
Subject: Re: Physical constants in IDL with !CONST
Posted by on Mon, 24 Dec 2012 09:37:32 GMT
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Den tisdagen den 18:e december 2012 kl. 23:34:53 UTC+1 skrev Chris Torrence:

> Hi all,

>

>

>

> I'm adding a new system variable to IDL, called !CONST. So far, it's an IDL structure containing the following physical constants, in MKS units. All of these values (except for !const.pi, .e, .phi, and .R_earth) are taken from the "2010 CODATA Recommended Values," from NIST.

>

>

>

> Name	Description	Value
> alpha	Fine structure constant	$7.2973525698 \times 10^{-3}$
> c	Speed of light in a vacuum	299792458 m/s
> e	Euler's number	2.7182818284590452
> ev	elementary charge e, 1 electron volt	$1.602176565 \times 10^{-19}$ C
> eps0	electric vacuum permittivity	$8.854187817 \times 10^{-12}$ F/m
> F	Faraday constant NAe	96485.3365 C/mol
> G	Gravitation constant	6.67384×10^{-11} m ³ /kg/s ²
> gn	Earth standard gravity	9.80665 m/s ²
> h	Planck constant	$6.62606957 \times 10^{-34}$ J s
> hbar	$\hbar/(2\pi)$	$1.054571726 \times 10^{-34}$ J s
> k	Boltzmann constant R/NA	$1.3806488 \times 10^{-23}$ J/K
> me	electron mass	$9.10938291 \times 10^{-31}$ kg
> mn	neutron mass	$1.674927351 \times 10^{-27}$ kg
> mp	proton mass	$1.672621777 \times 10^{-27}$ kg
> mu0	magnetic vacuum permeability	$12.566370614 \times 10^{-7}$ N/A ²
> Na	Avogadro constant NA	$6.02214129 \times 10^{23}$ mol ⁻¹

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> phi      golden ratio      1.6180339887498948
>
> pi      Pi      3.1415926535897932
>
> R      molar gas constant      8.3144621 J/mol/K
>
> R_earth  Earth radius (spherical)      6370997.0 m
>
> re      classical electron radius      2.8179403267 x 10-15 m
>
> rydberg  Rydberg constant Rinf      10973731.568539 m-1
>
> sigma    Stefan-Boltzmann constant      5.670373 x 10-8 W/m2/K4
>
> u      unified atomic mass unit      1.660538921 x 10-27 kg
>
>
>
> Here's my question: What am I missing? Are there any physical constants that most people
would find useful for their day-to-day work. The key is "most" people - nothing too esoteric, or
limited to a single scientific discipline, etc.
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>
> Thanks!
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>
>
> -Chris
>
> ExelisVis
>
> p.s. please limit your comments to !CONST. Our new widget system team is currently hard at
work in a secret underground bunker, and cannot be disturbed.

I suggest !const.xmase=1224 and !const.xmasd=1225.

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