## Subject: Re: using irregularly spaced coordinates with ray-casting in iVolume Posted by brian.niebergal@gmail on Wed, 11 Mar 2009 18:19:19 GMT View Forum Message <> Reply to Message

On Mar 11, 9:13 am, Jeremy Bailin <astroco...@gmail.com> wrote: > On Mar 10, 9:59 pm, "Kenneth P. Bowman" <k-bow...@null.edu> wrote: > > >> In article >> < 876f0fb1-0416-4f50-9377-c36f914f4...@a5g2000pre.googlegroups .com >, "brian.nieber...@gmail.com" <bri>omlieber...@gmail.com> wrote: >>> Hello everyone. >>> I've seen a few similar posts to this one, but there doesn't seem to >>> be a good (easy) answer that I can understand. :) >>> How does one use irregularly spaced (xyz) coordinates with the >>> IDLgrVolume ray-casting volume renderer? >>> I haven't used any of IDL's 3D features before and so I'm kind of >>> lost. Normally, using the "contour" command I would type something >>> like: >>> contour,3Ddata\_slice,dim\_x,dim\_y > >>> where dim\_x and dim\_y are my irregularly spaced coordinates. >>> If it helps, my data isn't completely irregular, that is to say there >>> is an equation that dictates the spacing between adjacent coordinate >>> points (involves a step function half-way through the data though). > >>> I realize the algorithm for accomplishing this with ray-casting is not >>> trivial, but if anyone renders hydrodynamical simulations, using >>> adaptive mesh refinement, they must also need this feature. >>> It seems this is related to why the "logarithmic axis" option in axis >>> properties is greyed out? >>> Thank you, >>> - Brian Niebergal PhD Student University of Calgary >>> www.capca.ucalgary.ca/~bniebergal/ >> I am pretty sure that the volume renderer requires regular grids.

>> My suggestion is to create a regular grid from your irregular data

- >> by interpolation.
- >> Ken Bowman

- > How many levels of refinement do you have? If it's not too many, you
- > could re-grid everything down to the finest grid level to get a
- > regularly-spaced grid, like Ken suggests. Of course, probably the
- > reason you're using AMR is because doing the entire volume at the
- > highest resolution is impossible. ;-) So that may not work so well.

>

> -Jeremy.

## Thank you for your responses!

Indeed I am using a very large dataset (~2GB per variable, times 5 or 8 variables) that has a large difference between the finest grid level and largest. So I would either lose a lot of resolution, or end up with an excessively large data set, or some combination of both. This is my last resort option.

I had noticed that in iVolume one can scale the image, which is essentially what I want, but I would like to scale it using something other than a constant value (eg. a function). I tried looking through some of the iVolume (sub-)programs quickly, but couldn't find what I was looking for. I couldn't even find where this IDLgrVolume routine is located.

Does anyone have an idea of where I could start looking to accomplish what I want? Or more specifically which IDL program would I want to modify?

Thank you again,

- Brian Niebergal