

---

Subject: 3D VOLUME VISUALIZATION

Posted by [MC](#) on Thu, 20 Feb 2003 04:51:57 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

A=array[100,80,160]

containing 0,1,2,3,10.

The numbers represent different materials within a solid.

Will like to visualize it in 3D.

Any suggestion on either program/code fragment which will produce nice visualization? Also to do various cutting and slicing?

Tried XVOLUME but doesn't work (?) - got black screen.

Thanks,  
Mark

---

---

Subject: Re: 3D VOLUME VISUALIZATION

Posted by [s\[1\]](#) on Thu, 20 Feb 2003 16:25:12 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Hi,

I suppose XVOLUME renders a black screen because the highest value in your data set is 10, rescale it to 0..255 and you should see something with XVOLUME.

Hope this helps,

Sebastian

On Thu, 20 Feb 2003, MC wrote:

> A=array[100,80,160]

> containing 0,1,2,3,10.

> The numbers represent different materials within a solid.

>

> Will like to visualize it in 3D.

>

> Any suggestion on either program/code fragment which will produce nice  
> visualization? Also to do various cutting and slicing?

>

> Tried XVOLUME but doesn't work (?) - got black screen.

>

> Thanks,  
> Mark  
>  
>  
>

---

---

Subject: Re: 3D VOLUME VISUALIZATION  
Posted by [Dick Jackson](#) on Thu, 20 Feb 2003 16:34:03 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

"MC" <markchan@shaw.ca> wrote in message  
news:N9Z4a.285092\$Yo4.11083327@news1.calgary.shaw.ca...  
> A=array[100,80,160]  
> containing 0,1,2,3,10.  
> The numbers represent different materials within a solid.  
>  
> Will like to visualize it in 3D.  
>  
> Any suggestion on either program/code fragment which will produce nice  
> visualization? Also to do various cutting and slicing?  
>  
> Tried XVOLUME but doesn't work (?) - got black screen.  
>  
> Thanks,  
> Mark

Hi Mark,

XVolume works pretty well if the data values use more of the 0-255 range.

This is a random mix of the 0,1,2,3,10 values:

```
a = ([0B,1B,2B,3B,10B])[byte(randomu(seed,100,80,160)*5)]
```

XVolume, a ; Doesn't look like much  
XVolume, a\*25 ; Is much easier to work with

You have to work with Color and Opacity to really show it off, but does this show up for you with what looks like a block of granite?

Cheers,  
--  
-Dick

Dick Jackson / [dick@d-jackson.com](mailto:dick@d-jackson.com)  
D-Jackson Software Consulting / <http://www.d-jackson.com>

---

Subject: Re: 3D VOLUME VISUALIZATION  
Posted by [idle](#) on Wed, 29 Dec 2004 03:06:39 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Is there any way to make the volume transparent so one can see through the volume instead only the front plane? Thanks!

---

---

Subject: Re: 3D VOLUME VISUALIZATION  
Posted by [Antonio Santiago](#) on Wed, 29 Dec 2004 07:22:13 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

idle wrote:

> Is there any way to make the volume transparent so one can see through  
> the volume instead only the front plane? Thanks!  
>

I supposing you are talking about IDLgrVolume. The RGB\_TABLE0 is the color table (256x3 array) for your DATA0 data and OPACITY\_TABLE0 is the opacity (256 array) for every element of the RGB\_TABLE0 color table. Then, for every color you can assign an opacity ("alpha channel").

Bye.

---

---

Subject: Re: 3D VOLUME VISUALIZATION  
Posted by [idle](#) on Mon, 03 Jan 2005 21:55:21 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Antonio Santiago wrote:

> idle wrote:  
>> Is there any way to make the volume transparent so one can see through  
>> the volume instead only the front plane? Thanks!  
>>  
>  
>  
> I supposing you are talking about IDLgrVolume. The RGB\_TABLE0 is the  
> color table (256x3 array) for your DATA0 data and OPACITY\_TABLE0 is the  
> opacity (256 array) for every element of the RGB\_TABLE0 color table.  
> Then, for every color you can assign an opacity ("alpha channel").  
>

> Bye.

Thanks. I met another problem as I first deal with 3D visulation. I can show the data on the screen, but when I use OBJ\_NEW('IDLgrClipboard') to try to save it to a file as postscript, the eps file is just a dark images. By the way, how to save the image as a jpeg file?

following is part of the code to draw and save the image.

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

```
loadct,13
tvlct, r, g, b,/get
rgb=bytarr(256,3)
rgb(*,0)=r & rgb(*,1)=g & rgb(*,2)=b

myvolume = OBJ_NEW('IDLgrVolume', da)
cc=[-0.5,1.0/64.0]
myvolume->SetProperty,XCOORD_CONV=cc,YCOORD_CONV=cc,ZCOORD_CONV=cc
mywindow = OBJ_NEW('IDLgrWindow',DIMENSIONS=[400,400])
;mywindow = OBJ_NEW('IDLgrClipboard')

myview = OBJ_NEW('IDLgrView',VIEWPLANE_RECT=[-1,-1,2,2], $
ZCLIP=[2.0,-2.0],color=[50,50,50])
mymodel = OBJ_NEW('IDLgrModel')
myview->Add,mymodel
mymodel->Add,myvolume
mymodel->rotate,[1,1,1],20
opac = BYTARR(256)
opac[0:127] = BINDGEN(128)/8
myvolume->SetProperty,OPACITY_TABLE0=opac
myvolume->SetProperty,RGB_TABLE0=rgb
mywindow->Draw,myview
;mywindow->Draw,myview,VECTOR=1,POSTS=1,FILE='rgb.eps'
;mywindow->Draw,myview,VECTOR=0,POSTS=0,FILE='a.bmp'
```

---

Subject: Re: 3D VOLUME VISUALIZATION

Posted by [Karl Schultz](#) on Mon, 03 Jan 2005 22:38:23 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

"idle" <tangsk@astro.umass.edu> wrote in message  
news:1104789321.046793.159050@f14g2000cwb.googlegroups.com.. .

>

> Antonio Santiago wrote:

>> idle wrote:

>>> Is there any way to make the volume transparent so one can see

> through

>>> the volume instead only the front plane? Thanks!

```

>>>
>>
>>
>> I supossing you are talking about IDLgrVolume. The RGB_TABLE0 is the
>> color table (256x3 array) for your DATA0 data and OPACITY_TABLE0 is
> the
>> opacity (256 array) for every element of the RGB_TABLE0 color table.
>> Then, for every color you can asign an opacity ("alpha channel").
>>
>> Bye.
>
> Thanks. I met another problem as I first deal with 3D visulation. I can
> show the data on the screen, but when I use OBJ_NEW('IDLgrClipboard')
> to try to save it to a file as postscript, the eps file is just a dark
> images.

```

It is documented that volume object won't render when using vector output. While a volume object ultimately is rendered as a 2D image, and 2D images can be rendered with vector output, IDL still does not render volumes in vector output. This is because per-pixel depth information is maintained in a volume object so that surfaces and other geometric primitives can be rendered correctly with volume data on devices that have depth buffers. Vector output cannot use depth buffering.

```

> By the way, how to save the image as a jpeg file?

```

You could render your scene into an IDLgrBuffer object, read the pixel data, and then use WRITE\_JPEG to create a jpeg file.

```

>
> following is part of the code to draw and save the image.
> ;-----
>
> loadct,13
> tvlct, r, g, b,/get
> rgb=bytarr(256,3)
> rgb(*,0)=r & rgb(*,1)=g & rgb(*,2)=b
>
> myvolume = OBJ_NEW('IDLgrVolume', da)
> cc=[-0.5,1.0/64.0]
> myvolume->SetProperty,XCOORD_CONV=cc,YCOORD_CONV=cc,ZCOORD_CONV=cc
> mywindow = OBJ_NEW('IDLgrWindow',DIMENSIONS=[400,400])
> ;mywindow = OBJ_NEW('IDLgrClipboard')
>
> myview = OBJ_NEW('IDLgrView',VIEWPLANE_RECT=[-1,-1,2,2], $
> ZCLIP=[2.0,-2.0],color=[50,50,50])
> mymodel = OBJ_NEW('IDLgrModel')

```

```
> myview->Add,mymodel
> mymodel->Add,myvolume
> mymodel->rotate,[1,1,1],20
> opac = BYTARR(256)
> opac[0:127] = BINDGEN(128)/8
> myvolume->SetProperty,OPACITY_TABLE0=opac
> myvolume->SetProperty,RGB_TABLE0=rgb
> mywindow->Draw,myview
> ;mywindow->Draw,myview,VECTOR=1,POSTS=1,FILE='rgb.eps'
> ;mywindow->Draw,myview,VECTOR=0,POSTS=0,FILE='a.bmp'
>
```

---

---

Subject: Re: 3D volume Visualization

Posted by [David Fanning](#) on Sat, 23 Nov 2013 13:46:08 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Amin Farhang writes:

> I have some gas density in a room where at any point in space I know it's density (x,y,z,rho), so my input data are as like as:

```
>
> x1 y1 z1 rho1
> x2 y2 z2 rho2
> x3 y3 z3 rho3
> .
> .
> .
>
>
```

> How can I have 3D volume plot of this gas density?

> is it possible I have interactively control rotation?

> and is it possible I paint the clouds according to its density?

>

> I use IDL7

If you are going to use IDL 7, then you probably have no real choice except to use the IDLgrVolume object. Pass it to XObView to gain interactive rotational ability. To create your 3D grid, you could use Interpolate or maybe even JD Smith's Hist\_ND.

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: 3D volume Visualization  
Posted by [markb77](#) on Mon, 02 Dec 2013 13:12:25 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

hi,

I'm just wondering how well this turned out? I'm interested in doing something similar..

best,  
Mark

---

---

Subject: Re: 3D volume Visualization  
Posted by [amin farhang](#) on Thu, 05 Dec 2013 00:17:31 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Hi,

Thanks for your answer. but now the question is how we could paint a 3d isocontour to a desired color? for instance in below example is it possible to color the cloud to red? and how I could add axes to plot?

```
IDL> RESTORE, FILEPATH('clouds3d.dat', SUBDIR=['examples','data'])
IDL> SHADE_VOLUME, clouds, 0.1, v, p, /LOW
IDL> s = SIZE(clouds)
IDL> SCALE3, XRANGE=[0,S[1]], YRANGE=[0,S[2]], $
IDL> ZRANGE=[0,S[3]], AX=0, AZ=45
IDL> TV, POLYSHADE(v, p, /T3D)
```

Cheers,

---

---

Subject: Re: 3D volume Visualization  
Posted by [David Fanning](#) on Thu, 05 Dec 2013 00:39:42 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Amin Farhang writes:

> Thanks for your answer. but now the question is how we could paint a 3d isocontour to a desired color? for instance in below example is it possible to color the cloud to red? and how I could add axes to plot?

```
>  
> IDL> RESTORE, FILEPATH('clouds3d.dat', SUBDIR=['examples','data'])  
> IDL> SHADE_VOLUME, clouds, 0.1, v, p, /LOW  
> IDL> s = SIZE(clouds)  
> IDL> SCALE3, XRANGE=[0,S[1]], YRANGE=[0,S[2]], $  
> IDL> ZRANGE=[0,S[3]], AX=0, AZ=45  
> IDL> TV, POLYSHADE(v, p, /T3D)
```

This is *\*really\** hard to do in direct graphics. Wouldn't you rather do this in the true 3d coordinate system of object graphics? It would be so much easier. Plus, you could rotate it to your heart's content.

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.")

---