Abstract

Thorn SampleIO serves as an example for creating your own I/O thorns. Its code is clearly structured and well documented, and implements a very simple and light-weight but fully functioning Cactus I/O method.

Together with the documentation about I/O methods in the Cactus Users' Guide and the chapter about thorn IOUtil in the Cactus Thorn Guide you should be able to use this code and modify/extend it according to your needs.

1 Purpose

Thorn SampleIO registers the I/O method SampleIO with the Cactus flesh I/O interface. This method prints the data values of three-dimensional, distributed Cactus grid functions/arrays at a chosen location to screen.

The implemented I/O method makes use of the Cactus Hyperslabbing API to obtain the data values to print.

2 SampleIO Parameters

Parameters to control the SampleIO I/O method are:

- **SampleIO::out_vars**
  
  This parameter denotes the variables to output as a space-separated list of full variable and/or group names.

- **SampleIO::point_x, SampleIO::point_y, SampleIO::point_z**
  
  The location of the data point to output for all variables is given in index coordinates (starting from 0) on a three-dimensional computational grid.

- **SampleIO::out_every**
  
  This parameter sets the frequency for periodic output. A positive value means to output every so many iterations. A negative value chooses the value of the general IO::out_every integer parameter to be taken. A value of zero disables SampleIO periodic output. The value for out_every is used for all variables by default. This
can be overwritten for individual variables by appending an option string to the variable name, like in

SampleIO::out_vars = "MyThorn::MyVar[out_every=2]".

All parameters are steerable, i.e. they can be changed at runtime. The code in thorn SampleIO includes the logic to check whether a parameter has been changed since the last output, and how to re-evaluate the I/O parameters.

3 Notes

Like any other I/O thorn should do, SampleIO inherits general I/O parameters from thorn IOUtil. Therefore this I/O helper thorn must be included in the ThornList of a Cactus configuration in order to compile thorn SampleIO, and also activated at runtime in the ActiveThorns parameter in your parameter file.