
Subject: machine precision

Posted by [Wout De Nolf](#) on Mon, 18 May 2009 11:41:52 GMT

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Hi all,

When checking whether two floating point variables are equal, one has to do this:

```
pres = (machar()).eps  
bequal = abs(f1-f2) < 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 f_1 and f_2 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) > pres then print,'wrong wrong wrong...'
```
