
Subject: Correlate function (bug?)

Posted by [Theo Brauers](#) on Fri, 13 Mar 1998 08:00:00 GMT

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Hi

I was facing a problem with the correlate function
which is demonstrated by the following IDL procedure:

```
pro testc
x=[1.D-5, 1.D-6, 0.0]
y=[1.D-5, 1.1D-6, 0.0]
f=[1.D0, 1.D1, 1.D2, 1.D3, 1.D4, 1.D5, 1.D6]
for i=0,6 do begin
print, i, correlate(x,y, /double) $
    , correlate(x,y*f[i], /double) $
    , correlate(x*f[i],y, /double) $
    , correlate(x*f[i],y*f[i], /double)
endfor
END
```

giving the following result:

0	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
1	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
2	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
3	1.#QNAN00	1.#QNAN00	1.#QNAN00	0.99995432
4	1.#QNAN00	1.#QNAN00	1.#QNAN00	0.99995432
5	1.#QNAN00	0.99995432	0.99995432	0.99995432
6	1.#QNAN00	0.99995432	0.99995432	0.99995432

In my opinion there is no reason for an underflow or whatever causes
correlate to return NAN.

Best Theo

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Subject: Re: Correlate function (bug?)

Posted by [thompson](#) on Mon, 16 Mar 1998 08:00:00 GMT

Theo Brauers <Th.Brauers@fz-juelich.de> writes:

> Hi

> I was facing a problem with the correlate function
> which is demonstrated by the following IDL procedure:

```
> pro testc
> x=[1.D-5, 1.D-6, 0.0]
> y=[1.D-5, 1.1D-6, 0.0]
> f=[1.D0, 1.D1, 1.D2, 1.D3, 1.D4, 1.D5, 1.D6]
> for i=0,6 do begin
>   print, i, correlate(x,y, /double) $
>   , correlate(x,y*f[i], /double) $
>   , correlate(x*f[i],y, /double) $
>   , correlate(x*f[i],y*f[i], /double)
> endfor
> END
```

> giving the following result:

> 0	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
> 1	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
> 2	1.#QNAN00	1.#QNAN00	1.#QNAN00	1.#QNAN00
> 3	1.#QNAN00	1.#QNAN00	1.#QNAN00	0.99995432
> 4	1.#QNAN00	1.#QNAN00	1.#QNAN00	0.99995432
> 5	1.#QNAN00	0.99995432	0.99995432	0.99995432
> 6	1.#QNAN00	0.99995432	0.99995432	0.99995432

> In my opinion there is no reason for an underflow or whatever causes
> correlate to return NAN.

> Best Theo

This behavior seems to have been introduced in IDL version 5. IDL/v4 doesn't have any problem, and returns the result

0	0.99995432	0.99995432	0.99995432	0.99995432
1	0.99995432	0.99995432	0.99995432	0.99995432
2	0.99995432	0.99995432	0.99995432	0.99995432
3	0.99995432	0.99995432	0.99995432	0.99995432
4	0.99995432	0.99995432	0.99995432	0.99995432
5	0.99995432	0.99995432	0.99995432	0.99995432
6	0.99995432	0.99995432	0.99995432	0.99995432

William Thompson

Subject: Re: Correlate function (bug?)

Posted by [John Smith](#) on Tue, 17 Mar 1998 08:00:00 GMT

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William Connolley wrote:

> In article 9AA03CE1@fz-juelich.de, Theo Brauers <Th.Brauers@fz-juelich.de> writes:

>> I was facing a problem with the correlate function

>> which is demonstrated by the following IDL procedure:

>

>> pro testc

>> x=[1.D-5, 1.D-6, 0.0]

>> y=[1.D-5, 1.1D-6, 0.0]

>> print, correlate(x,y, /double)

>

>> giving the following result:

>>

>> NAN

>

> The problem is due to stupid programming in the correlate function.

> You can look at the source in \$IDL_DIR/lib/correlate.pro.

> There is a tolerance (set to 1e-12 at /double, or 1e-6 otherwise) and if

> $\|x\|^2\|y\|^2$ is less than this, NAN is returned. Double precision should be

> good for a lot better than 1e-12, and anyway its more the ratio between x and y

> that would matter not the absolute value. Ho hum.

>

> Just take the code and insert tol=0 in the appropriate place...

>

> ps - the documentation doesn't mention this tolerance factor, presumably to avoid

> worrying our pretty little heads...

>

> - William

This bug was reported long time ago to RSI and they said they will fix it in one of their

next releases. Meanwhile I use the old version.

Samuel Haimov

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