Subject: IDLgrVolume rendering bug
Posted by markb77 on Wed, 10 Jun 2015 11:56:03 GMT
View Forum Message <> Reply to Message

hi,

I've run into what seems like a serious bug in the IDLgrVolume object (it was in fact Dick Jackson who uncovered this).

Here is the problem. When setting the LOCATION property of an IDLgrView object which contains the volume object, the volume object doesn't adjust to the new LOCATION. Rather, it remains rendered as if the LOCATION of the IDLgrView remains at [0,0].

I am rendering multiple IDLgrViews in an IDLgrScene object, and I am using the LOCATION property of the views to allow the user to move each view and its contents around the screen. All other graphics objects (lines, plots, images) seem to render normally and as expected when changing the LOCATION of the view. It is only the IDLgrVolume object that doesn't react.

I have written a short code to demonstrate the problem:

```
;-----------------------------------

pro volume_render_bug

   ; determine the path to the image file

   imgfile = FILEPATH('rose.jpg', $
      SUBDIRECTORY = ['examples', 'data'])

   READ_JPEG, imgfile, imgdat


   ; set up the volume data

   vdata = BYTARR(64,64,64)
   FOR i=0,63 DO vdata[*,i,0:i] = i*2
   vdata[5:15, 5:15, 5:55] = 128
   vdata[45:55, 45:55, 5:15] = 255


   ; initialize window and view sizes


   winx = 650
   winy = 750

   vol_viewx = 300
   vol_viewy = 300
```

```
vol_view_dims = [vol_viewx,vol_viewy]



; Initialize graphics objects


; set up the image

oImage = OBJ_NEW('IDLgrImage', imgdat)

oImage -> GetProperty, DIMENSIONS = imgdims
imgx = imgdims[0]
imgy = imgdims[1]

img_model = OBJ_NEW('IDLgrModel')

img_model -> Add, oImage

oimgview = OBJ_NEW('IDLgrView', $
                VIEWPLANE_RECT = [0.0, 0.0, imgx, imgy], $
                LOCATION=[350,300], $
                DIMENSIONS=imgdims, $
                COLOR=[0,0,0])

oimgview -> Add, img_model



; set up the volume object

oVolume = OBJ_NEW('IDLgrVolume', vdata)

vol_datamodel = OBJ_NEW('IDLgrModel')
vol_rotationmodel = OBJ_NEW('IDLgrModel')

vol_datamodel -> Add, oVolume
vol_datamodel -> Translate, -32.0, -32.0, -32.0

vol_rotationmodel -> Add, vol_datamodel

ovolview = OBJ_NEW('IDLgrView', $
                VIEWPLANE_RECT =[-50.0,-50.0,100.0,100.0], $
                LOCATION=[0,0], $
                DIMENSIONS=vol_view_dims, $
                COLOR=[0,0,0], $
                EYE = 65.0, $
                ZCLIP = [64.0, -64.0])
```

```
ovolview -> Add, vol_rotationmodel


; create a bounding box around the volume object

oboundingbox = obj_new('IDLgrModel')
bBoxThick = 1
bBoxColor = [255, 255, 255]

for x1=0, 1 do for y1=0, 1 do for z1=0, 1 do begin

   if x1 eq 0 then begin

      xLine = [[0, y1, z1], [1, y1, z1]]

      oboundingbox -> Add, $
         obj_new('idlgrpolyline', $
               xLine, $
               thick=bBoxThick, $
               Color=bBoxColor)

   endif

   if y1 eq 0 then begin

      yLine = [[x1, 0, z1], [x1, 1, z1]]

      oboundingbox -> Add, $
         obj_new('idlgrpolyline', $
               yLine, $
               thick=bBoxThick, $
               Color=bBoxColor)

   endif

   if z1 eq 0 then begin

      zLine = [[x1, y1, z1], [x1, y1, 1-z1]]

      oboundingbox -> Add, $
         obj_new('idlgrpolyline', $
               zLine, $
               thick=bBoxThick, $
               Color=bBoxColor)

   endif
```

```
endfor

vol_datamodel -> Add, oboundingbox
oboundingbox -> Scale, 64.0, 64.0, 64.0


; set up the on-screen text

msgtxt = ['Shifting the IDLgrView which contains the ' + $
        'IDLgrImage works', $
        'as expected.']

otext1 = obj_new('IDLgrText', msgtxt, $
              LOCATIONS=[[0.1,0.9],[0.1,0.8]], $
              COLOR=[255,255,255], $
              HIDE=1)

msgtxt2 = ['There is a problem when shifting the ' + $
        'IDLgrView which contains', $
        'the IDLgrVolume object.  The polylines shift ' + $
        'with the IDLgrView', $
        'but the volume does not move.']

otext2 = obj_new('IDLgrText', msgtxt2, $
              LOCATIONS=[[0.1,0.6],[0.1,0.5],[0.1,0.4]], $
              COLOR=[255,255,255], $
              HIDE=1)

msgtxt3 = ['This appears to be a bug in the IDLgrVolume object']

otext3 = obj_new('IDLgrText', msgtxt3, $
              LOCATIONS=[0.1,0.2], $
              COLOR=[255,255,255], $
              HIDE=1)

otextmodel = obj_new('IDLgrModel')

otextview = obj_new('IDLgrView', $
                DIMENSIONS = [winx,200], $
                LOCATION = [0,500], $
                COLOR = [0,0,0], $
                VIEWPLANE_RECT=[0.0,0.0,1.0,1.0])

otextmodel -> Add, otext1
otextmodel -> Add, otext2
otextmodel -> Add, otext3
otextview -> Add, otextmodel
```

```
; set up the scene

oscene = OBJ_NEW('IDLgrScene', COLOR=[0,0,0])

oscene -> Add, ovolview
oscene -> Add, oimgview
oscene -> Add, otextview


oWindow = OBJ_NEW('IDLgrWindow', $
                  RETAIN = 0, $
                  DIMENSIONS = [winx,winy], $
                  TITLE = 'Volume render bug')

oWindow -> Erase, COLOR=[0,0,0]

oWindow -> Draw, oscene

wait, 0.5

otext1 -> SetProperty, HIDE=0

wait, 0.5

; move the image by changing the location property
; of the image view

nmoves = 200
movescale = 30.0

oimgview -> GetProperty, LOCATION=init_loc

for i = 0, nmoves-1 do begin

   dx = sin( (2.0*!pi) * (i/float(nmoves-1)) ) * movescale
   dy = sin( (2.0*!pi) * (i/float(nmoves-1)) ) * movescale

   oimgview -> SetProperty, $
      LOCATION=[init_loc[0]+dx,init_loc[1]+dy]

   oWindow -> Draw, oscene

endfor

wait, 0.5

otext2 -> SetProperty, HIDE=0
```

```
wait, 0.5

; rotate the volume

nrots = 200

for i = 0, nrots-1 do begin

   rot_incr = 360.0/nrots
   vol_rotationmodel -> Rotate, [1,1,0], rot_incr
   oWindow -> Draw, oscene

endfor


; rotate the volume while moving the view

nrots = 200
movedx = 300
movedy = 0

ovolview -> GetProperty, LOCATION=vol_init_loc
vx = vol_init_loc[0]
vy = vol_init_loc[1]

for i = 0, nrots-1 do begin

   rot_incr = 360.0/nrots
   move_x_incr = movedx/float(nrots)
   move_y_incr = movedy/float(nrots)

   vol_rotationmodel -> Rotate, [1,1,0], rot_incr

   ovolview-> SetProperty, $
      LOCATION = [vx+(i*move_x_incr), vy+(i*move_y_incr)]

   oWindow -> Draw, oscene

endfor

wait, 0.5

otext3 -> SetProperty, HIDE=0

wait, 0.5

oWindow -> Draw, oscene
```

end

;----------

Does anyone have any ideas about this?

thanks!
Mark
