

[FLASH-USERS] small numbers in guard cellsod

Klaus Weide klaus at flash.uchicago.edu
Mon Sep 22 13:56:19 CDT 2014

On Tue, 23 Sep 2014, you wrote:

*>I am trying to setup a simulation using FLASH code. It runs well in a test
>problem, Sod Shock-Tube, using the original initial parameters. But when I
>run it using physical parameters in units of "cgs", it raises a warning:*

Hi,

Some remarks without looking at any details of your failures:

You have lowered your initial values of density and pressure by many orders of magnitude, with respect to the default flash.par. That should be fine, IF you also adjust the values of several runtime parameters that are used as lower bounds on some variables. In particular, you should set:

```
smlrho      # threshold value for density
smallp      # threshold value for pressure
smallT      # threshold value for temperature
smallE      # threshold value for energy
```

These should usually all be significantly smaller than the smallest values of the corresponding variables that you expect to occur physically.

If you do not set them, default values of 1.E-10 will be used, which is clearly not appropriate for your application.

You may also have to adjust other runtime parameters to your application. In particular, the timestep-related parameters

```
dtinit
dtmin
dtmax
```

come to mind.

Finally, I recommend testing with lower resolution first (NOT lrefine_max=8) in order to sort out those issues.

Klaus
