Subject: Re: Strange behavior of /cumulative keyword in total()
Posted by David Fanning on Tue, 04 Nov 2008 13:38:23 GMT
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Chris writes:

> Can anybody explain this?
>
> arr = fltarr(500000) + .1
> cumul = total(array, /cumulative)
>
> print, (cumul - shift(cumul, 1)) [1 : 10]
> print, (cumul - shift(cumul,1)) [499990:499999]
>
>> 0.100000 0.100000 0.100000 0.100000 0.100000 0.100000
> 0.100000 0.100000 0.100000 0.100000
>
>
>> 0.101562 0.101562 0.101562 0.101562 0.101562 0.101562
> 0.101562 0.101562 0.101562 0.101562
>
> Plotting cumul - shift(cumul,1) is even weirder. I can understand the
> net error of cumul growing over time, as floating point precision
> errors accumulate. However, shouldn't the error between any two
> entries in a cumulative sum not accumulate over the array?

Two words: double precision.

```
IDL> arr = fltarr( 500000) + .1D
IDL> cumul = total(arr, /cumulative, /double)
IDL>
IDL> print, (cumul - shift(cumul, 1)) [1 : 10]
     0.10000000      0.10000000      0.10000000      0.10000000
0.10000000      0.10000000      0.10000000      0.10000000
0.10000000      0.10000000
IDL> print, (cumul - shift(cumul,1)) [499990:499999]
     0.10000000      0.10000000      0.10000000      0.10000000
0.10000000      0.10000000      0.10000000      0.10000000
0.10000000      0.10000000
```

Cheers,

David

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David Fanning, Ph.D.

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