

```
const double NISTConst::kelvinToElectronVoltUncertainty = 0.0000050e-5
```

$(1\text{ K})k$ (*eV*) Uncertainty in kelvin-electron volt relationship.

3.73.2.5 kelvinToHartree

```
const double NISTConst::kelvinToHartree = 3.1668105e-6
```

$(1\text{ K})k\ (E_h)$ Kelvin-hartree relationship.

3.73.2.6 kelvinToHartreeUncertainty

```
const double NISTConst::kelvinToHartreeUncertainty = 0.0000018e-6
```

$(1\text{ K})k\ (E_h)$ Uncertainty in kelvin-hartree relationship.

3.73.2.7 kelvinToHertz

```
const double NISTConst::kelvinToHertz = 2.0836612e10
```

$\frac{(1\text{ K})k}{h}\ (Hz)$ Kelvin-hertz relationship.

3.73.2.8 kelvinToHertzUncertainty

```
const double NISTConst::kelvinToHertzUncertainty = 0.0000012e10
```

$\frac{(1\text{ K})k}{h}\ (Hz)$ Uncertainty in kelvin-hertz relationship.

3.73.2.9 kelvinToInverseMeter

```
const double NISTConst::kelvinToInverseMeter = 69.503457
```

$\frac{(1\text{ K})k}{hc}\ (\frac{1}{m})$ Kelvin-inverse meter relationship.

3.73.2.10 kelvinToInverseMeterUncertainty

```
const double NISTConst::kelvinToInverseMeterUncertainty = 0.000040
```

$\frac{(1\text{ K})k}{hc}\ (\frac{1}{m})$ Uncertainty in kelvin-inverse meter relationship.

3.73.2.11 kelvinToJoule

```
const double NISTConst::kelvinToJoule = 1.38064852e-23
```

$(1\text{ K})k\ (J)$ Kelvin-joule relationship.

3.73.2.12 kelvinToJouleUncertainty

```
const double NISTConst::kelvinToJouleUncertainty = 0.00000079e-23
```

$(1\text{ K})k\ (J)$ Uncertainty in kelvin-joule relationship.

3.73.2.13 kelvinToKilogram

```
const double NISTConst::kelvinToKilogram = 1.53617865e-40
```

$\frac{(1\text{ K})k}{c^2}\ (kg)$ Kelvin-kilogram relationship.

3.73.2.14 kelvinToKilogramUncertainty

```
const double NISTConst::kelvinToKilogramUncertainty = 0.00000088e-40
```

$\frac{(1\text{ K})k}{c^2}\ (kg)$ Uncertainty in kelvin-kilogram relationship.

3.74 Kilogram

Variables

- const double [NISTConst::kilogramToAtomicMassUnit](#) = 6.022140857e26
- const double [NISTConst::kilogramToElectronVolt](#) = 5.609588650e35
- const double [NISTConst::kilogramToHartree](#) = 2.061485823e34
- const double [NISTConst::kilogramToHertz](#) = 1.356392512e50
- const double [NISTConst::kilogramToInverseMeter](#) = 4.524438411e41
- const double [NISTConst::kilogramToJoule](#) = 8.987551787e16
- const double [NISTConst::kilogramToKelvin](#) = 6.5096595e39
- const double [NISTConst::kilogramToAtomicMassUnitUncertainty](#) = 0.000000074e26
- const double [NISTConst::kilogramToElectronVoltUncertainty](#) = 0.000000034e35
- const double [NISTConst::kilogramToHartreeUncertainty](#) = 0.000000025e34
- const double [NISTConst::kilogramToHertzUncertainty](#) = 0.000000017e50
- const double [NISTConst::kilogramToInverseMeterUncertainty](#) = 0.000000056e41
- const double [NISTConst::kilogramToJouleUncertainty](#) = 0.0
- const double [NISTConst::kilogramToKelvinUncertainty](#) = 0.0000037e39

3.74.1 Detailed Description

3.74.2 Variable Documentation

3.74.2.1 kilogramToAtomicMassUnit

```
const double NISTConst::kilogramToAtomicMassUnit = 6.022140857e26
```

(1 *kg*) (*u*) Kilogram-unified atomic mass unit relationship.

3.74.2.2 kilogramToAtomicMassUnitUncertainty

```
const double NISTConst::kilogramToAtomicMassUnitUncertainty = 0.000000074e26
```

(1 *kg*) (*u*) Uncertainty in kilogram-unified atomic mass unit relationship.

3.74.2.3 kilogramToElectronVolt

```
const double NISTConst::kilogramToElectronVolt = 5.609588650e35
```

(1 *kg*)*c*² (*eV*) Kilogram-electron volt relationship.

3.74.2.4 kilogramToElectronVoltUncertainty

```
const double NISTConst::kilogramToElectronVoltUncertainty = 0.000000034e35
```

(1 *kg*)*c*² (*eV*) Uncertainty in kilogram-electron volt relationship.

3.74.2.5 kilogramToHartree

```
const double NISTConst::kilogramToHartree = 2.061485823e34
```

$(1\text{ kg})c^2 (E_h)$ Kilogram-hartree relationship.

3.74.2.6 kilogramToHartreeUncertainty

```
const double NISTConst::kilogramToHartreeUncertainty = 0.000000025e34
```

$(1\text{ kg})c^2 (E_h)$ Uncertainty in kilogram-hartree relationship.

3.74.2.7 kilogramToHertz

```
const double NISTConst::kilogramToHertz = 1.356392512e50
```

$\frac{(1\text{ kg})c^2}{h} (Hz)$ Kilogram-hertz relationship .

3.74.2.8 kilogramToHertzUncertainty

```
const double NISTConst::kilogramToHertzUncertainty = 0.000000017e50
```

$\frac{(1\text{ kg})c^2}{h} (Hz)$ Uncertainty in kilogram-hertz relationship .

3.74.2.9 kilogramToInverseMeter

```
const double NISTConst::kilogramToInverseMeter = 4.524438411e41
```

$\frac{(1\text{ kg})c}{h} (\frac{1}{m})$ Kilogram-inverse meter relationship.

3.74.2.10 kilogramToInverseMeterUncertainty

```
const double NISTConst::kilogramToInverseMeterUncertainty = 0.000000056e41
```

$\frac{(1\text{ kg})c}{h} (\frac{1}{m})$ Uncertainty in kilogram-inverse meter relationship.

3.74.2.11 kilogramToJoule

```
const double NISTConst::kilogramToJoule = 8.987551787e16
```

$(1\text{ kg})c^2 (J)$ Kilogram-joule relationship.

3.74.2.12 kilogramToJouleUncertainty

```
const double NISTConst::kilogramToJouleUncertainty = 0.0
```

$(1\text{ kg})c^2 (J)$ Uncertainty in kilogram-joule relationship. Note should be 0.0 since it is a defined value.

3.74.2.13 kilogramToKelvin

```
const double NISTConst::kilogramToKelvin = 6.5096595e39
```

$\frac{(1\text{ kg})c^2}{K} (K)$ Kilogram-kelvin relationship.

3.74.2.14 kilogramToKelvinUncertainty

```
const double NISTConst::kilogramToKelvinUncertainty = 0.0000037e39
```

$\frac{(1\text{ kg})c^2}{K} (K)$ Uncertainty in kilogram-kelvin relationship.

3.75 X-ray values

Modules

- [Angstrom star](#)
- [Copper](#)
- [Molybdenum](#)
- [Silicon](#)

3.75.1 Detailed Description

3.76 Angstrom star

Variables

- const double [NISTConst::AngstromStar](#) = 1.00001495e-10
- const double [NISTConst::AngstromStarUncertainty](#) = 0.00000090e-10

3.76.1 Detailed Description

3.76.2 Variable Documentation

3.76.2.1 AngstromStar

```
const double NISTConst::AngstromStar = 1.00001495e-10
```

A^* (m) Angstrom star in meters.

3.76.2.2 AngstromStarUncertainty

```
const double NISTConst::AngstromStarUncertainty = 0.00000090e-10
```

A^* (m) Uncertainty in angstrom star in meters.

3.77 Copper

Variables

- const double `NISTConst::CuXUnit` = 1.00207697e-13
- const double `NISTConst::CuXUnitUncertainty` = 0.00000028e-13

3.77.1 Detailed Description

3.77.2 Variable Documentation

3.77.2.1 CuXUnit

```
const double NISTConst::CuXUnit = 1.00207697e-13
```

$xu(CuK\alpha_1)$ (m) Cu X unit in meters.

3.77.2.2 CuXUnitUncertainty

```
const double NISTConst::CuXUnitUncertainty = 0.00000028e-13
```

$xu(CuK\alpha_1)$ (m) Uncertainty in Cu X unit in meters.

3.78 Molybdenum

Variables

- const double `NISTConst::MoXUnit` = 1.00209952e-13
- const double `NISTConst::MoXUnitUncertainty` = 0.00000053e-13

3.78.1 Detailed Description

3.78.2 Variable Documentation

3.78.2.1 MoXUnit

```
const double NISTConst::MoXUnit = 1.00209952e-13
```

$xu(MoK\alpha_1)$ (m) Mo x unit in meters.

3.78.2.2 MoXUnitUncertainty

```
const double NISTConst::MoXUnitUncertainty = 0.00000053e-13
```

$xu(MoK\alpha_1)$ (m) Uncertainty in Mo x unit in meters.

3.79 Silicon

Variables

- const double `NISTConst::latticeSpacingOfSilicon` = 192.0155714e-12
- const double `NISTConst::latticeSpacingOfSiliconUncertainty` = 0.0000032e-12
- const double `NISTConst::latticeParameterOfSilicon` = 543.1020504e-12
- const double `NISTConst::latticeParameterOfSiliconUncertainty` = 0.0000089e-12
- const double `NISTConst::molarVolumeOfSilicon` = 12.05883214e-6
- const double `NISTConst::molarVolumeOfSiliconUncertainty` = 0.00000061e-6

3.79.1 Detailed Description

3.79.2 Variable Documentation

3.79.2.1 `latticeParameterOfSilicon`

```
const double NISTConst::latticeParameterOfSilicon = 543.1020504e-12
```

a (m) Lattice parameter of silicon in meters.

3.79.2.2 `latticeParameterOfSiliconUncertainty`

```
const double NISTConst::latticeParameterOfSiliconUncertainty = 0.0000089e-12
```

a (m) Uncertainty in lattice parameter of silicon in meters.

3.79.2.3 `latticeSpacingOfSilicon`

```
const double NISTConst::latticeSpacingOfSilicon = 192.0155714e-12
```

d_{220} (m) Silicon {220} lattice spacing in meters.

3.79.2.4 `latticeSpacingOfSiliconUncertainty`

```
const double NISTConst::latticeSpacingOfSiliconUncertainty = 0.0000032e-12
```

d_{220} (m) Uncertainty in silicon {220} lattice spacing in meters.

3.79.2.5 `molarVolumeOfSilicon`

```
const double NISTConst::molarVolumeOfSilicon = 12.05883214e-6
```

$V_m(Si)$ ($\frac{m^3}{mol}$) Molar volume of silicon in meters cubed per mole.

3.79.2.6 `molarVolumeOfSiliconUncertainty`

```
const double NISTConst::molarVolumeOfSiliconUncertainty = 0.00000061e-6
```

$V_m(Si)$ ($\frac{m^3}{mol}$) Uncertainty in molar volume of silicon in meters cubed per mole.

Chapter 4

File Documentation

4.1 D:/Documents/GitHub/NISTConst/NISTConst/NISTConst.hpp File Reference

Constants library for physics and chemistry based off of data from NIST.

Variables

- const double [NISTConst::latticeSpacingOfSilicon](#) = 192.0155714e-12
- const double [NISTConst::latticeSpacingOfSiliconUncertainty](#) = 0.0000032e-12
- const double [NISTConst::alphaParticleElectronMassRatio](#) = 7294.29954136
- const double [NISTConst::alphaParticleMass](#) = 6.644657230e-27
- const double [NISTConst::alphaParticleMassInJPercSquared](#) = 5.971920097e-10
- const double [NISTConst::alphaParticleMassInMeVPercSquared](#) = 3727.379378
- const double [NISTConst::alphaParticleMassInu](#) = 4.001506179127
- const double [NISTConst::alphaParticleMolarMass](#) = 4.001506179127e-3
- const double [NISTConst::alphaParticleProtonMassRatio](#) = 3.97259968907
- const double [NISTConst::alphaParticleElectronMassRatioUncertainty](#) = 0.00000024
- const double [NISTConst::alphaParticleMassUncertainty](#) = 0.000000082e-27
- const double [NISTConst::alphaParticleMassInJPercSquaredUncertainty](#) = 0.000000073e-10
- const double [NISTConst::alphaParticleMassInMeVPercSquaredUncertainty](#) = 0.000023
- const double [NISTConst::alphaParticleMassInuUncertainty](#) = 0.000000000063
- const double [NISTConst::alphaParticleMolarMassUncertainty](#) = 0.000000000063e-3
- const double [NISTConst::alphaParticleProtonMassRatioUncertainty](#) = 0.00000000036
- const double [NISTConst::AngstromStar](#) = 1.00001495e-10
- const double [NISTConst::AngstromStarUncertainty](#) = 0.00000090e-10
- const double [NISTConst::atomicMassConstant](#) = 1.660539040e-27
- const double [NISTConst::atomicMassConstantInJPercSquared](#) = 1.492418062e-10
- const double [NISTConst::atomicMassConstantInMeVPercSquared](#) = 931.4940954
- const double [NISTConst::atomicMassConstantUncertainty](#) = 0.000000020e-27
- const double [NISTConst::atomicMassConstantInJPercSquaredUncertainty](#) = 0.000000018e-10
- const double [NISTConst::atomicMassConstantInMeVPercSquaredUncertainty](#) = 0.0000057
- const double [NISTConst::atomicMassUnitToElectronVolt](#) = 931.4940954e6
- const double [NISTConst::atomicMassUnitToHartree](#) = 3.4231776902e7
- const double [NISTConst::atomicMassUnitToHertz](#) = 2.2523427206e23
- const double [NISTConst::atomicMassUnitToInverseMeter](#) = 7.5130066166e14
- const double [NISTConst::atomicMassUnitToJoule](#) = 1.492418062e-10
- const double [NISTConst::atomicMassUnitToKelvin](#) = 1.08095438e13

- const double [NISTConst::atomicMassUnitToKilogram](#) = 1.660539040e-27
- const double [NISTConst::atomicMassUnitToElectronVoltUncertainty](#) = 0.0000057e6
- const double [NISTConst::atomicMassUnitToHartreeUncertainty](#) = 0.000000016e7
- const double [NISTConst::atomicMassUnitToHertzUncertainty](#) = 0.0000000010e23
- const double [NISTConst::atomicMassUnitToInverseMeterUncertainty](#) = 0.0000000034e14
- const double [NISTConst::atomicMassUnitToJouleUncertainty](#) = 0.000000018e-10
- const double [NISTConst::atomicMassUnitToKelvinUncertainty](#) = 0.00000062e13
- const double [NISTConst::atomicMassUnitToKilogramUncertainty](#) = 0.000000020e-27
- const double [NISTConst::atomicUnitOf1stHyperpolarizability](#) = 3.206361329e-53
- const double [NISTConst::atomicUnitOf2ndHyperpolarizability](#) = 6.235380085e-65
- const double [NISTConst::atomicUnitOfAction](#) = 1.054571800e-34
- const double [NISTConst::atomicUnitOfCharge](#) = 1.6021766208e-19
- const double [NISTConst::atomicUnitOfChargeDensity](#) = 1.0812023770e12
- const double [NISTConst::atomicUnitOfCurrent](#) = 6.623618183e-3
- const double [NISTConst::atomicUnitOfElectricDipoleMoment](#) = 8.478353552e-30
- const double [NISTConst::atomicUnitOfElectricField](#) = 5.142206707e11
- const double [NISTConst::atomicUnitOfElectricFieldGradient](#) = 9.717362356e21
- const double [NISTConst::atomicUnitOfElectricPolarizability](#) = 1.6487772731e-41
- const double [NISTConst::atomicUnitOfElectricPotential](#) = 27.21138602
- const double [NISTConst::atomicUnitOfElectricQuadrupoleMoment](#) = 4.486551484e-40
- const double [NISTConst::atomicUnitOfEnergy](#) = 4.359744650e-18
- const double [NISTConst::atomicUnitOfForce](#) = 8.23872336e-8
- const double [NISTConst::atomicUnitOfLength](#) = 0.52917721067e-10
- const double [NISTConst::atomicUnitOfMagneticDipoleMoment](#) = 1.854801999e-23
- const double [NISTConst::atomicUnitOfMagneticFluxDensity](#) = 2.350517550e5
- const double [NISTConst::atomicUnitOfMagnetizability](#) = 7.8910365886e-29
- const double [NISTConst::atomicUnitOfMass](#) = 9.10938356e-31
- const double [NISTConst::atomicUnitOfMomentum](#) = 1.992851882e-24
- const double [NISTConst::atomicUnitOfPermittivity](#) = 1.112650056e-10
- const double [NISTConst::atomicUnitOfTime](#) = 2.418884326509e-17
- const double [NISTConst::atomicUnitOfVelocity](#) = 2.18769126277e6
- const double [NISTConst::atomicUnitOf1stHyperpolarizabilityUncertainty](#) = 0.000000020e-53
- const double [NISTConst::atomicUnitOf2ndHyperpolarizabilityUncertainty](#) = 0.000000077e-65
- const double [NISTConst::atomicUnitOfActionUncertainty](#) = 0.000000013e-34
- const double [NISTConst::atomicUnitOfChargeUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::atomicUnitOfChargeDensityUncertainty](#) = 0.0000000067e12
- const double [NISTConst::atomicUnitOfCurrentUncertainty](#) = 0.000000041e-3
- const double [NISTConst::atomicUnitOfElectricDipoleMomentUncertainty](#) = 0.000000052e-30
- const double [NISTConst::atomicUnitOfElectricFieldUncertainty](#) = 0.000000032e11
- const double [NISTConst::atomicUnitOfElectricFieldGradientUncertainty](#) = 0.000000060e21
- const double [NISTConst::atomicUnitOfElectricPolarizabilityUncertainty](#) = 0.0000000011e-41
- const double [NISTConst::atomicUnitOfElectricPotentialUncertainty](#) = 0.00000017
- const double [NISTConst::atomicUnitOfElectricQuadrupoleMomentUncertainty](#) = 0.000000028e-40
- const double [NISTConst::atomicUnitOfEnergyUncertainty](#) = 0.000000054e-18
- const double [NISTConst::atomicUnitOfForceUncertainty](#) = 0.00000010e-8
- const double [NISTConst::atomicUnitOfLengthUncertainty](#) = 0.00000000012e-10
- const double [NISTConst::atomicUnitOfMagneticDipoleMomentUncertainty](#) = 0.000000011e-23
- const double [NISTConst::atomicUnitOfMagneticFluxDensityUncertainty](#) = 0.000000014e5
- const double [NISTConst::atomicUnitOfMagnetizabilityUncertainty](#) = 0.0000000090e-29
- const double [NISTConst::atomicUnitOfMassUncertainty](#) = 0.00000011e-31
- const double [NISTConst::atomicUnitOfMomentumUncertainty](#) = 0.000000024e-24
- const double [NISTConst::atomicUnitOfPermittivityUncertainty](#) = 0.0
- const double [NISTConst::atomicUnitOfTimeUncertainty](#) = 0.000000000014e-17
- const double [NISTConst::atomicUnitOfVelocityUncertainty](#) = 0.00000000050e6
- const double [NISTConst::AvogadroConstant](#) = 6.022140857e23

- const double [NISTConst::AvogadroConstantUncertainty](#) = 0.000000074e23
- const double [NISTConst::BohrMagneton](#) = 927.4009994e-26
- const double [NISTConst::BohrMagnetonInVPerT](#) = 5.7883818012e-5
- const double [NISTConst::BohrMagnetonInHzPerT](#) = 13.996245042e9
- const double [NISTConst::BohrMagnetonInInversemT](#) = 46.68644814
- const double [NISTConst::BohrMagnetonInKPerT](#) = 0.67171405
- const double [NISTConst::BohrMagnetonUncertainty](#) = 0.0000057e-26
- const double [NISTConst::BohrMagnetonInVPerTUncertainty](#) = 0.0000000026e-5
- const double [NISTConst::BohrMagnetonInHzPerTUncertainty](#) = 0.000000086e9
- const double [NISTConst::BohrMagnetonInInversemTUncertainty](#) = 0.00000029
- const double [NISTConst::BohrMagnetonInKPerTUncertainty](#) = 0.00000039
- const double [NISTConst::BohrRadius](#) = 0.52917721067e-10
- const double [NISTConst::BohrRadiusUncertainty](#) = 0.00000000012e-10
- const double [NISTConst::BoltzmannConstant](#) = 1.38064852e-23
- const double [NISTConst::BoltzmannConstantInVPerK](#) = 8.6173303e-5
- const double [NISTConst::BoltzmannConstantInHzPerK](#) = 2.0836612e10
- const double [NISTConst::BoltzmannConstantInInversemK](#) = 69.503457
- const double [NISTConst::BoltzmannConstantUncertainty](#) = 0.00000079e-23
- const double [NISTConst::BoltzmannConstantInVPerKUncertainty](#) = 0.0000050e-5
- const double [NISTConst::BoltzmannConstantInHzPerKUncertainty](#) = 0.0000012e10
- const double [NISTConst::BoltzmannConstantInInversemKUncertainty](#) = 0.000040
- const double [NISTConst::impedanceOfVacuum](#) = 376.730313461
- const double [NISTConst::impedanceOfVacuumUncertainty](#) = 0.0
- const double [NISTConst::classicalElectronRadius](#) = 2.8179403227e-15
- const double [NISTConst::classicalElectronRadiusUncertainty](#) = 0.0000000019e-15
- const double [NISTConst::ComptonWavelength](#) = 2.4263102367e-12
- const double [NISTConst::ComptonWavelengthOver2Pi](#) = 386.15926764e-15
- const double [NISTConst::ComptonWavelengthUncertainty](#) = 0.0000000011e-12
- const double [NISTConst::ComptonWavelengthOver2PiUncertainty](#) = 0.00000018e-15
- const double [NISTConst::conductanceQuantum](#) = 7.7480917310e-5
- const double [NISTConst::conductanceQuantumUncertainty](#) = 0.0000000018e-5
- const double [NISTConst::conventionalJosephsonConstant](#) = 483597.9e9
- const double [NISTConst::conventionalJosephsonConstantUncertainty](#) = 0.0
- const double [NISTConst::conventionalvonKlitzingConstant](#) = 25812.807
- const double [NISTConst::conventionalvonKlitzingConstantUncertainty](#) = 25812.807
- const double [NISTConst::CuXUnit](#) = 1.00207697e-13
- const double [NISTConst::CuXUnitUncertainty](#) = 0.00000028e-13
- const double [NISTConst::deuteronFactor](#) = 0.8574382311
- const double [NISTConst::deuteronElectronMagneticMomentRatio](#) = -4.664345535e-4
- const double [NISTConst::deuteronElectronMassRatio](#) = 3670.48296785
- const double [NISTConst::deuteronMagneticMoment](#) = 0.4330735040e-26
- const double [NISTConst::deuteronMagneticMomentToBohrMagnetonRatio](#) = 0.4669754554e-3
- const double [NISTConst::deuteronMagneticMomentToNuclearMagnetonRatio](#) = 0.8574382311
- const double [NISTConst::deuteronMass](#) = 3.343583719e-27
- const double [NISTConst::deuteronMassInJPercSquared](#) = 3.005063183e-10
- const double [NISTConst::deuteronMassInMeVPerSquared](#) = 1875.612928
- const double [NISTConst::deuteronMassInu](#) = 2.013553212745
- const double [NISTConst::deuteronMolarMass](#) = 2.013553212745e-3
- const double [NISTConst::deuteronNeutronMagneticMomentRatio](#) = -0.44820652
- const double [NISTConst::deuteronProtonMagneticMomentRatio](#) = 0.3070122077
- const double [NISTConst::deuteronProtonMassRatio](#) = 1.99900750087
- const double [NISTConst::deuteronrmsChargeRadius](#) = 2.1413e-15
- const double [NISTConst::deuteronFactorUncertainty](#) = 0.0000000048
- const double [NISTConst::deuteronElectronMagneticMomentRatioUncertainty](#) = 0.000000026e-4
- const double [NISTConst::deuteronElectronMassRatioUncertainty](#) = 0.00000013

- const double [NISTConst::deuteronMagneticMomentUncertainty](#) = 0.000000036e-26
- const double [NISTConst::deuteronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.000000026e-3
- const double [NISTConst::deuteronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.000000048
- const double [NISTConst::deuteronMassUncertainty](#) = 0.00000041e-27
- const double [NISTConst::deuteronMassInJPercSquaredUncertainty](#) = 0.00000037e-10
- const double [NISTConst::deuteronMassInMeVPercSquaredUncertainty](#) = 0.000012
- const double [NISTConst::deuteronMassInuUncertainty](#) = 0.00000000040
- const double [NISTConst::deuteronMolarMassUncertainty](#) = 0.00000000040e-3
- const double [NISTConst::deuteronNeutronMagneticMomentRatioUncertainty](#) = 0.00000011
- const double [NISTConst::deuteronProtonMagneticMomentRatioUncertainty](#) = 0.000000015
- const double [NISTConst::deuteronProtonMassRatioUncertainty](#) = 0.0000000019
- const double [NISTConst::deuteronrmsChargeRadiusUncertainty](#) = 0.0025e-15
- const double [NISTConst::electricConstant](#) = 8.854187817e-12
- const double [NISTConst::electricConstantUncertainty](#) = 0.0
- const double [NISTConst::electronChargeToMass](#) = -1.758820024e11
- const double [NISTConst::electronDeuteronMagneticMomentRatio](#) = -2143.923499
- const double [NISTConst::electronDeuteronMassRatio](#) = 2.724437107484e-4
- const double [NISTConst::electrongFactor](#) = -2.00231930436182
- const double [NISTConst::electronGyromagneticRatio](#) = 1.760859644e11
- const double [NISTConst::electronGyromagneticRatioOver2pi](#) = 28024.95164
- const double [NISTConst::electronHelionMassRatio](#) = 1.819543074854e-4
- const double [NISTConst::electronMagneticMoment](#) = -928.4764620e-26
- const double [NISTConst::electronMagneticMomentAnomaly](#) = 1.15965218091e-3
- const double [NISTConst::electronMagneticMomentToBohrMagnetonRatio](#) = -1.00115965218091
- const double [NISTConst::electronMagneticMomentToNuclearMagnetonRatio](#) = -1838.28197234
- const double [NISTConst::electronMass](#) = 9.10938356e-31
- const double [NISTConst::electronMassInJPercSquared](#) = 8.18710565e-14
- const double [NISTConst::electronMassInMeVPercSquared](#) = 0.5109989461
- const double [NISTConst::electronMassInu](#) = 5.48579909070e-4
- const double [NISTConst::electronMolarMass](#) = 5.48579909070e-7
- const double [NISTConst::electronMuonMagneticMomentRatio](#) = 206.7669880
- const double [NISTConst::electronMuonMassRatio](#) = 4.83633170e-3
- const double [NISTConst::electronNeutronMagneticMomentRatio](#) = 960.92050
- const double [NISTConst::electronNeutronMassRatio](#) = 5.4386734428e-4
- const double [NISTConst::electronProtonMagneticMomentRatio](#) = -658.2106866
- const double [NISTConst::electronProtonMassRatio](#) = 5.44617021352e-4
- const double [NISTConst::electronTauMassRatio](#) = 2.87592e-4
- const double [NISTConst::electronToAlphaParticleMassRatio](#) = 1.370933554798e-4
- const double [NISTConst::electronToShieldedHelionMagneticMomentRatio](#) = 864.058257
- const double [NISTConst::electronToShieldedProtonMagneticMomentRatio](#) = -658.2275971
- const double [NISTConst::electronTritonMassRatio](#) = 1.819200062203e-4
- const double [NISTConst::electronChargeToMassUncertainty](#) = 0.000000011e11
- const double [NISTConst::electronDeuteronMagneticMomentRatioUncertainty](#) = 0.000012
- const double [NISTConst::electronDeuteronMassRatioUncertainty](#) = 0.000000000096e-4
- const double [NISTConst::electrongFactorUncertainty](#) = 0.00000000000052
- const double [NISTConst::electronGyromagneticRatioUncertainty](#) = 0.000000011e11
- const double [NISTConst::electronGyromagneticRatioOver2piUncertainty](#) = 0.00017
- const double [NISTConst::electronHelionMassRatioUncertainty](#) = 0.000000000088e-4
- const double [NISTConst::electronMagneticMomentUncertainty](#) = 0.0000057e-26
- const double [NISTConst::electronMagneticMomentAnomalyUncertainty](#) = 0.00000000026e-3
- const double [NISTConst::electronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000000000026
- const double [NISTConst::electronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000017
- const double [NISTConst::electronMassUncertainty](#) = 0.00000011e-31
- const double [NISTConst::electronMassInJPercSquaredUncertainty](#) = 0.00000010e-14
- const double [NISTConst::electronMassInMeVPercSquaredUncertainty](#) = 0.0000000031

- const double [NISTConst::electronMassInuUncertainty](#) = 0.00000000016e-4
- const double [NISTConst::electronMolarMassUncertainty](#) = 0.00000000016e-7
- const double [NISTConst::electronMuonMagneticMomentRatioUncertainty](#) = 0.0000046
- const double [NISTConst::electronMuonMassRatioUncertainty](#) = 0.00000011e-3
- const double [NISTConst::electronNeutronMagneticMomentRatioUncertainty](#) = 0.00023
- const double [NISTConst::electronNeutronMassRatioUncertainty](#) = 0.0000000027e-4
- const double [NISTConst::electronProtonMagneticMomentRatioUncertainty](#) = 0.0000020
- const double [NISTConst::electronProtonMassRatioUncertainty](#) = 0.00000000052e-4
- const double [NISTConst::electronTauMassRatioUncertainty](#) = 0.00026e-4
- const double [NISTConst::electronToAlphaParticleMassRatioUncertainty](#) = 0.00000000045e-4
- const double [NISTConst::electronToShieldedHelionMagneticMomentRatioUncertainty](#) = 0.000010
- const double [NISTConst::electronToShieldedProtonMagneticMomentRatioUncertainty](#) = 0.0000072
- const double [NISTConst::electronTritonMassRatioUncertainty](#) = 0.000000000084e-4
- const double [NISTConst::electronVolt](#) = 1.6021766208e-19
- const double [NISTConst::electronVoltUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::electronVoltToAtomicMassUnit](#) = 1.0735441105e-9
- const double [NISTConst::electronVoltToHartree](#) = 3.674932248e-2
- const double [NISTConst::electronVoltToHertz](#) = 2.417989262e14
- const double [NISTConst::electronVoltToInverseMeter](#) = 8.065544005e5
- const double [NISTConst::electronVoltToJoule](#) = 1.6021766208e-19
- const double [NISTConst::electronVoltToKelvin](#) = 1.16045221e4
- const double [NISTConst::electronVoltToKilogram](#) = 1.782661907e-36
- const double [NISTConst::electronVoltToAtomicMassUnitUncertainty](#) = 0.0000000066e-9
- const double [NISTConst::electronVoltToHartreeUncertainty](#) = 0.000000023e-2
- const double [NISTConst::electronVoltToHertzUncertainty](#) = 0.000000015e14
- const double [NISTConst::electronVoltToInverseMeterUncertainty](#) = 0.000000050e5
- const double [NISTConst::electronVoltToJouleUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::electronVoltToKelvinUncertainty](#) = 0.00000067e4
- const double [NISTConst::electronVoltToKilogramUncertainty](#) = 0.000000011e-36
- const double [NISTConst::elementaryCharge](#) = 1.6021766208e-19
- const double [NISTConst::elementaryChargeOverh](#) = 2.417989262e14
- const double [NISTConst::elementaryChargeUncertainty](#) = 0.0000000098e-19
- const double [NISTConst::elementaryChargeOverhUncertainty](#) = 0.000000015e14
- const double [NISTConst::FaradayConstant](#) = 96485.33289
- const double [NISTConst::FaradayConstantForConventionalElectricCurrent](#) = 96485.3251
- const double [NISTConst::FaradayConstantUncertainty](#) = 0.00059
- const double [NISTConst::FaradayConstantForConventionalElectricCurrentUncertainty](#) = 0.0012
- const double [NISTConst::FermiCouplingConstant](#) = 1.1663787e-5
- const double [NISTConst::FermiCouplingConstantUncertainty](#) = 0.0000006e-5
- const double [NISTConst::fineStructureConstant](#) = 7.2973525664e-3
- const double [NISTConst::fineStructureConstantUncertainty](#) = 0.0000000017e-3
- const double [NISTConst::firstRadiationConstant](#) = 3.741771790e-16
- const double [NISTConst::firstRadiationConstantForSpectralRadiance](#) = 1.191042953e-16
- const double [NISTConst::firstRadiationConstantUncertainty](#) = 0.000000046e-16
- const double [NISTConst::firstRadiationConstantForSpectralRadianceUncertainty](#) = 0.000000015e-16
- const double [NISTConst::HartreeEnergy](#) = 4.359744650e-18
- const double [NISTConst::HartreeEnergyIneV](#) = 27.21138602
- const double [NISTConst::HartreeEnergyUncertainty](#) = 0.000000054e-18
- const double [NISTConst::HartreeEnergyIneVUncertainty](#) = 0.00000017
- const double [NISTConst::hartreeToAtomicMassUnit](#) = 2.9212623197e-8
- const double [NISTConst::hartreeToElectronVolt](#) = 27.21138602
- const double [NISTConst::hartreeToHertz](#) = 6.579683920711e15
- const double [NISTConst::hartreeToInverseMeter](#) = 2.194746313702e7
- const double [NISTConst::hartreeToJoule](#) = 4.359744650e-18
- const double [NISTConst::hartreeToKelvin](#) = 3.1577513e5

- const double [NISTConst::hartreeToKilogram](#) = 4.850870129e-35
- const double [NISTConst::hartreeToAtomicMassUnitUncertainty](#) = 0.0000000013e-8
- const double [NISTConst::hartreeToElectronVoltUncertainty](#) = 0.00000017
- const double [NISTConst::hartreeToHertzUncertainty](#) = 0.000000000039e15
- const double [NISTConst::hartreeToInverseMeterUncertainty](#) = 0.000000000013e7
- const double [NISTConst::hartreeToJouleUncertainty](#) = 0.000000054e-18
- const double [NISTConst::hartreeToKelvinUncertainty](#) = 0.0000018e5
- const double [NISTConst::hartreeToKilogramUncertainty](#) = 0.000000060e-35
- const double [NISTConst::helionElectronMassRatio](#) = 5495.88527922
- const double [NISTConst::heliongFactor](#) = -4.255250616
- const double [NISTConst::helionMagneticMoment](#) = -1.074617522e-26
- const double [NISTConst::helionMagneticMomentToBohrMagnetronRatio](#) = -1.158740958e-3
- const double [NISTConst::helionMagneticMomentToNuclearMagnetronRatio](#) = -2.127625308
- const double [NISTConst::helionMass](#) = 5.006412700e-27
- const double [NISTConst::helionMassInJPercSquared](#) = 4.499539341e-10
- const double [NISTConst::helionMassInMeVPercSquared](#) = 2808.391586
- const double [NISTConst::helionMassInu](#) = 3.01493224673
- const double [NISTConst::helionMolarMass](#) = 3.01493224673e-3
- const double [NISTConst::helionProtonMassRatio](#) = 2.99315267046
- const double [NISTConst::helionElectronMassRatioUncertainty](#) = 0.00000027
- const double [NISTConst::heliongFactorUncertainty](#) = 0.000000050
- const double [NISTConst::helionMagneticMomentUncertainty](#) = 0.000000014e-26
- const double [NISTConst::helionMagneticMomentToBohrMagnetronRatioUncertainty](#) = 0.000000014e-3
- const double [NISTConst::helionMagneticMomentToNuclearMagnetronRatioUncertainty](#) = 0.000000025
- const double [NISTConst::helionMassUncertainty](#) = 0.000000062e-27
- const double [NISTConst::helionMassInJPercSquaredUncertainty](#) = 0.000000055e-10
- const double [NISTConst::helionMassInMeVPercSquaredUncertainty](#) = 0.000017
- const double [NISTConst::helionMassInuUncertainty](#) = 0.00000000012
- const double [NISTConst::helionMolarMassUncertainty](#) = 0.00000000012e-3
- const double [NISTConst::helionProtonMassRatioUncertainty](#) = 0.00000000029
- const double [NISTConst::hertzToAtomicMassUnit](#) = 4.439821661e-24
- const double [NISTConst::hertzToElectronVolt](#) = 4.135667662e-15
- const double [NISTConst::hertzToHartree](#) = 1.5198298460088e-16
- const double [NISTConst::hertzToInverseMeter](#) = 3.335640951e-9
- const double [NISTConst::hertzToJoule](#) = 6.626070040e-34
- const double [NISTConst::hertzToKelvin](#) = 4.7992447e-11
- const double [NISTConst::hertzToKilogram](#) = 7.372497201e-51
- const double [NISTConst::hertzToAtomicMassUnitUncertainty](#) = 0.0000000020e-24
- const double [NISTConst::hertzToElectronVoltUncertainty](#) = 0.000000025e-15
- const double [NISTConst::hertzToHartreeUncertainty](#) = 0.000000000090e-16
- const double [NISTConst::hertzToInverseMeterUncertainty](#) = 0.0
- const double [NISTConst::hertzToJouleUncertainty](#) = 0.000000081e-34
- const double [NISTConst::hertzToKelvinUncertainty](#) = 0.0000028e-11
- const double [NISTConst::hertzToKilogramUncertainty](#) = 0.000000091e-51
- const double [NISTConst::inverseFineStructureConstant](#) = 137.035999139
- const double [NISTConst::inverseFineStructureConstantUncertainty](#) = 0.000000031
- const double [NISTConst::inverseMeterToAtomicMassUnit](#) = 1.33102504900e-15
- const double [NISTConst::inverseMeterToElectronVolt](#) = 1.2398419739e-6
- const double [NISTConst::inverseMeterToHartree](#) = 4.556335252767e-8
- const double [NISTConst::inverseMeterToHertz](#) = 299792458
- const double [NISTConst::inverseMeterToJoule](#) = 1.986445824e-25
- const double [NISTConst::inverseMeterToKelvin](#) = 1.43877736e-2
- const double [NISTConst::inverseMeterToKilogram](#) = 2.210219057e-42
- const double [NISTConst::inverseMeterToAtomicMassUnitUncertainty](#) = 0.00000000061e-15
- const double [NISTConst::inverseMeterToElectronVoltUncertainty](#) = 0.0000000076e-6

- const double [NISTConst::inverseMeterToHartreeUncertainty](#) = 0.00000000027e-8
- const double [NISTConst::inverseMeterToHertzUncertainty](#) = 0.0
- const double [NISTConst::inverseMeterToJouleUncertainty](#) = 0.000000024e-25
- const double [NISTConst::inverseMeterToKelvinUncertainty](#) = 0.00000083e-2
- const double [NISTConst::inverseMeterToKilogramUncertainty](#) = 0.000000027e-42
- const double [NISTConst::inverseOfConductanceQuantum](#) = 12906.4037278
- const double [NISTConst::inverseOfConductanceQuantumUncertainty](#) = 0.0000029
- const double [NISTConst::JosephsonConstant](#) = 483597.8525e9
- const double [NISTConst::JosephsonConstantUncertainty](#) = 0.0030e9
- const double [NISTConst::jouleToAtomicMassUnit](#) = 6.700535363e9
- const double [NISTConst::jouleToElectronVolt](#) = 6.241509126e18
- const double [NISTConst::jouleToHartree](#) = 2.293712317e17
- const double [NISTConst::jouleToHertz](#) = 1.509190205e33
- const double [NISTConst::jouleToInverseMeter](#) = 5.034116651e24
- const double [NISTConst::jouleToKelvin](#) = 7.2429731e22
- const double [NISTConst::jouleToKilogram](#) = 1.112650056e-17
- const double [NISTConst::jouleToAtomicMassUnitUncertainty](#) = 0.000000082e9
- const double [NISTConst::jouleToElectronVoltUncertainty](#) = 0.000000038e18
- const double [NISTConst::jouleToHartreeUncertainty](#) = 0.000000028e17
- const double [NISTConst::jouleToHertzUncertainty](#) = 0.000000019e33
- const double [NISTConst::jouleToInverseMeterUncertainty](#) = 0.000000062e24
- const double [NISTConst::jouleToKelvinUncertainty](#) = 0.0000042e22
- const double [NISTConst::jouleToKilogramUncertainty](#) = 0.0
- const double [NISTConst::kelvinToAtomicMassUnit](#) = 9.2510842e-14
- const double [NISTConst::kelvinToElectronVolt](#) = 8.6173303e-5
- const double [NISTConst::kelvinToHartree](#) = 3.1668105e-6
- const double [NISTConst::kelvinToHertz](#) = 2.0836612e10
- const double [NISTConst::kelvinToInverseMeter](#) = 69.503457
- const double [NISTConst::kelvinToJoule](#) = 1.38064852e-23
- const double [NISTConst::kelvinToKilogram](#) = 1.53617865e-40
- const double [NISTConst::kelvinToAtomicMassUnitUncertainty](#) = 0.0000053e-14
- const double [NISTConst::kelvinToElectronVoltUncertainty](#) = 0.0000050e-5
- const double [NISTConst::kelvinToHartreeUncertainty](#) = 0.0000018e-6
- const double [NISTConst::kelvinToHertzUncertainty](#) = 0.0000012e10
- const double [NISTConst::kelvinToInverseMeterUncertainty](#) = 0.000040
- const double [NISTConst::kelvinToJouleUncertainty](#) = 0.00000079e-23
- const double [NISTConst::kelvinToKilogramUncertainty](#) = 0.00000088e-40
- const double [NISTConst::kilogramToAtomicMassUnit](#) = 6.022140857e26
- const double [NISTConst::kilogramToElectronVolt](#) = 5.609588650e35
- const double [NISTConst::kilogramToHartree](#) = 2.061485823e34
- const double [NISTConst::kilogramToHertz](#) = 1.356392512e50
- const double [NISTConst::kilogramToInverseMeter](#) = 4.524438411e41
- const double [NISTConst::kilogramToJoule](#) = 8.987551787e16
- const double [NISTConst::kilogramToKelvin](#) = 6.5096595e39
- const double [NISTConst::kilogramToAtomicMassUnitUncertainty](#) = 0.000000074e26
- const double [NISTConst::kilogramToElectronVoltUncertainty](#) = 0.000000034e35
- const double [NISTConst::kilogramToHartreeUncertainty](#) = 0.000000025e34
- const double [NISTConst::kilogramToHertzUncertainty](#) = 0.000000017e50
- const double [NISTConst::kilogramToInverseMeterUncertainty](#) = 0.000000056e41
- const double [NISTConst::kilogramToJouleUncertainty](#) = 0.0
- const double [NISTConst::kilogramToKelvinUncertainty](#) = 0.0000037e39
- const double [NISTConst::latticeParameterOfSilicon](#) = 543.1020504e-12
- const double [NISTConst::latticeParameterOfSiliconUncertainty](#) = 0.0000089e-12
- const double [NISTConst::LoschmidtConstant](#) = 2.6516467e25
- const double [NISTConst::LoschmidtConstantatm](#) = 2.6867811e25

- const double [NISTConst::LoschmidtConstantUncertainty](#) = 0.0000015e25
- const double [NISTConst::LoschmidtConstantatmUncertainty](#) = 0.0000015e25
- const double [NISTConst::magneticConstant](#) = 12.566370614e-7
- const double [NISTConst::magneticConstantUncertainty](#) = 0.0
- const double [NISTConst::magneticFluxQuantum](#) = 2.067833831e-15
- const double [NISTConst::magneticFluxQuantumUncertainty](#) = 0.000000013e-15
- const double [NISTConst::molarGasConstant](#) = 8.3144598
- const double [NISTConst::molarGasConstantUncertainty](#) = 0.0000048
- const double [NISTConst::molarMassConstant](#) = 1e-3
- const double [NISTConst::molarMassOfCarbon12](#) = 12e-3
- const double [NISTConst::molarMassConstantUncertainty](#) = 0.0
- const double [NISTConst::molarMassOfCarbon12Uncertainty](#) = 0.0
- const double [NISTConst::molarPlanckConstant](#) = 3.9903127110e-10
- const double [NISTConst::molarPlanckConstantTimesc](#) = 0.119626565582
- const double [NISTConst::molarPlanckConstantUncertainty](#) = 0.0000000018e-10
- const double [NISTConst::molarPlanckConstantTimescUncertainty](#) = 0.000000000054
- const double [NISTConst::molarVolumeOfIdealGas](#) = 22.710947e-3
- const double [NISTConst::molarVolumeOfIdealGasatm](#) = 22.413962e-3
- const double [NISTConst::molarVolumeOfIdealGasUncertainty](#) = 0.000013e-3
- const double [NISTConst::molarVolumeOfIdealGasatmUncertainty](#) = 0.000013e-3
- const double [NISTConst::molarVolumeOfSilicon](#) = 12.05883214e-6
- const double [NISTConst::molarVolumeOfSiliconUncertainty](#) = 0.00000061e-6
- const double [NISTConst::MoXUnit](#) = 1.00209952e-13
- const double [NISTConst::MoXUnitUncertainty](#) = 0.00000053e-13
- const double [NISTConst::muonComptonWavelength](#) = 11.73444111e-15
- const double [NISTConst::muonComptonWavelengthOver2pi](#) = 1.867594308e-15
- const double [NISTConst::muonElectronMassRatio](#) = 206.7682826
- const double [NISTConst::muongFactor](#) = -2.0023318418
- const double [NISTConst::muonMagneticMoment](#) = -4.49044826e-26
- const double [NISTConst::muonMagneticMomentAnomaly](#) = 1.16592089e-3
- const double [NISTConst::muonMagneticMomentToBohrMagnetonRatio](#) = -4.84197048e-3
- const double [NISTConst::muonMagneticMomentToNuclearMagnetonRatio](#) = -8.89059705
- const double [NISTConst::muonMass](#) = 1.883531594e-28
- const double [NISTConst::muonMassInJPercSquared](#) = 1.692833774e-11
- const double [NISTConst::muonMassInMeVPercSquared](#) = 105.6583745
- const double [NISTConst::muonMassInu](#) = 0.1134289257
- const double [NISTConst::muonMolarMass](#) = 0.1134289257e-3
- const double [NISTConst::muonNeutronMassRatio](#) = 0.1124545167
- const double [NISTConst::muonProtonMagneticMomentRatio](#) = -3.183345142
- const double [NISTConst::muonProtonMassRatio](#) = 0.1126095262
- const double [NISTConst::muonTauMassRatio](#) = 5.94649e-2
- const double [NISTConst::muonComptonWavelengthUncertainty](#) = 0.00000026e-15
- const double [NISTConst::muonComptonWavelengthOver2piUncertainty](#) = 0.000000042e-15
- const double [NISTConst::muonElectronMassRatioUncertainty](#) = 0.0000046
- const double [NISTConst::muongFactorUncertainty](#) = 0.0000000013
- const double [NISTConst::muonMagneticMomentUncertainty](#) = 0.00000010e-26
- const double [NISTConst::muonMagneticMomentAnomalyUncertainty](#) = 0.00000063e-3
- const double [NISTConst::muonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000011e-3
- const double [NISTConst::muonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000020
- const double [NISTConst::muonMassUncertainty](#) = 0.000000048e-28
- const double [NISTConst::muonMassInJPercSquaredUncertainty](#) = 0.000000043e-11
- const double [NISTConst::muonMassInMeVPercSquaredUncertainty](#) = 0.0000024
- const double [NISTConst::muonMassInuUncertainty](#) = 0.0000000025
- const double [NISTConst::muonMolarMassUncertainty](#) = 0.0000000025e-3
- const double [NISTConst::muonNeutronMassRatioUncertainty](#) = 0.0000000025

- const double [NISTConst::muonProtonMagneticMomentRatioUncertainty](#) = 0.000000071
- const double [NISTConst::muonProtonMassRatioUncertainty](#) = 0.0000000025
- const double [NISTConst::muonTauMassRatioUncertainty](#) = 0.00054e-2
- const double [NISTConst::naturalUnitOfAction](#) = 1.054571800e-34
- const double [NISTConst::naturalUnitOfActionInVs](#) = 6.582119514e-16
- const double [NISTConst::naturalUnitOfEnergy](#) = 8.18710565e-14
- const double [NISTConst::naturalUnitOfEnergyInMeV](#) = 0.5109989461
- const double [NISTConst::naturalUnitOfLength](#) = 386.15926764e-15
- const double [NISTConst::naturalUnitOfMass](#) = 9.10938356e-31
- const double [NISTConst::naturalUnitOfMomentum](#) = 2.730924488e-22
- const double [NISTConst::naturalUnitOfMomentumInMeVPerc](#) = 0.5109989461
- const double [NISTConst::naturalUnitOfTime](#) = 1.28808866712e-21
- const double [NISTConst::naturalUnitOfVelocity](#) = 299792458
- const double [NISTConst::naturalUnitOfActionUncertainty](#) = 0.000000013e-34
- const double [NISTConst::naturalUnitOfActionInVsUncertainty](#) = 0.000000040e-16
- const double [NISTConst::naturalUnitOfEnergyUncertainty](#) = 0.00000010e-14
- const double [NISTConst::naturalUnitOfEnergyInMeVUncertainty](#) = 0.0000000031
- const double [NISTConst::naturalUnitOfLengthUncertainty](#) = 0.00000018e-15
- const double [NISTConst::naturalUnitOfMassUncertainty](#) = 0.00000011e-31
- const double [NISTConst::naturalUnitOfMomentumUncertainty](#) = 0.000000034e-22
- const double [NISTConst::naturalUnitOfMomentumInMeVPercUncertainty](#) = 0.0000000031
- const double [NISTConst::naturalUnitOfTimeUncertainty](#) = 0.00000000058e-21
- const double [NISTConst::naturalUnitOfVelocityUncertainty](#) = 0.0
- const double [NISTConst::neutronComptonWavelength](#) = 1.31959090481e-15
- const double [NISTConst::neutronComptonWavelengthOver2Pi](#) = 0.21001941536e-15
- const double [NISTConst::neutronElectronMagneticMomentRatio](#) = 1.04066882e-3
- const double [NISTConst::neutronElectronMassRatio](#) = 1838.68366158
- const double [NISTConst::neutrongFactor](#) = -3.82608545
- const double [NISTConst::neutronGyromagneticRatio](#) = 1.83247172e8
- const double [NISTConst::neutronGyromagneticRatioOver2Pi](#) = 29.1646933
- const double [NISTConst::neutronMagneticMoment](#) = -0.96623650e-26
- const double [NISTConst::neutronMagneticMomentToBohrMagnetonRatio](#) = -1.04187563e-3
- const double [NISTConst::neutronMagneticMomentToNuclearMagnetonRatio](#) = -1.91304273
- const double [NISTConst::neutronMass](#) = 1.674927471e-27
- const double [NISTConst::neutronMassInJPercSquared](#) = 1.505349739e-10
- const double [NISTConst::neutronMassInMeVPercSquared](#) = 939.5654133
- const double [NISTConst::neutronMassInu](#) = 1.00866491588
- const double [NISTConst::neutronMolarMass](#) = 1.00866491588e-3
- const double [NISTConst::neutronMuonMassRatio](#) = 8.89248408
- const double [NISTConst::neutronProtonMagneticMomentRatio](#) = -0.68497934
- const double [NISTConst::neutronProtonMassDifference](#) = 2.30557377e-30
- const double [NISTConst::neutronProtonMassDifferenceInJPercSquared](#) = 2.07214637e-13
- const double [NISTConst::neutronProtonMassDifferenceInMeVPercSquared](#) = 1.29333205
- const double [NISTConst::neutronProtonMassDifferenceInu](#) = 0.00138844900
- const double [NISTConst::neutronProtonMassRatio](#) = 1.00137841898
- const double [NISTConst::neutronTauMassRatio](#) = 0.528790
- const double [NISTConst::neutronToShieldedProtonMagneticMomentRatio](#) = -0.68499694
- const double [NISTConst::neutronComptonWavelengthUncertainty](#) = 0.00000000088e-15
- const double [NISTConst::neutronComptonWavelengthOver2PiUncertainty](#) = 0.00000000014e-15
- const double [NISTConst::neutronElectronMagneticMomentRatioUncertainty](#) = 0.00000025e-3
- const double [NISTConst::neutronElectronMassRatioUncertainty](#) = 0.00000090
- const double [NISTConst::neutrongFactorUncertainty](#) = 0.00000090
- const double [NISTConst::neutronGyromagneticRatioUncertainty](#) = 0.00000043e8
- const double [NISTConst::neutronGyromagneticRatioOver2PiUncertainty](#) = 0.0000069
- const double [NISTConst::neutronMagneticMomentUncertainty](#) = 0.00000023e-26

- const double [NISTConst::neutronMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.00000025e-3
- const double [NISTConst::neutronMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.00000045
- const double [NISTConst::neutronMassUncertainty](#) = 0.000000021e-27
- const double [NISTConst::neutronMassInJPercSquaredUncertainty](#) = 0.000000019e-10
- const double [NISTConst::neutronMassInMeVPercSquaredUncertainty](#) = 0.00000058
- const double [NISTConst::neutronMassInuUncertainty](#) = 0.00000000049
- const double [NISTConst::neutronMolarMassUncertainty](#) = 0.00000000049e-3
- const double [NISTConst::neutronMuonMassRatioUncertainty](#) = 0.00000020
- const double [NISTConst::neutronProtonMagneticMomentRatioUncertainty](#) = 0.00000016
- const double [NISTConst::neutronProtonMassDifferenceUncertainty](#) = 0.00000085e-30
- const double [NISTConst::neutronProtonMassDifferenceInJPercSquaredUncertainty](#) = 0.00000076e-13
- const double [NISTConst::neutronProtonMassDifferenceInMeVPercSquaredUncertainty](#) = 0.00000048
- const double [NISTConst::neutronProtonMassDifferenceInuUncertainty](#) = 0.00000000051
- const double [NISTConst::neutronProtonMassRatioUncertainty](#) = 0.00000000051
- const double [NISTConst::neutronTauMassRatioUncertainty](#) = 0.000048
- const double [NISTConst::neutronToShieldedProtonMagneticMomentRatioUncertainty](#) = 0.00000016
- const double [NISTConst::NewtonianConstantOfGravitation](#) = 6.67408e-11
- const double [NISTConst::NewtonianConstantOfGravitationOverhbarc](#) = 6.70861e-39
- const double [NISTConst::NewtonianConstantOfGravitationUncertainty](#) = 0.00031e-11
- const double [NISTConst::NewtonianConstantOfGravitationOverhbarcUncertainty](#) = 0.00031e-39
- const double [NISTConst::nuclearMagneton](#) = 5.050783699e-27
- const double [NISTConst::nuclearMagnetonIneVPerT](#) = 3.1524512550e-8
- const double [NISTConst::nuclearMagnetonInInversemT](#) = 2.542623432e-2
- const double [NISTConst::nuclearMagnetonInKPerT](#) = 3.6582690e-4
- const double [NISTConst::nuclearMagnetonInMHzPerT](#) = 7.622593285
- const double [NISTConst::nuclearMagnetonUncertainty](#) = 0.000000031e-27
- const double [NISTConst::nuclearMagnetonIneVPerTUncertainty](#) = 0.0000000015e-8
- const double [NISTConst::nuclearMagnetonInInversemTUncertainty](#) = 0.000000016e-2
- const double [NISTConst::nuclearMagnetonInKPerTUncertainty](#) = 0.0000021e-4
- const double [NISTConst::nuclearMagnetonInMHzPerTUncertainty](#) = 0.000000047
- const double [NISTConst::PlanckConstant](#) = 6.626070040e-34
- const double [NISTConst::PlanckConstantIneVs](#) = 4.135667662e-15
- const double [NISTConst::PlanckConstantOver2Pi](#) = 1.054571800e-34
- const double [NISTConst::PlanckConstantOver2PiIneVs](#) = 6.582119514e-16
- const double [NISTConst::PlanckConstantOver2PiTimescInMeVfm](#) = 197.3269788
- const double [NISTConst::PlanckConstantUncertainty](#) = 0.000000081e-34
- const double [NISTConst::PlanckConstantIneVsUncertainty](#) = 0.000000025e-15
- const double [NISTConst::PlanckConstantOver2PiUncertainty](#) = 0.000000013e-34
- const double [NISTConst::PlanckConstantOver2PiIneVsUncertainty](#) = 0.000000040e-16
- const double [NISTConst::PlanckConstantOver2PiTimescInMeVfmUncertainty](#) = 0.0000012
- const double [NISTConst::PlanckLength](#) = 1.616229e-35
- const double [NISTConst::PlanckLengthUncertainty](#) = 0.000038e-35
- const double [NISTConst::PlanckMass](#) = 2.176470e-8
- const double [NISTConst::PlanckMassInGeVpercSquared](#) = 1.220910e19
- const double [NISTConst::PlanckMassUncertainty](#) = 0.000051e-8
- const double [NISTConst::PlanckMassInGeVpercSquaredUncertainty](#) = 0.000029e19
- const double [NISTConst::PlanckTemperature](#) = 1.416808e32
- const double [NISTConst::PlanckTemperatureUncertainty](#) = 0.000033e32
- const double [NISTConst::PlanckTime](#) = 5.39116e-44
- const double [NISTConst::PlanckTimeUncertainty](#) = 0.00013e-44
- const double [NISTConst::protonChargeToMassQuotient](#) = 9.578833226e7
- const double [NISTConst::protonComptonWavelength](#) = 1.32140985396e-15
- const double [NISTConst::protonComptonWavelengthOver2Pi](#) = 0.210308910109e-15
- const double [NISTConst::protonElectronMassRatio](#) = 1836.15267389
- const double [NISTConst::protongFactor](#) = 5.585694702

- const double [NISTConst::protonGyromagneticRatio](#) = 2.675221900e8
- const double [NISTConst::protonGyromagneticRatioOver2pi](#) = 42.57747892
- const double [NISTConst::protonMagneticMoment](#) = 1.4106067873e-26
- const double [NISTConst::protonMagneticMomentToBohrMagnetonRatio](#) = 1.5210322053e-3
- const double [NISTConst::protonMagneticMomentToNuclearMagnetonRatio](#) = 2.7928473508
- const double [NISTConst::protonMagneticShieldingCorrection](#) = 25.691e-6
- const double [NISTConst::protonMass](#) = 1.672621898e-27
- const double [NISTConst::protonMassInJPercSquared](#) = 1.503277593e-10
- const double [NISTConst::protonMassInMeVPercSquared](#) = 938.2720813
- const double [NISTConst::protonMassInu](#) = 1.007276466879
- const double [NISTConst::protonMolarMass](#) = 1.007276466879e-3
- const double [NISTConst::protonMuonMassRatio](#) = 8.88024338
- const double [NISTConst::protonNeutronMagneticMomentRatio](#) = -1.45989805
- const double [NISTConst::protonNeutronMassRatio](#) = 0.99862347844
- const double [NISTConst::protonrmsChargeRadius](#) = 0.8751e-15
- const double [NISTConst::protonTauMassRatio](#) = 0.528063
- const double [NISTConst::protonChargeToMassQuotientUncertainty](#) = 0.000000059e7
- const double [NISTConst::protonComptonWavelengthUncertainty](#) = 0.0000000061e-15
- const double [NISTConst::protonComptonWavelengthOver2PiUncertainty](#) = 0.00000000097e-15
- const double [NISTConst::protonElectronMassRatioUncertainty](#) = 0.00000017
- const double [NISTConst::protongFactorUncertainty](#) = 0.000000017
- const double [NISTConst::protonGyromagneticRatioUncertainty](#) = 0.000000018e8
- const double [NISTConst::protonGyromagneticRatioOver2piUncertainty](#) = 0.00000029
- const double [NISTConst::protonMagneticMomentUncertainty](#) = 0.0000000097e-26
- const double [NISTConst::protonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.0000000046e-3
- const double [NISTConst::protonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.0000000085
- const double [NISTConst::protonMagneticShieldingCorrectionUncertainty](#) = 0.011e-6
- const double [NISTConst::protonMassUncertainty](#) = 0.000000021e-27
- const double [NISTConst::protonMassInJPercSquaredUncertainty](#) = 0.000000018e-10
- const double [NISTConst::protonMassInMeVPercSquaredUncertainty](#) = 0.0000058
- const double [NISTConst::protonMassInuUncertainty](#) = 0.000000000091
- const double [NISTConst::protonMolarMassUncertainty](#) = 0.000000000091e-3
- const double [NISTConst::protonMuonMassRatioUncertainty](#) = 0.00000020
- const double [NISTConst::protonNeutronMagneticMomentRatioUncertainty](#) = 0.00000034
- const double [NISTConst::protonNeutronMassRatioUncertainty](#) = 0.00000000051
- const double [NISTConst::protonrmsChargeRadiusUncertainty](#) = 0.0061e-15
- const double [NISTConst::protonTauMassRatioUncertainty](#) = 0.000048
- const double [NISTConst::quantumOfCirculation](#) = 3.6369475486e-4
- const double [NISTConst::quantumOfCirculationTimes2](#) = 7.2738950972e-4
- const double [NISTConst::quantumOfCirculationUncertainty](#) = 0.0000000017e-4
- const double [NISTConst::quantumOfCirculationTimes2Uncertainty](#) = 0.0000000033e-4
- const double [NISTConst::RydbergConstant](#) = 10973731.568508
- const double [NISTConst::RydbergConstantTimesclnHz](#) = 3.289841960355e15
- const double [NISTConst::RydbergConstantTimeshcIneV](#) = 13.605693009
- const double [NISTConst::RydbergConstantTimeshcInJ](#) = 2.179872325e-18
- const double [NISTConst::RydbergConstantUncertainty](#) = 0.000065
- const double [NISTConst::RydbergConstantTimesclnHzUncertainty](#) = 0.000000000019e15
- const double [NISTConst::RydbergConstantTimeshcIneVUncertainty](#) = 0.000000084
- const double [NISTConst::RydbergConstantTimeshcInJUncertainty](#) = 0.000000027e-18
- const double [NISTConst::SackurTetrodeConstant](#) = -1.1517084
- const double [NISTConst::SackurTetrodeConstantatm](#) = -1.1648714
- const double [NISTConst::SackurTetrodeConstantUncertainty](#) = 0.0000014
- const double [NISTConst::SackurTetrodeConstantatmUncertainty](#) = 0.0000014
- const double [NISTConst::secondRadiationConstant](#) = 1.43877736e-2
- const double [NISTConst::secondRadiationConstantUncertainty](#) = 0.00000083e-2

- const double [NISTConst::shieldedHelionGyromagneticRatio](#) = 2.037894585e8
- const double [NISTConst::shieldedHelionGyromagneticRatioOver2Pi](#) = 32.43409966
- const double [NISTConst::shieldedHelionMagneticMoment](#) = -1.074553080e-26
- const double [NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatio](#) = -1.158671471e-3
- const double [NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatio](#) = -2.127497720
- const double [NISTConst::shieldedHelionToProtonMagneticMomentRatio](#) = -0.7617665603
- const double [NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatio](#) = -0.7617861313
- const double [NISTConst::shieldedHelionGyromagneticRatioUncertainty](#) = 0.000000027e8
- const double [NISTConst::shieldedHelionGyromagneticRatioOver2PiUncertainty](#) = 0.00000043
- const double [NISTConst::shieldedHelionMagneticMomentUncertainty](#) = 0.000000014e-26
- const double [NISTConst::shieldedHelionMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.↵
000000014e-3
- const double [NISTConst::shieldedHelionMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.↵
000000025
- const double [NISTConst::shieldedHelionToProtonMagneticMomentRatioUncertainty](#) = 0.0000000092
- const double [NISTConst::shieldedHelionToShieldedProtonMagneticMomentRatioUncertainty](#) = 0.↵
0000000033
- const double [NISTConst::shieldedProtonGyromagneticRatio](#) = 2.675153171e8
- const double [NISTConst::shieldedProtonGyromagneticRatioOver2Pi](#) = 42.57638507
- const double [NISTConst::shieldedProtonMagneticMoment](#) = 1.410570547e-26
- const double [NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatio](#) = 1.520993128e-3
- const double [NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatio](#) = 2.792775600
- const double [NISTConst::shieldedProtonGyromagneticRatioUncertainty](#) = 0.000000033e8
- const double [NISTConst::shieldedProtonGyromagneticRatioOver2PiUncertainty](#) = 0.00000053
- const double [NISTConst::shieldedProtonMagneticMomentUncertainty](#) = 0.000000018e-26
- const double [NISTConst::shieldedProtonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.↵
000000017e-3
- const double [NISTConst::shieldedProtonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.↵
000000030
- const double [NISTConst::speedOfLightInVacuum](#) = 299792458.0
- const double [NISTConst::speedOfLightInVacuumUncertainty](#) = 0.0
- const double [NISTConst::standardAccelerationOfGravity](#) = 9.80665
- const double [NISTConst::standardAccelerationOfGravityUncertainty](#) = 0.0
- const double [NISTConst::standardAtmosphere](#) = 101325.0
- const double [NISTConst::standardAtmosphereUncertainty](#) = 0.0
- const double [NISTConst::standardStatePressure](#) = 100000.0
- const double [NISTConst::standardStatePressureUncertainty](#) = 0.0
- const double [NISTConst::StefanBoltzmannConstant](#) = 5.670367e-8
- const double [NISTConst::StefanBoltzmannConstantUncertainty](#) = 0.000013e-8
- const double [NISTConst::tauComptonWavelength](#) = 0.697787e-15
- const double [NISTConst::tauComptonWavelengthOver2Pi](#) = 0.111056e-15
- const double [NISTConst::tauElectronMassRatio](#) = 3477.15
- const double [NISTConst::tauMass](#) = 3.16747e-27
- const double [NISTConst::tauMassInJPercSquared](#) = 2.84678e-10
- const double [NISTConst::tauMassInMeVPercSquared](#) = 1776.82
- const double [NISTConst::tauMassInu](#) = 1.90749
- const double [NISTConst::tauMolarMass](#) = 1.90749e-3
- const double [NISTConst::tauMuonMassRatio](#) = 16.8167
- const double [NISTConst::tauNeutronMassRatio](#) = 1.89111
- const double [NISTConst::tauProtonMassRatio](#) = 1.89372
- const double [NISTConst::tauComptonWavelengthUncertainty](#) = 0.000063e-15
- const double [NISTConst::tauComptonWavelengthOver2PiUncertainty](#) = 0.000010e-15
- const double [NISTConst::tauElectronMassRatioUncertainty](#) = 0.31
- const double [NISTConst::tauMassUncertainty](#) = 0.00029e-27
- const double [NISTConst::tauMassInJPercSquaredUncertainty](#) = 0.00026e-10

- const double [NISTConst::tauMassInMeVPercSquaredUncertainty](#) = 0.16
- const double [NISTConst::tauMassInuUncertainty](#) = 0.00017
- const double [NISTConst::tauMolarMassUncertainty](#) = 0.00017e-3
- const double [NISTConst::tauMuonMassRatioUncertainty](#) = 0.0015
- const double [NISTConst::tauNeutronMassRatioUncertainty](#) = 0.00017
- const double [NISTConst::tauProtonMassRatioUncertainty](#) = 0.00017
- const double [NISTConst::ThomsonCrossSection](#) = 0.66524587158e-28
- const double [NISTConst::ThomsonCrossSectionUncertainty](#) = 0.00000000091e-28
- const double [NISTConst::tritonElectronMassRatio](#) = 5496.92153588
- const double [NISTConst::tritongFactor](#) = 5.957924920
- const double [NISTConst::tritonMagneticMoment](#) = 1.504609503e-26
- const double [NISTConst::tritonMagneticMomentToBohrMagnetonRatio](#) = 1.6223936616e-3
- const double [NISTConst::tritonMagneticMomentToNuclearMagnetonRatio](#) = 2.978962460
- const double [NISTConst::tritonMass](#) = 5.007356665e-27
- const double [NISTConst::tritonMassInJPercSquared](#) = 4.500387735e-10
- const double [NISTConst::tritonMassInMeVPercSquared](#) = 2808.921112
- const double [NISTConst::tritonMassInu](#) = 3.01550071632
- const double [NISTConst::tritonMolarMass](#) = 3.01550071632e-3
- const double [NISTConst::tritonProtonMassRatio](#) = 2.99371703348
- const double [NISTConst::tritonElectronMassRatioUncertainty](#) = 0.00000026
- const double [NISTConst::tritongFactorUncertainty](#) = 0.000000028
- const double [NISTConst::tritonMagneticMomentUncertainty](#) = 0.000000012e-26
- const double [NISTConst::tritonMagneticMomentToBohrMagnetonRatioUncertainty](#) = 0.0000000076e-3
- const double [NISTConst::tritonMagneticMomentToNuclearMagnetonRatioUncertainty](#) = 0.000000014
- const double [NISTConst::tritonMassUncertainty](#) = 0.000000062e-27
- const double [NISTConst::tritonMassInJPercSquaredUncertainty](#) = 0.000000055e-10
- const double [NISTConst::tritonMassInMeVPercSquaredUncertainty](#) = 0.000017
- const double [NISTConst::tritonMassInuUncertainty](#) = 0.00000000011
- const double [NISTConst::tritonMolarMassUncertainty](#) = 0.00000000011e-3
- const double [NISTConst::tritonProtonMassRatioUncertainty](#) = 0.00000000022
- const double [NISTConst::unifiedAtomicMassUnit](#) = 1.660539040e-27
- const double [NISTConst::unifiedAtomicMassUnitUncertainty](#) = 0.000000020e-27
- const double [NISTConst::vonKlitzingConstant](#) = 25812.8074555
- const double [NISTConst::vonKlitzingConstantUncertainty](#) = 0.0000059
- const double [NISTConst::weakMixingAngle](#) = 0.2223
- const double [NISTConst::weakMixingAngleUncertainty](#) = 0.0021
- const double [NISTConst::WienFrequencyDisplacementLawConstant](#) = 5.8789238e10
- const double [NISTConst::WienWavelengthDisplacementLawConstant](#) = 2.8977729e-3
- const double [NISTConst::WienFrequencyDisplacementLawConstantUncertainty](#) = 0.0000034e10
- const double [NISTConst::WienWavelengthDisplacementLawConstantUncertainty](#) = 0.0000017e-3
- const double [NISTConst::L](#) = AvogadroConstant
- const double [NISTConst::NA](#) = AvogadroConstant
- const double [NISTConst::LUncertainty](#) = AvogadroConstantUncertainty
- const double [NISTConst::NAUncertainty](#) = AvogadroConstantUncertainty
- const double [NISTConst::kB](#) = BoltzmannConstant
- const double [NISTConst::kBIneVPerK](#) = BoltzmannConstantIneVPerK
- const double [NISTConst::kBInHzPerK](#) = BoltzmannConstantInHzPerK
- const double [NISTConst::kBInInversemK](#) = BoltzmannConstantInInversemK
- const double [NISTConst::kBUncertainty](#) = BoltzmannConstantUncertainty
- const double [NISTConst::kBIneVPerKUncertainty](#) = BoltzmannConstantIneVPerKUncertainty
- const double [NISTConst::kBInHzPerKUncertainty](#) = BoltzmannConstantInHzPerKUncertainty
- const double [NISTConst::kBInInversemKUncertainty](#) = BoltzmannConstantInInversemKUncertainty
- const double [NISTConst::muB](#) = BohrMagneton
- const double [NISTConst::muBIneVPerT](#) = BohrMagnetonIneVPerT
- const double [NISTConst::muBInHzPerT](#) = BohrMagnetonInHzPerT

- const double [NISTConst::muBlnInversemPerT](#) = BohrMagnetonInInversemT
- const double [NISTConst::muBlnKPerT](#) = BohrMagnetonInKPerT
- const double [NISTConst::muBUncertainty](#) = BohrMagnetonUncertainty
- const double [NISTConst::muBlnVPerTUncertainty](#) = BohrMagnetonInVPerTUncertainty
- const double [NISTConst::muBlnHzPerTUncertainty](#) = BohrMagnetonInHzPerTUncertainty
- const double [NISTConst::muBlnInversemPerTUncertainty](#) = BohrMagnetonInInversemTUncertainty
- const double [NISTConst::muBlnKPerTUncertainty](#) = BohrMagnetonInKPerTUncertainty
- const double [NISTConst::a0](#) = BohrRadius
- const double [NISTConst::rBohr](#) = BohrRadius
- const double [NISTConst::a0Uncertainty](#) = BohrRadiusUncertainty
- const double [NISTConst::rBohrUncertainty](#) = BohrRadiusUncertainty
- const double [NISTConst::lambdaC](#) = ComptonWavelength
- const double [NISTConst::lambdaCOver2Pi](#) = ComptonWavelengthOver2Pi
- const double [NISTConst::lambdaCOver2PiUncertainty](#) = ComptonWavelengthOver2PiUncertainty
- const double [NISTConst::lambdaCUncertainty](#) = ComptonWavelengthUncertainty
- const double [NISTConst::lambdaCOver2PiUncertainty](#) = ComptonWavelengthOver2PiUncertainty
- const double [NISTConst::lambdaCOver2PiUncertainty](#) = ComptonWavelengthOver2PiUncertainty
- const double [NISTConst::lambdaCOver2PiUncertainty](#) = ComptonWavelengthOver2PiUncertainty
- const double [NISTConst::G0](#) = conductanceQuantum
- const double [NISTConst::G0Uncertainty](#) = conductanceQuantumUncertainty
- const double [NISTConst::e0](#) = electricConstant
- const double [NISTConst::vacuumPermittivity](#) = electricConstant
- const double [NISTConst::permittivityOfFreeSpace](#) = electricConstant
- const double [NISTConst::permittivityOfVacuum](#) = electricConstant
- const double [NISTConst::e0Uncertainty](#) = electricConstantUncertainty
- const double [NISTConst::vacuumPermittivityUncertainty](#) = electricConstantUncertainty
- const double [NISTConst::permittivityOfFreeSpaceUncertainty](#) = electricConstantUncertainty
- const double [NISTConst::permittivityOfVacuumUncertainty](#) = electricConstantUncertainty
- const double [NISTConst::e](#) = elementaryCharge
- const double [NISTConst::elementaryPositiveCharge](#) = elementaryCharge
- const double [NISTConst::eUncertainty](#) = elementaryChargeUncertainty
- const double [NISTConst::elementaryPositiveChargeUncertainty](#) = elementaryChargeUncertainty
- const double [NISTConst::Z0](#) = impedanceOfVacuum
- const double [NISTConst::impedanceOfFreeSpace](#) = impedanceOfVacuum
- const double [NISTConst::Z0Uncertainty](#) = impedanceOfVacuumUncertainty
- const double [NISTConst::impedanceOfFreeSpaceUncertainty](#) = impedanceOfVacuumUncertainty
- const double [NISTConst::KJ](#) = JosephsonConstant
- const double [NISTConst::KJUncertainty](#) = JosephsonConstantUncertainty
- const double [NISTConst::F](#) = FaradayConstant
- const double [NISTConst::FUncertainty](#) = FaradayConstantUncertainty
- const double [NISTConst::alpha](#) = fineStructureConstant
- const double [NISTConst::SommerfeldsConstant](#) = fineStructureConstant
- const double [NISTConst::alphaUncertainty](#) = fineStructureConstantUncertainty
- const double [NISTConst::SommerfeldsConstantUncertainty](#) = fineStructureConstantUncertainty
- const double [NISTConst::Eh](#) = HartreeEnergy
- const double [NISTConst::EhIneV](#) = HartreeEnergyIneV
- const double [NISTConst::EhUncertainty](#) = HartreeEnergyUncertainty
- const double [NISTConst::EhIneVUncertainty](#) = HartreeEnergyIneVUncertainty
- const double [NISTConst::n0](#) = LoschmidtConstant
- const double [NISTConst::LoschmidtsNumber](#) = LoschmidtConstant
- const double [NISTConst::n0Uncertainty](#) = LoschmidtConstantUncertainty
- const double [NISTConst::LoschmidtsNumberUncertainty](#) = LoschmidtConstantUncertainty
- const double [NISTConst::mu0](#) = magneticConstant
- const double [NISTConst::vacuumPermeability](#) = magneticConstant
- const double [NISTConst::permeabilityOfFreeSpace](#) = magneticConstant
- const double [NISTConst::permeabilityOfVacuum](#) = magneticConstant

- const double [NISTConst::mu0Uncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::vacuumPermeabilityUncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::permeabilityOfFreeSpaceUncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::permeabilityOfVacuumUncertainty](#) = magneticConstantUncertainty
- const double [NISTConst::Phi0](#) = magneticFluxQuantum
- const double [NISTConst::Phi0Uncertainty](#) = magneticFluxQuantumUncertainty
- const double [NISTConst::R](#) = molarGasConstant
- const double [NISTConst::gasConstant](#) = molarGasConstant
- const double [NISTConst::universalGasConstant](#) = molarGasConstant
- const double [NISTConst::idealGasConstant](#) = molarGasConstant
- const double [NISTConst::RUncertainty](#) = molarGasConstantUncertainty
- const double [NISTConst::gasConstantUncertainty](#) = molarGasConstantUncertainty
- const double [NISTConst::universalGasConstantUncertainty](#) = molarGasConstantUncertainty
- const double [NISTConst::idealGasConstantUncertainty](#) = molarGasConstantUncertainty
- const double [NISTConst::Mu](#) = molarMassConstant
- const double [NISTConst::MuUncertainty](#) = molarMassConstantUncertainty
- const double [NISTConst::muN](#) = nuclearMagneton
- const double [NISTConst::muNInVPerT](#) = nuclearMagnetonInVPerT
- const double [NISTConst::muNInInversemT](#) = nuclearMagnetonInInversemT
- const double [NISTConst::muNInKPerT](#) = nuclearMagnetonInKPerT
- const double [NISTConst::muNInMHzPerT](#) = nuclearMagnetonInMHzPerT
- const double [NISTConst::muNUncertainty](#) = nuclearMagnetonUncertainty
- const double [NISTConst::muNInVPerTUncertainty](#) = nuclearMagnetonInVPerTUncertainty
- const double [NISTConst::muNInInversemTUncertainty](#) = nuclearMagnetonInInversemTUncertainty
- const double [NISTConst::muNInKPerTUncertainty](#) = nuclearMagnetonInKPerTUncertainty
- const double [NISTConst::muNInMHzPerTUncertainty](#) = nuclearMagnetonInMHzPerTUncertainty
- const double [NISTConst::G](#) = NewtonianConstantOfGravitation
- const double [NISTConst::gravitationalConstant](#) = NewtonianConstantOfGravitation
- const double [NISTConst::universalGravitationalConstant](#) = NewtonianConstantOfGravitation
- const double [NISTConst::NewtonsConstant](#) = NewtonianConstantOfGravitation
- const double [NISTConst::GUncertainty](#) = NewtonianConstantOfGravitationUncertainty
- const double [NISTConst::gravitationalConstantUncertainty](#) = NewtonianConstantOfGravitationUncertainty
- const double [NISTConst::universalGravitationalConstantUncertainty](#) = NewtonianConstantOfGravitationUncertainty
- const double [NISTConst::NewtonsConstantUncertainty](#) = NewtonianConstantOfGravitationUncertainty
- const double [NISTConst::h](#) = PlanckConstant
- const double [NISTConst::hInVs](#) = PlanckConstantInVs
- const double [NISTConst::hbar](#) = PlanckConstantOver2Pi
- const double [NISTConst::hbarInVs](#) = PlanckConstantOver2PiInVs
- const double [NISTConst::reducedPlanckConstant](#) = PlanckConstantOver2Pi
- const double [NISTConst::reducedPlanckConstantInVs](#) = PlanckConstantOver2PiInVs
- const double [NISTConst::hUncertainty](#) = PlanckConstantUncertainty
- const double [NISTConst::hInVsUncertainty](#) = PlanckConstantInVsUncertainty
- const double [NISTConst::hbarUncertainty](#) = PlanckConstantOver2PiUncertainty
- const double [NISTConst::hbarInVsUncertainty](#) = PlanckConstantOver2PiInVsUncertainty
- const double [NISTConst::reducedPlanckConstantUncertainty](#) = PlanckConstantOver2PiUncertainty
- const double [NISTConst::reducedPlanckConstantInVsUncertainty](#) = PlanckConstantOver2PiInVsUncertainty
- const double [NISTConst::c](#) = speedOfLightInVacuum
- const double [NISTConst::speedOfLight](#) = speedOfLightInVacuum
- const double [NISTConst::cUncertainty](#) = speedOfLightInVacuumUncertainty
- const double [NISTConst::speedOfLightUncertainty](#) = speedOfLightInVacuumUncertainty
- const double [NISTConst::g0](#) = standardAccelerationOfGravity
- const double [NISTConst::standardAccelerationDueToGravity](#) = standardAccelerationOfGravity
- const double [NISTConst::g0Uncertainty](#) = standardAccelerationOfGravityUncertainty

- const double `NISTConst::standardAccelerationDueToGravityUncertainty` = standardAccelerationOfGravity↔Uncertainty
- const double `NISTConst::atm` = standardAtmosphere
- const double `NISTConst::atmosphericPressure` = standardAtmosphere
- const double `NISTConst::barometricPressure` = standardAtmosphere
- const double `NISTConst::atmUncertainty` = standardAtmosphereUncertainty
- const double `NISTConst::atmosphericPressureUncertainty` = standardAtmosphereUncertainty
- const double `NISTConst::barometricPressureUncertainty` = standardAtmosphereUncertainty
- const double `NISTConst::sigma` = StefanBoltzmannConstant
- const double `NISTConst::sigmaUncertainty` = StefanBoltzmannConstantUncertainty
- const double `NISTConst::RK` = vonKlitzingConstant
- const double `NISTConst::RKUncertainty` = vonKlitzingConstantUncertainty
- const double `NISTConst::WeinbergAngle` = weakMixingAngle
- const double `NISTConst::WeinbergAngleUncertainty` = weakMixingAngleUncertainty

4.1.1 Detailed Description

Constants library for physics and chemistry based off of data from NIST.

NISTConst contains a total of 335 constants compiled by the National Institute of Standards and Technology (NIST) as well as their associated uncertainties. This library provides access to the current set of basic constants and conversion factors for physics and chemistry recommended by the Committee on Data for Science and Technology (CODATA).

Constants are from CODATA-2014.

See <https://dx.doi.org/10.1063/1.4954402>

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Date

8/9/17

Version

1.0.0