Subject: Help plotting a 3D Carioid...
Posted by Steve[3] on Wed, 15 Feb 2006 16:46:09 GMT
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I'm a newbie to IDL, and am having a bit of trouble doing stuff that is pretty basic in other tools. In this case, I'm trying to generate a surface plot of a 3D cartioid function. I start by defining azimuth and elevation angle matrices, then compute the range of the cartioid for each angle pair. I then want to convert from spherical to rectangular coordinates and make a surface plot of the result.

In Matlab, I was able to do the coordinate transform on the matrices in n x n form, but it appears that IDL wants the data as column vectors. However, somewhere it appears that things are getting messed up, as the resulting plot has a "hole" in it. However, when I use xplot3D to plot the result, the hole is not there...

Additionally, the surface plot just doesn't have a nice look - is there anything a bit nicer I could do, along the lines of xplot3D, but be able to do it in a pre-specified window (I'm going to be having the result plot in a GUI)? Best would be to have the surface shaded and with the color set to correspond with the magnitude of each point.

I guess what I'm looking for is a little guidance on how to get this to look a bit nicer, and what's causing the hole when I use surface...

```
            ;ang=[0:.1:2.*pi+.1]'; (this is what I used in
Matlab...)
            ang=transpose(2*!PI*findgen(64)/63)
 n=size(ang, /N_ELEMENTS )
 ones=fltarr(n,1)+1
 theta_a=(ang##ones)
 ;ang2=[0:.05:pi+.05]'-pi/2;  (this is what Iused in Matlab)
 ang2=transpose(!PI*findgen(n)/(n-1)-!PI/2) ; (should be roughly
equivalent to above)
 theta_e=transpose(ang2##ones)
    rcart=1+cos(!pi/2-theta_e)

    theta_a_1d=reform(theta_a,1,n*n)
    theta_e_1d=reform(theta_e,1,n*n)
    rcart_1d=reform(rcart,1,n*n)
 sph=[theta_a_1d,theta_e_1d,rcart_1d]

 rectc=cv_coord(from_sphere=sph, /to_rect)
 x_1d=rectc(0,*)
 y_1d=rectc(1,*)
 z_1d=rectc(2,*)
 x=reform(x_1d,n,n)
```

```
y=reform(y_1d,n,n)
z=reform(z_1d,n,n)

        surface, z,x,y
        xplot3d, x,y,z
```