Subject: Re: labeling my polarplot
Posted by David Fanning on Fri, 28 Feb 2003 17:15:13 GMT
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Helena (hschlueter@ifm.uni-kiel.de) writes:

> i want to label my polarplot in polarcoordinates. i tried it with
> xyouts but its not working. the plot is a circle with a radiationfield
> inside, thats with polar_contour. around of the field is the circle
> with plot. the circle should be labelled with tickmarks (45, 90, 135,
> 180,...360 degree). can anybody help me with that? thanks for
> responding.

Oh, dear. Well, IDL is not going to give you a lot
of help here. One of the problems (as I discovered
this morning) is that the ISOTROPIC keyword on the
CONTOUR (or POLAR_CONTOUR) command doesn't exactly
give you an isotropic plot. :-(

It's *almost* isotropic. But it is just damn hard
to fit a circle around the plot. (An ellipse works.) :-)

Anyway, in the code below, I had to resort to my ASPECT
program to calculate the correct position for the
plot in the window. It was the only way I could fit
a circle around it.

  http://www.dfanning.com/programs/aspect.pro

And there is only one program in the world worth having
to draw a circle, and that is TVCIRCLE from the NASA
Goddard Astronomy Library:

  http://idlastro.gsfc.nasa.gov/homepage.html

That said, here is some code that will produce a filled
polar contour plot, with circular annotations.

```
;************************************************************ *******
PRO Example

  ; Number of contour levels

nlevels = 12

  ; Load program colors.

LoadCT, 0
```

```
LoadCT, 13, NColors=nlevels, Bottom=1
annotation = nlevels + 2
background = nlevels + 3
foreground = nlevels + 4
TVLCT,  70, 70, 70, annotation
TVLCT, 255, 255, 224, background
TVLCT, 0, 0, 0, foreground
contourcolors = Indgen(nlevels)+1

   ; Create data values to be contoured.

nr = 12 ; number of radii
nt = 18 ; number of Thetas
r = FINDGEN(nr)/(nr-1)
theta = 2*!PI * FINDGEN(nt)/(nt-1)
z = COS(theta*3) # (r-0.5)^2
z = z * 1000.0

   ; Create contour levels.

step = (Max(z) - Min(z)) / nlevels
levels = Min(z) + Indgen(nlevels) * step

   ; Create the polar contour plot:

IF (!D.Flags AND 256) NE 0 THEN BEGIN
   Device, Decomposed=0
   Window, XSize=500, YSize=500
ENDIF
POLAR_CONTOUR, z, theta, r, /CELL_FILL, $
   c_color=contourcolors, Levels=levels, $
   Position=Aspect(1.0), $
   ;ISOTROPIC=1, $  ; This doesn't work :-(
   XStyle=4, YStyle=4, $
   BACKGROUND=background, $
   Color=foreground
POLAR_CONTOUR, z, theta, r, Levels=levels, /OVERPLOT, $
   C_Label=Replicate(1, nlevels), Color=foreground

   ; Draw a circle.

TVCircle, 1.0, 0, 0, /Data, Color=annotation, Thick=2

   ; Draw tick marks on the circle.

FOR j=0, 315, 45 DO BEGIN
   degrees = j * !DtoR
   PLOTS, [0.95*cos(degrees), 1.05*cos(degrees)], $
```

```
        [0.95*sin(degrees), 1.05*sin(degrees)], $
        Color=annotation, Thick=2
ENDFOR

   ; Label the plot.

XYOutS, 1.1, -0.03, '0', Charsize = 1.25, $
   Color=annotation, Alignment=0.0, CharThick=2
XYOutS, 0.8, 0.77, '45', Charsize = 1.25, $
   Color=annotation, Alignment=0.0, CharThick=2, Orientation=45
XYOutS, 0.0, 1.1, '90', Charsize = 1.25, $
   Color=annotation, Alignment=0.5, CharThick=2
XYOutS, -0.8, 0.77, '135', Charsize = 1.25, $
   Color=annotation, Alignment=1.0, CharThick=2, Orientation=-45
XYOutS, -1.1, -0.03, '180', Charsize = 1.25, $
   Color=annotation, Alignment=1.0, CharThick=2
XYOutS, -0.8, -0.83, '225', Charsize = 1.25, $
   Color=annotation, Alignment=1.0, CharThick=2, Orientation=45
XYOutS, 0.0, -1.2, '270', Charsize = 1.25, $
   Color=annotation, Alignment=0.5, CharThick=2
XYOutS, 0.8, -0.83, '315', Charsize = 1.25, $
   Color=annotation, Alignment=0.0, CharThick=2, Orientation=-45

END
 ;************************************************************ *******
```

Notice that everything uses data coordinates. If you use DEVICE coordinates (as you were trying to do in your original code) you will have a devil of a time getting the code to work both on your display and in PostScript output.

This code will work in whatever device you care to draw it in.

Cheers,

David

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