Chapel: Wrap Up
Outline

- About Chapel v1.1
- Implementation status
- External collaborations
Chapel Version 1.1

• Features
  • Open source at http://sourceforge.net/projects/chapel/
  • Distributed under the BSD Open Source license
  • Ported to Linux/Unix, Mac, Cygwin

• Contents
  • Compiler, runtime, standard modules, third-party libraries
  • Language spec, quick reference, numerous examples

• Highlights
  • Most data-parallel operations execute in parallel
  • Improved control of data parallelism
  • Completed Block and Cyclic distributions
Implementation Status

- **Language Basics**
  - No support for inheritance from multiple or generic classes
  - Incomplete support for sparse arrays and domains
  - No support for skyline arrays
  - Several internal memory leaks

- **Task Parallelism**
  - No support for atomic statements
  - Memory consistency model is not guaranteed

- **Data Parallelism**
  - Promoted functions/operators do not preserve shape
  - No partial scans or reductions
Collaborations

- **Notre Dame/ORNL** (Peter Kogge, Srinivas Sridharan, Jeff Vetter)
  Asynchronous software transactional memory over distributed memory
- **UIUC** (David Padua, Albert Sidelnik, Maria Garzaran)
  CPU-GPU computing
- **BSC/UPC** (Alex Duran)
  Chapel over Nanos++ user-level tasking
- **U. Malaga** (Rafa Asenio, Maria Gonzales, Rafael Larossa)
  Parallel file I/O
- **OSU** (Gagan Agrawal, Bin Ren)
  User-defined reductions over FREERIDE
- **U. Colorado** (Jeremy Siek, Jonathan Turner)
  Interfaces and generics
- **PNNL/CASS-MT** (John Feo, Daniel Chavarria)
  Hybrid computing in Chapel; Cray XMT performance tuning; ARMCI port
- **ORNL** (David Bernholdt *et al.*, Steve Poole *et al.)*
  Code studies – Fock matrices, MADNESS, Sweep3D, coupled models, ...
- **Berkeley** (Dan Bonachea, Paul Hargrove *et al.*)
  Efficient GASNet support; collective communication
- **U. Oregon/Paratools Inc.** (Sameer Shende)
  Performance analysis with Tau
Chapel Interns

- Mackale Joyner (‘05 – Rice)
- Robert Bocchino (‘06 – UIUC)
- James Dinan (‘07 – Ohio St.)
- Andy Stone (‘08 – Colorado St.)
- Jacob Nelson (‘09 – U. Wash.)
- Albert Sidelnik (‘09 – UIUC)
- Jonathan Turner (‘10 – U. Colorado)
- Hannah Hemmaplardh (‘10 – U. Wash.)