Benchmarks of Cactus Computational Toolkit IO Methods

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Abstract

This thorn contains benchmarks for the different IO methods which are provided by the Cactus Computational Toolkit.

1 Introduction

When performing lots of IO, the speed of writing data to disk can be crucially important for performance. Writing data depends on many factors: the type of filesystem being written to, the bandwidth to that filesystem, the IO method used for writing, and the selection of processors which write data.

This thorn provides benchmark tests for comparing different platforms and options, and ultimately results for to compare against. The thorn is very simple, it declares 100 3D grid functions, and provides parameter files to test IO with these grid functions. Currently the tests are all for checkpointing the grid functions.

2 Using This Thorn

To use this thorn simply run the different parameter files in the `par` directory and note the reported timings. Be aware that the parameter files can create significant amounts of data.

Note that the speed of writing data to disk is highly dependent on the file system being written to, and you may want to change the parameter `IO::checkpoint_dir` to experiment with this.

When using multiple processors, the speed of writing will depend on how many processors are doing the writing, change the parameter files with `8procs` in the name to change the number of processors used.