
Subject: Re: using irregularly spaced coordinates with ray-casting in iVolume
Posted by brian.niebergal@gmail.com on Wed, 11 Mar 2009 18:19:19 GMT
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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" <brian.nieber...@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
