Subject: Re: 3D vector rotation to the Z axis
Posted by MartyL on Tue, 04 Jan 2011 01:17:49 GMT
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On Dec 16 2010, 11:48 am, James <donje...@gmail.com> wrote:
> Do you have to use a rotation matrix? Quaternions (http://
> en.wikipedia.org/wiki/Quaternion) are more numerically stable, and
> there is an easy-to-use library by Craig Markwardt
athttp://www.physics.wisc.edu/~craigm/idl/math.html. I was just using
> them to draw some rotating polyhedra in IDL, and they work great!
> Your code would look like this:
>
> ;define the axis of rotation
> rotaxis = crossp (input, [0,0,1])
>
> ;find the angle of rotation
> rotangle = transpose(input) # [0,0,1]
>
> ;make the quaternion
> q = qtcompose(rotaxis, rotangle)
>
> ;do it
> rotated = qtvrot(input, q)
>
> ;there is even a routine to create a rotation matrix from the
> quaternion:
> rmatx = qtmat(q)
>
> by the way, I like the # operator. It lets you treat 1D arrays as
> column vectors; then defining a matrix is just concatenating a group
> of column vectors across the second dimension. Matrix-by-vector
> multiplication works like you expect.
>
> - James
>

James,
I do not need to use a rotation matrix per se, I just need to rotate
the vectors to the Z axis.
I copied your code and made a quick test procedure and I am not
getting the results I would expect. Here is the code I used:

```
PRO Rotate_to_Z_axis, input

  print, 'input = ', input
  ;define the axis of rotation
  rotaxis = crossp (input, [0,0,1])
```

```
  ;find the angle of rotation
  rotangle = transpose(input) # [0,0,1]

  ;make the quaternion
  q = qtcompose(rotaxis, rotangle)

  ;do it
  rotated = qtvrot(input, q)
  print, 'rotated = ', rotated

end
```

I then input the following at the command prompt:

```
rotate_to_z_axis, [cos(!dtor*30.0), sin(!dtor*30.0), 0.0]
```

and the results are:

```
input =      0.866025     0.500000      0.00000
rotated =      0.866025     0.500000      0.00000
```

Shouldn't the rotated vector be [0,0,1] if it is being rotated to the
Z axis? That is what I am trying to do at least.
