Orthogonal Scheduling of Stencil Computations with Chapel Iterators

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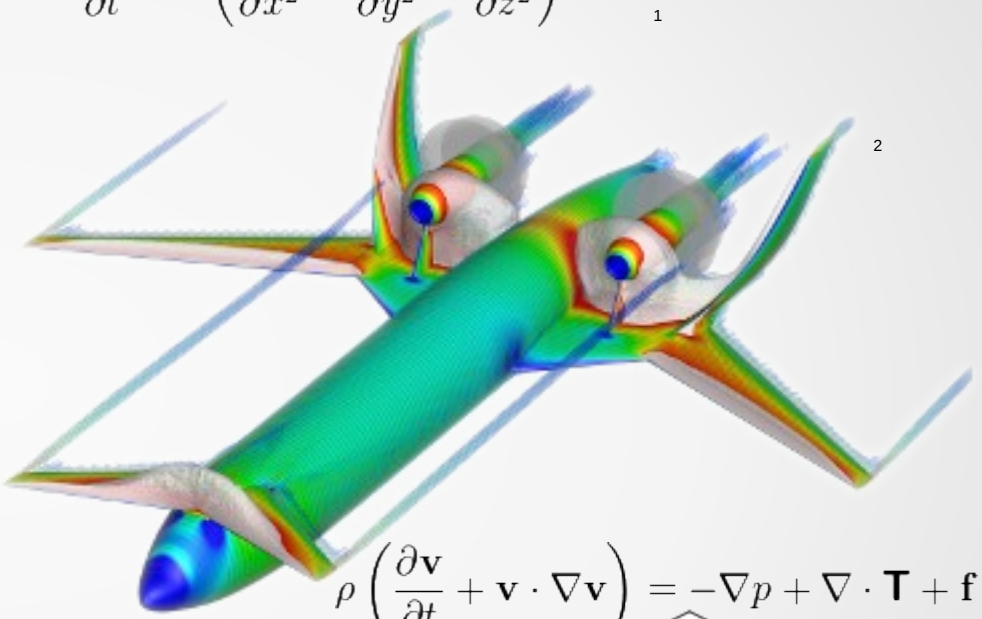
ENERGY

Overview

- Scientific simulation code is very compute and memory heavy
- Use advanced scheduling techniques to better order the memory access patterns on multi-core machines.
- Problem: Developing and maintaining the code for these schedules is difficult.
- Solution: Library of Chapel iterators providing these advanced schedules

$$\frac{\partial u}{\partial t} - \alpha \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} \right) = 0$$

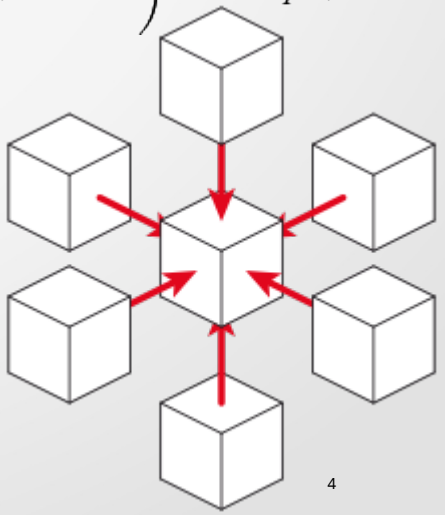
1



2

$$\rho \left(\frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \nabla \cdot \mathbf{T} + \mathbf{f}$$

3



4

Want more?

- See the poster today!
  - Poster #8
- Can't do today?
  How about SuperComputing2014?
  - Poster: Tuesday 5:15-7 p.m.
  - Lightning Talk: Tuesday 12:15-1:15 p.m.
- Email me: ibertola@rams.colostate.edu

Image References

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