
Subject: Re: Convolution of Stick Spectra
Posted by [mole6e23](#) on Thu, 14 Sep 2000 07:00:00 GMT
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bjackel@phys.ucalgary.ca wrote:

```
> It helps a bit to pre-calculate your variance term.  
> Cuts execution time from 27 to 18 seconds on my PC.  
>  
> variance_term= ( ( (.12*sqrt(energy/1000))/1.6651)*1000)^2  
> FOR indx=0L,nstick-1 DO BEGIN  
>   result = result + intensity[indx]* $  
>       exp(-((energy_scale - energy[indx])^2)/  
> variance_term[indx] )  
> ENDFOR  
>
```

Actually, I was surprised to find that didn't change the timing any on my sytem (alpha OSF unix 5.3 Nov 11 1999) to any appreciable degree. With the code I first posted (attached below as a procedure), it took about 10.5 seconds either way.

```
IDL> test  
time other:      10.706325  
time precalc:    10.545039
```

Jumping up to 20,000 elements, the timing was still pretty much identical (42.9 vs. 42.7 seconds).

Todd

```
pro test  
convoluted = fltarr( 2, 2048 )  
convoluted[0,*] = findgen( 2048 ) / 2047. * 4.  
  
;; Let's fake a stick spectrum, we usually have at least this many elements  
stick = abs(randomn( systime(1), 2, 5000 ))  
stick[0,*] = stick[0,*] * 4.  
stick[1,*] = stick[1,*] * 1000.  
  
time = systime(1)  
  
variance = (((.12*sqrt(stick[0,*]/1000))/1.6651)*1000)^2  
for i=0L, n_elements( stick ) / 2 -1 do $  
    convoluted[1,*] = stick[1,i]*exp(-((convoluted[0,*] - stick[0,i])^2)/ $  
        variance[i]) $
```

```
        + convoluted[1,*]

time2 = systime(1)

for i=0L, n_elements( stick ) / 2 -1 do $
    convoluted[1,*] = stick[1,i]*exp(-((convoluted[0,*] - stick[0,i])^2)/ $
        (((.12*sqrt(stick[0,i]/1000))/1.6651)*1000)^2) $
        + convoluted[1,*]

print, 'time other: ', systime(1) - time2
print, 'time precalc: ', time2 - time

end
```
