Subject: Re: Physical constants in IDL with !CONST
Posted by Jeremy Bailin on Mon, 24 Dec 2012 04:21:04 GMT
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On 12/18/12 5:34 PM, Chris Torrence wrote:
> 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 x 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 x 10-19 C
eps0	electric vacuum permittivity	8.854187817 x 10-12 F/m
F	Faraday constant NAe	96485.3365 C/mol
G	Gravitation constant	6.67384 x 10-11 m3/kg/s2
gn	Earth standard gravity	9.80665 m/s2
h	Planck constant	6.62606957 x 10-34 J s
hbar	h/(2pi)	1.054571726 x 10-34 J s
k	Boltzmann constant R/NA	1.3806488 x 10-23 J/K
me	electron mass	9.10938291 x 10-31 kg
mn	neutron mass	1.674927351 x 10-27 kg
mp	proton mass	1.672621777 x 10-27 kg
mu0	magnetic vacuum permeability	12.566370614 x 10-7 N/A2
Na	Avogadro constant NA	6.02214129e23 mol-1
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.
>
> Thanks!
>
> -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.
>

Just checking against astroconst (good lord, is it really over 10 years since I updated the public version?????), all of the ones that aren't there or haven't already been mentioned are probably too astronomy-specific.

I would much prefer !CONST over !C. I just grepped my code directories and found one case of !C in there, from my first 2 months of using IDL. Think of how many cases of () subscripts you see from time to time, and take pity on people who have code still around from before they learned to be half-decent IDL programmers!

-Jeremy.
