Subject: Re: ROT is ROTTEN (a solution)
Posted by Wayne Landsman on Thu, 22 Nov 2001 04:55:17 GMT
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Martin Downing wrote:

> Regarding the accuracy issue, I can not reproduce your result:
> IDL> a = dist(2048)
> IDL> print,total(rot(a,90)) - total(a)

0.000000

I find that when I add the /DOUBLE keyword to TOTAL()I reproduce your results, so it does seem like the new rot.pro does produce exact numerical results. Alternatively,

```
{ sparc sunos unix 5.4.1 Jan 16 2001      64      64}
IDL> a = dist(2048)
IDL> print,array_equal( rotate(a,1), rot(a,-90) )
1
```

(I had also forgotten that ROTATE() is positive counterclockwise and ROT() is positive clockwise.

> This was an issue of general rotations which was just well illustrated by 90 degree examples.

I could be wrong again ;-), but I think that the original ROT had no problems except at exact multiples of 90 degrees. It doesn't matter if a rotation angle of 23 degrees loses precision and becomes 23.00001 degrees, but it does matter if 90 degrees becomes 90.00001 degrees. At 90 degrees the new image exactly overlaps the old image, and there is no need to extrapolate, but at 90.000001 degrees there will be subpixels on the edge of the new image that do not overlay the old (and which will be flagged as missing data).

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```
b= findgen(3,3)
IDL>print,rot(b,90)
     2.00000      5.00000      8.00000
     1.00000      4.00000      7.00000
     0.00000      3.00000      6.00000
IDL> print,rot(b,90.0001)
     2.00000      5.00000      7.00000
     1.00000      4.00000      7.00000
     0.00000      0.00000      3.00000
```