
Subject: smooth function and rounding error

Posted by [simona bellavista](#) on Thu, 17 Dec 2009 23:20:13 GMT

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Hi,

there is something I do not understand about smooth function, or probably about numerics in general.

I implemented my version of smooth function, following the prescription in

http://idlastro.gsfc.nasa.gov/idl_html_help/SMOOTH.html

I compared these two versions on same data, ranging from $\sim 10^{-1}$ to $\sim 10^{-5}$

and I get a relative error between the methods up to $\sim 10^{-1}$. it looks rather big.

it is the same prescription on same data. does it happen because my implementation is too naive and I accumulate rounding errors in it? or because of smooth function itself?

I am not worried about performance here, just accuracy.

my implementation is the following:

```
function smooth_equivalent, A, width
```

```
  n=n_elements(A)
```

```
  y=DBLARR(n)
```

```
  y=A
```

```
  for i=(width)/2,n-(width)/2-1,1 do begin
```

```
    y[i]=total(A[i-width/2:i+width/2-1])/width
```

```
  endfor
```

```
  RETURN, y
```

```
end
```

many thanks,

simona
