Subject: Re: machine precision
Posted by David Fanning on Mon, 18 May 2009 11:53:36 GMT
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Wox writes:

> When checking whether two foating point variables are equal, one has
> to do this:
>
> pres = (machar()).eps
> bequal = abs(f1-f2) lt pres
>
> This can go wrong however, as illustrated by the example below. Do I
> need to do error propagation on this? This means that every time f1
> and f2 are calculated differently, I have to calculate a different
> uncertainty? This seems like a lot of work, not to mention the machine
> precision in calculation the propagation of uncertainty... Is there a
> more general rule of thumb I can use?
>
> vec1=[1.,2,3,4,5]
> vec2=vec1
> pres=(machar()).eps
> norm1=sqrt(total(vec1^2,1,/pres))
> norm2=sqrt(total(vec2^2,1,/pres))
> f1=total(vec1*vec2,/pres) ; inner product
> f2=norm1*norm2 ; product of the norms
> ; f1 and f2 must be equal so
> if abs(f1-f2) ge pres then print,'wrong wrong wrong...'

Uh, Wox, I think you need to read this article again:

http://www.dfanning.com/math_tips/sky_is_falling.html

I think if you try:

vec1 = [1.D, 2, 3, 4, 5]

you might find a different result. :-)

Cheers,

David

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Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")