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Subject: IDL & HDF-5 files: Reading attributes at (unknown) list elements

Posted by [Luds](#) on Tue, 08 Sep 2009 20:32:44 GMT

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Hello,

I'm new to hdf5 file formats, but am comfortable with IDL. I have a question about reading hdf5 files which I can't seem to solve, and can find no useful help on any available resource.

Here it is....

I'm working with N-body simulation outputs in hdf5 format, and have run the same simulation twice; once at very low resolution (i.e. small file size for testing), and once at high resolution (i.e. ~34 Gb file size, for production). The files contain a header with a bunch of basic info on the run, and attributes which are the particle data: (3D) position, (3D) velocities, and (1D int) array if particle "ID"s.

Associated with each of these files I have another file which lists (apart from the header) only a set of particle IDs; a (non-contiguous) subset of IDs from the simulation output above (these IDs are used to tag particles in the simulation file that happen to cluster together during the run - and the ultimate goal is to analyze these "particle clusters"). Let's call this one "ID\_file", since it's only full of IDs.

With the small simulation file there are no problems. I just read the desired attribute for all particles using something like this:

```
group_id    = h5g_open(file_id,gName)
dataset_id  = h5d_open(group_id,desired_particle_attr)
particle_Attr = h5d_read(dataset_id)
```

I can then simply match the IDs found in ID\_file with those in the simulation file to access the list elements of the positions and velocities of particles belonging to the "particle clusters".

The problem is with the big simulation... I can't read the entire file

into memory, not even one attribute at a time. So what I need to have is a quick way to read from the simulation file only certain elements of the attributes: those corresponding to the IDs found in ID\_file. Remember, all IDs in ID\_file are in the simulation file also, but are not necessarily ordered in the same way.

So, is there a way I can read from the simulation file only the elements of attribute\_1 (pos, or vel) that match a pre-defined set of attribute\_2 (IDs from ID\_file)? It seems I should be able to use something like H5S\_SELECT\_ELEMENTS, but I can't figure that procedure out for my life.

If this is impossible.... I also know the positions of the center for each "particle cluster" so perhaps I could somehow read just a cube of data surrounding the center position. I can't think of any way to work-around my problem, and IDL doesn't have the best hdf5 documentation.

Thanks for any advice anyone may have!

Luds

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