
Subject: Different FFT times for same array size ?

Posted by [jcami](#) on Wed, 24 Aug 2005 05:55:26 GMT

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Hi,

First of all :

```
IDL> print, !version
```

```
{ x86 linux unix linux 6.2 Jun 20 2005    32    64}
```

I am using the blk_con program that comes with the IDL distribution. Basically, this uses fft's to do a convolution. I have a large number of arrays that all have the same number of elements, and I convolve them all with the same kernel using the blk_con program. I would think that the execution time should then be roughly the same, but apparently it is not. To get some more information on the timing, I added a short timing command in the while loop so that that part now reads :

```
while loop le k-1L do begin
  input = [input[blen-p+1:blen-1], signal[lower:upper]]
  tt=systime(1)
  output = fft((z_filter * fft(input, -1) ),1) * blen
  print, "blk_con ", loop, k-1L, systime(1)-tt
;Next output segment.
  result[ip] = double ?
DOUBLE(output[p-1:blen-1]):FLOAT(output[p-1:blen-1])
  ip = ip + blen - p + 1L
  lower = upper + 1L
  upper = lower + blen - p
  loop = loop + 1L
endwhile
```

Since the sizes of the chunks that go into the fft are always the same, and always a power of 2, the execution time should always be (roughly) the same, right ??

Now here's an example of what the print statement says for one of my arrays :

blk_con	2	150	0.034678936
blk_con	3	150	0.036569834
blk_con	4	150	0.033971071
blk_con	5	150	0.036265135
blk_con	6	150	0.039370060
blk_con	7	150	0.049736023
blk_con	8	150	0.039547920
blk_con	9	150	0.054105043
blk_con	10	150	0.036910057

blk_con	11	150	0.046661854
blk_con	12	150	0.13956809
blk_con	13	150	0.046625137
blk_con	14	150	0.058930874
blk_con	15	150	0.036964893
blk_con	16	150	0.045490980
blk_con	17	150	0.063371181
blk_con	18	150	0.037928820
blk_con	19	150	0.048100948
blk_con	20	150	0.032199144
blk_con	21	150	0.042580128
blk_con	22	150	0.034416914
blk_con	23	150	0.036769152
blk_con	24	150	0.033674002
blk_con	25	150	0.045473099
blk_con	26	150	0.035262823
blk_con	27	150	0.039651871
blk_con	28	150	0.037656784
blk_con	29	150	0.040482998
blk_con	30	150	2.7050159
blk_con	31	150	2.8096600
blk_con	32	150	2.8986051
blk_con	33	150	2.7503240
blk_con	34	150	2.8176029
...			
blk_con	73	150	2.6031480
blk_con	74	150	0.032071114
blk_con	75	150	0.029819965
blk_con	76	150	2.5321939
...			
blk_con	150	150	2.5533669

So the first 28 segments go fast, and from then on things slow down by a factor of 50 (well, except those 2 funny ones) !!

Am I missing something here ???

Note : I get the same sort of troubles if I use the astrolib's convolve function, which does pretty much the same.