
Subject: Re: texture map on cylindrical section
Posted by [Rick Towler](#) on Wed, 06 Apr 2005 00:03:03 GMT
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Rob wrote:

> Hi,
>
> I'm trying to texture map an image onto a cylindrical section (created
> with an IDLgrPolygon object) but I'm having trouble determining the
> proper texture mapping coordinates to display it properly. Can I use
> the vertices or connectivity arrays that were calculated from MESH_OBJ
> somehow for this?

Yes, something as simple as this will work:

```
zMax = MAX(verts[2,*], MIN = zMin)
yMax = MAX(verts[1,*], MIN = yMin)
texCoords = [(verts[2,*] - zMin) / (zMax - zMin), $
             (verts[1,*] - yMin) / (yMax - yMin)]
```

You'll have to pick the plane you want to project your image onto. In the case above I chose the zy plane. This may or may not be right for you, I didn't really look.

Now, maybe you already know how to do this and you realize that this won't apply the texture uniformly across the cylinder and that's why you are posting...

To do that I would create your cylinder orthogonal to the XZ plane centered about the origin (you can worry about transforming it later). Then I would calculate the "horizontal" texcoords as a function of the angle of rotation about the Y axis:

```
yMax = MAX(verts[1,*], MIN = yMin)
rotAngle = atan(verts[0,*],verts[2,*]) * !RADEG
cMax = MAX(rotAngle, MIN = cMin)
texCoords = [(rotAngle - cMin) / (cMax - cMin), $
             (verts[1,*] - yMin) / (yMax - yMin)]
```

You'll probably have to dress that up a bit.

So here it is all together. Enjoy!

-Rick

```
pro cylindrical_sector
; This procedure attempts to create a section of a cylindrical
```

```
; shell.
```

```
; Use extrusion to create the cylindrical section
```

```
; First create an arc in the x-y plane
```

```
radius = 1.0 & height = 1.0
```

```
th_lo = 25.0 & th_hi = 180.-th_lo
```

```
n = 50 & dth = (th_hi-th_lo)/(n - 1.0)
```

```
th = th_lo+dth*findgen(n)
```

```
x = radius * cos(!dth * th)
```

```
z = radius * sin(!dth * th)
```

```
y = replicate(-0.5*height,n)
```

```
type = 5 ; extrusion
```

```
; Create the array based on x and y
```

```
array = fltarr(3,n)
```

```
for i = 0,n-1 do array[0:2,i] = [x[i],y[i],z[i]]
```

```
; Use MESH_OBJ to create the extruded section
```

```
mesh_obj, type, verts, polys, array, p1=1, p2=[0,1,0]
```

```
; Create a model into which we'll stuff the POLYGON object
```

```
omodel = obj_new('IDLgrModel')
```

```
; Create the image data to be texture-mapped onto the
```

```
; POLYGON object.
```

```
;image_data = bytscl(hanning(32,32))
```

```
image_data =
```

```
  read_image(filepath('glowing_gas.jpg',subdir=['examples','data']))
```

```
help, image_data
```

```
oimage = obj_new('IDLgrImage',image_data)
```

```
; Create the POLYGON object
```

```
osection = obj_new('IDLgrPolygon',verts,style = 2,polygons = polys, $
```

```
  color = [255,255,255],texture_map = oimage)
```

```
omodel->add,osection
```

```
; easy method - not quite right
```

```
xMax = MAX(verts[0,*], MIN = xMin)
```

```
yMax = MAX(verts[1,*], MIN = yMin)
```

```
texCoords = [(verts[0,*] - xMin) / (xMax - xMin), $
```

```
  (verts[1,*] - yMin) / (yMax - yMin)]
```

```
osection -> SetProperty, texture_coord=texCoords
```

```
xobjview,omodel, /block
```

```
; better method
```

```
yMax = MAX(verts[1,*], MIN = yMin)
```

```
rotAngle = atan(verts[0,*],verts[2,*]) * !RADEG
cMax = MAX(rotAngle, MIN = cMin)
texCoords = [(rotAngle - cMin) / (cMax - cMin), $
              (verts[1,*] - yMin) / (yMax - yMin)]
```

```
osection -> SetProperty, texture_coord=texCoords
xobjview,omodel, /block
```

```
obj_destroy, [omodel,oimage]
```

```
end
```

Subject: Re: texture map on cylindrical section
Posted by [Rob\[1\]](#) on Wed, 06 Apr 2005 00:24:05 GMT
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Rick,

Thanks a million. That works very nicely.

Rob

Rick Towler wrote:

```
>
> Yes, something as simple as this will work:
>
> zMax = MAX(verts[2,*], MIN = zMin)
> yMax = MAX(verts[1,*], MIN = yMin)
> texCoords = [(verts[2,*] - zMin) / (zMax - zMin), $
>              (verts[1,*] - yMin) / (yMax - yMin)]
>
> You'll have to pick the plane you want to project your image onto.
In
> the case above I chose the zy plane. This may or may not be right
for
> you, I didn't really look.
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you
> are posting...
>
> To do that I would create your cylinder orthoginal to the XZ plane
> centered about the origin (you can worry about transforming it
later).
> Then I would calculate the "horizontal" texcoords as a function of
the
```

```

> angle of rotation about the Y axis:
>
> yMax = MAX(verts[1,*], MIN = yMin)
> rotAngle = atan(verts[0,*],verts[2,*]) * !RADEG
> cMax = MAX(rotAngle, MIN = cMin)
> texCoords = [(rotAngle - cMin) / (cMax - cMin), $
>              (verts[1,*] - yMin) / (yMax - yMin)]
>
> You'll probably have to dress that up a bit.
>
> So here it is all together.  Enjoy!
>
> -Rick
>
>
> pro cylindrical_sector
> ; This procedure attempts to create a section of a cylindrical
> ; shell.
>
> ; Use extrusion to create the cylindrical section
> ; First create an arc in the x-y plane
> radius = 1.0 & height = 1.0
> th_lo = 25.0 & th_hi = 180.-th_lo
> n = 50 & dth = (th_hi-th_lo)/(n - 1.0)
> th = th_lo+dth*findgen(n)
> x = radius * cos(!dth * th)
> z = radius * sin(!dth * th)
> y = replicate(-0.5*height,n)
>
> type = 5 ; extrusion
> ; Create the array based on x and y
> array = fltarr(3,n)
> for i = 0,n-1 do array[0:2,i] = [x[i],y[i],z[i]]
>
> ; Use MESH_OBJ to create the extruded section
> mesh_obj, type, verts, polys, array, p1=1, p2=[0,1,0]
>
> ; Create a model into which we'll stuff the POLYGON object
> omodel = obj_new('IDLgrModel')
>
> ; Create the image data to be texture-mapped onto the
> ; POLYGON object.
> ;image_data = bytscl(hanning(32,32))
> image_data =
> read_image(filepath('glowing_gas.jpg',subdir=['examples','da ta']))
> help, image_data
> oimage = obj_new('IDLgrImage',image_data)
>

```

```
> ; Create the POLYGON object
> osection = obj_new('IDLgrPolygon',verts,style = 2,polygons = polys, $
>   color = [255,255,255],texture_map = oimage)
> omodel->add,osection
>
> ; easy method - not quite right
> xMax = MAX(verts[0,*], MIN = xMin)
> yMax = MAX(verts[1,*], MIN = yMin)
> texCoords = [(verts[0,*] - xMin) / (xMax - xMin), $
>   (verts[1,*] - yMin) / (yMax - yMin)]
> osection -> SetProperty, texture_coord=texCoords
>
> xobjview,omodel, /block
>
>
> ; better method
> yMax = MAX(verts[1,*], MIN = yMin)
> rotAngle = atan(verts[0,*],verts[2,*]) * !RADEG
> cMax = MAX(rotAngle, MIN = cMin)
> texCoords = [(rotAngle - cMin) / (cMax - cMin), $
>   (verts[1,*] - yMin) / (yMax - yMin)]
>
> osection -> SetProperty, texture_coord=texCoords
> xobjview,omodel, /block
>
> obj_destroy, [omodel,oimage]
>
> end
```
