
Subject: mixing plots and images in IDL

Posted by [lucio](#) on Fri, 08 Sep 1995 07:00:00 GMT

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I had been told that the correct way to plot an image in colour or grayscale in an axis frame (with or without overplotted a contour) was :

```
; set up ps device
;
device,yoffset=3,ysize=16,xsize=16.9443
!p.font=0
device,/helvetica,font_size=12
device,bits_per_pixel=8
device,/color
; plot axes to set window
plot,a.data(0:255,1),xrange=[1,256],yrange=[1,256],/nodata,color=1
; scale image and set 0 to white
c=bytsc1(a.data,min=0.90,max=1.11)
c(where(c eq 0b))=255B
; plot image
tv,c,!x.window(0),!y.window(0),xsize=!x.window(1)-!x.window(
0),ysize=!y.window(1)-!y.window(0),/norm
; replot axes
plot,a.data(0:255,1),xrange=[1,256],yrange=[1,256],/nodata,/noerase,color=1
```

and this apparently works OK.

The trick is the use of the !x.window keys

Now what I want to do is to plot a colour bar with the indication of the levels in some part of the frame. To do this I thought to do :

```
; construct the color bar as a small rectangular image
;
y=findgen(210)
y=0.90+y*0.001
z=fltarr(210,20)
for i=0,19 do z(0:209,i)=y
;
; apply the same scaling as for the main image
c=bytsc1(z,min=0.90,max=1.11)
c(where(c eq 0b))=255B
tv,c,20,220,xsize=100,ysize=20,/data          <-----
;
; annotate with the levels
device,/helvetica,font_size=5
for i=0,209,20 do xyouts,20+100*float(i)/210.,240,string(y(i),format='(F4.2)')
for i=0,209,20 do oplot,[20+100*float(i)/210.,20+100*float(i)/210.],[235,239]
```

I'd expect this (in my frame 0:256 0:256) to plot a colour bar in the rectangle (20:120 220:240), and annotate it with 11 ticks from 0.90 to 1.10.

The point is that the width and size of the colour bar are not what I expect (I've used /DATA coordinates in the TV statement)

I've then played interactively using a Postscript previewer, and I found that I could (BUT I DO NOT UNDERSTAND WHY) fix the width of the bar applying a fudge factor :

```
tv,c,20,220,xsize=0.82*100,ysize=0.82*100*20./210.,/data
```

So I inserted that in my code and tried again but ... in the final plot the colour bar came out of the wrong size.

It looks like there is an interference between the size of the font I use and the size of the color bar

In summary :

```
device,/helvetica,font_size=12
plot axes
tv main image
replot axes
tv colour bar with fudge
device,/helvetica,font_size=5
annotate ticks
```

IS WRONG

```
device,/helvetica,font_size=5      SIC !
plot axes
tv main image
replot axes
tv colour bar with fudge
device,/helvetica,font_size=5
annotate ticks
```

IS CORRECT (BUT NOT WHAT I WANT !)

```
device,/helvetica,font_size=5
plot axes
tv main image
tv colour bar with fudge
device,/helvetica,font_size=5
annotate ticks
device,/helvetica,font_size=12
```

replot axes

GIVES THE CORRECT COLOUR BAR BUT THE AXES ARE REPLOTTED WRONG

Now I'd try to play around always with /NORM coordinates, but I'd appreciate if somebody could explain the interference between TV, axis setting and font setting

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