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
```
