Subject: Create curves
Posted by g.nacarts on Fri, 16 Oct 2015 13:41:02 GMT
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Hi

I created an ellipsoid shape as follows

```
NX=128
NY=128
Ellipxe = fltarr(NX,NY)

for i=0L, NX-1 do begin
  for j=0L, NY-1 do begin
       if (0.1*(j-50)^2.+0.23*(i-95)^2. LT 100) then begin
    Ellipse[i,j] = 10.
 endif
  endfor
endfor
tvscl, Ellipse
```

I wanted to change the direction of the ellipse to be diagonal (i.e. not plotted vertically). Does anyone knows how to do that?

Also I found that the bean curve in Cartesian coordinates has the following form:

(x^2+y^2)^2 = x^3+y^3

I tried the following but it doesn't work

```
NX=128
NY=128
Bean_curve = fltarr(NX,NY)

for i=0L, NX-1 do begin
  for j=0L, NY-1 do begin
       if ((0.1*(j)^2.+0.23*(i)^2.)^2. EQ (0.1*(j)^3.+0.23*(i)^3.)) then begin
    Bean_Curve[i,j] = 10.
 endif
  endfor
endfor

tvscl, bean_Curve
```

Can anyone help with this?

Subject: Re: Create curves
Posted by David Fanning on Fri, 16 Oct 2015 13:56:49 GMT
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g.nacarts@gmail.com writes:

> I created an ellipsoid shape as follows
>
> NX=128
> NY=128
> Ellipxe = fltarr(NX,NY)
>
> for i=0L, NX-1 do begin
> for j=0L, NY-1 do begin
> if (0.1*(j-50)^2.+0.23*(i-95)^2. LT 100) then begin
> Ellipse[i,j] = 10.
> endif
> endfor
> endfor
> tvscl, Ellipse
>
>
> I wanted to change the direction of the ellipse to be diagonal (i.e. not plotted vertically). Does anyone knows how to do that?

I think I would use TVEllipse from the NASA Astronomy Library with the
angle parameter set to 45 degrees.

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: Create curves
Posted by g.nacarts on Fri, 16 Oct 2015 14:13:08 GMT
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Other way beside the NASA Astronomy Library?

I don't want to use the TVEllipse because I want to create the ellipse as an array not just to display it.

Subject: Re: Create curves
Posted by Russell[1] on Fri, 16 Oct 2015 14:46:48 GMT
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This is probably going to sound more complicated than it actually is. But all you need to do is the rotation matrix to rotate your coordinate system.

https://en.wikipedia.org/wiki/Rotation_matrix

so if the center of your ellipse is at (xc,yc) then the coordinates of the new ellipse will be

```
theta=45.
s=sin(theta*!PI/180)
c=cos(theta*!PI/180.)
dx=x-xc
dy=y-yc

x = xc + c*dx+s*dy
y = yc  - s*dx+c*dy
```

and now you use the definition of an ellipse:

r^2 = (x/a)^2 + (y/b)^2

This is all tvellipse does. If you don't want to use tvellipse, then just open it up and you'll see pretty much the same equations there. I didn't test this cause I didn't understand exactly what you want, so you'll need to work it over a bit (but it's the correct idea). I think I used a negative angle (when wiki uses a positive one) and used the fact that sin is an odd function.

On Friday, October 16, 2015 at 9:41:08 AM UTC-4, g.na...@gmail.com wrote:

```
> Hi
>
> I created an ellipsoid shape as follows
>
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> Ellipxe = fltarr(NX,NY)
>
> for i=0L, NX-1 do begin
>   for j=0L, NY-1 do begin
>        if (0.1*(j-50)^2.+0.23*(i-95)^2. LT 100) then begin
>     Ellipse[i,j] = 10.
>  endif
>   endfor
> endfor
```

> tvscl, Ellipse
>
>
> I wanted to change the direction of the ellipse to be diagonal (i.e. not plotted vertically). Does anyone knows how to do that?
>
>
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> Bean_Curve[i,j] = 10.
> endif
> endfor
> endfor
>
> tvscl, bean_Curve
>
> Can anyone help with this?

Subject: Re: Create curves
Posted by g.nacarts on Fri, 16 Oct 2015 15:56:59 GMT
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Yes, I found the TVEllipse document and I had a look on that one.
The problem is that I want to make an array with this ellipse and they way I did it I only got a black window when I display it. My code is shown below

```
xc=90.  ;center in x-direction
yc=50.  ;center in y-direction

theta=45.  ;angle to rotate
s=sin(theta*!pi/180.)
c=cos(theta*!pi/180.)
dx=xc
dy=yc

for x=0L, NX-1 do begin
```

```
  for y=0L, NY-1 do begin
 if ((xc + c*dx+s*dy )/2.)^2 + (( yc - s*dx+c*dy )/4.)^2 LT 100 then begin
   Ellipse[x,y] = 10.
 endif
  endfor
endfor
tvscl, Ellipse
```