Subject: Re: Looking for 3-D vector routines (dot & cross product, ..) for arrays of [x,y,z]'s
Posted by James Kuyper on Tue, 05 Mar 2002 19:29:34 GMT
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William Gallery wrote:

> I need a set of routines that operate on ***arrays*** of 3-D vectors
> (x, y, z), including:
> length of a vector
> dot- and cross- products
> included angle between two vectors
>
>
> Before I write my own, are there any out there already?

There aren't any such routines to work on arrays of vectors, but the equivalent code is fairly simple:

```
seed = 12345L
a = randomn(seed, 3, 5)
b = randomn(seed, 3, 5)

dot_product = total(a*b,1)
lengtha = total(a^2,1)^0.5
lengthb = total(b^2,1)^0.5

; Warning: not protected against division by 0:
angle = acos(dot_product/(lengtha*lengthb)
; If calculating only the angle, this is slightly faster
; since there's only one sqrt() per row
angle = acos(dot_product/(total(a^2,1)*total(b^2,1))^0.5)

cross_prod = dblarr(3,5)
cross_prod(0,*) = a(1,*)*b(2,*)-a(2,*)*b(1,*)
cross_prod(1,*) = -a(0,*)*b(2,*)+a(2,*)*b(0,*)
cross_prod(2,*) = a(0,*)*b(1,*)-a(1,*)*b(0,*)
```