TACC Technical Report IMP-21

Adaptive mesh refinement

Victor Eijkhout*

February 22, 2016

The University of Texas at Austin and the Texas Advanced Computing Center make no warranty, express or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed.

* `eijkhout@tacc.utexas.edu`, Texas Advanced Computing Center, The University of Texas at Austin

Abstract

AMR stuff

The following IMP reports are available or under construction:

IMP-00 The IMP Elevator Pitch
IMP-01 IMP Distribution Theory
IMP-02 The deep theory of the Integrative Model
IMP-03 The type system of the Integrative Model
IMP-04 Task execution in the Integrative Model
IMP-05 Processors in the Integrative Model
IMP-06 Definition of a ‘communication avoiding’ compiler in the Integrative Model
IMP-07 Associative messsaging in the Integrative Model (under construction)
IMP-08 Resilience in the Integrative Model (under construction)
IMP-09 Tree codes in the Integrative Model
IMP-10 Thoughts on models for parallelism
IMP-11 A gentle introduction to the Integrative Model for Parallelism
IMP-12 K-means clustering in the Integrative Model
IMP-13 Sparse Operations in the Integrative Model for Parallelism
IMP-14 1.5D All-pairs Methods in the Integrative Model for Parallelism (under construction)
IMP-15 Collectives in the Integrative Model for Parallelism
IMP-16 Processor-local code generation (under construction)
IMP-17 The CG method in the Integrative Model for Parallelism (under construction)
IMP-18 A tutorial introduction to IMP software (under construction)
IMP-19 Report on NSF EAGER 1451204.
IMP-20 A mathematical formalization of data parallel operations
IMP-21 Adaptive mesh refinement (under construction)
IMP-22 Implementing LULESH in IMP (under construction)

1 Story

2 Implementation

We use partial distributions a lot.

One. We set the same mask on the beta as on the output. Does that sasve any purpose?

```
beta_distribution = distribution_from_structure
  (outvector->get_distribution(),pstruct);
if (outvector->has_mask())
  beta_distribution->add_mask(outvector->get_mask());
```

Two. The beta mask is unrelated to the input masks. For instance, in a broadcast the input has a mask, but the output and beta not.

References