Subject: Re: iVolume isosurface placement
Posted by Karl Schultz on Fri, 24 Feb 2006 16:22:14 GMT
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On Fri, 24 Feb 2006 09:18:01 -0600, Kenneth Bowman wrote:

> I have been experimenting with iVolume in order to understand my problem with
> displaying isosurfaces.
>
> I think the following example demonstrates the problem clearly.
>
>
>
> n = 5
> x = FINDGEN(n)/(n-1)
> x3 = REBIN(REFORM(x, n, 1, 1), n, n, n)
> y3 = REBIN(REFORM(x, 1, n, 1), n, n, n)
> z3 = REBIN(REFORM(x, 1, 1, n), n, n, n)
> vol = z3 - SIN(!PI*x3)*SIN(!PI*y3)
>
> iVolume, vol, /NO_SAVEPROMPT, $
>   VOLUME_LOCATION = [0.0, 0.0, 0.0], $
>   VOLUME_DIMENSIONS = [1.0, 1.0, 1.0]
>
>
>
> After the volume is created, add an isosurface at the level 0.0 by using
>   Operations...Volume...Isosurface.
>
> The peak in the surface should be at (x,y) = (0.5,0.5), not (0.4,0.4), and the
> isosurface should span the whole data space, 0 -> 1.
>
> Volume slicing (Operations...Volume...Image plane) and volume rendering
> operations do place the data correctly.
>
> If you have a lot of points in your data set, you may not care that isosurfaces
> are squeezed by one grid point in each direction, but for my purposes, this is
> causing me real problems.

I think it is a bug in idlitvisisosurface__define.pro. The scaling should
be accomplished with a value one less than the volume dimensions since the
number of voxels is one less than the number of samples in each direction:

```
;; Prepare vertex data
;; - scale by dimensions
oDimensions = self->GetParameter('VOLUME_DIMENSIONS')
if OBJ_VALID(oDimensions) then begin
   success = oDimensions->GetData(dimensions)
```

```
      dimensions = FLOAT(dimensions)
      volDims = SIZE(*pVol, /DIMENSIONS)
      verts[0,*] *= dimensions[0] / (volDims[0]-1) ; change
      verts[1,*] *= dimensions[1] / (volDims[1]-1) ; change
      verts[2,*] *= dimensions[2] / (volDims[2]-1) ; change
   endif
```

I'll file a bug report. But you should be able to apply this change
yourself and get on with things. And yeah, you're right in that it is
hard to notice with bigger volumes.

Karl