Development Plans

Mission and General Plan

The goal of ASPECT is to provide the geoscience community with an extensible software written in C++ to support research in simulating convection in the Earth mantle and elsewhere by providing a well-documented, tested code base.

The general goals are:

1. To include community developed features: provide help and review contributions
2. To run tutorials and hackathons
3. To fix bugs and maintain the code base
4. Benchmarking and implementation of new features based on CIG and community feedback
5. To provide regular software releases
6. To provide support via mailing list, github issues, etc.

Suggested current work items (2017)

1. Interface to couple BurnMan & ASPECT
2. Revision of the 2nd ASPECT paper
3. Work on deal.II related features
4. Initial work on coupling with the mineral physics toolbox BurnMan
5. Deprecation of outdated features towards ASPECT 2.0
6. Redesign of non-linear solver infrastructure (tests/benchmarks)
7. Merge the Newton solver
8. Implement and test the new parameter GUI

term plan

Stokes Solver improvements (melt preconditioner, Schur complement improvements, GMG)
Benchmarking of different compressible formulations
Participate in community benchmark efforts
Perform parallel performance benchmarking of deal.II and ASPECT to increase efficiency
Develop a robust non-linear solver framework
Develop a robust and scalable passive and active tracer code
Improve interoperability with codes used in other fields of study e.g. mineral physics, seismology, or the planetary sciences
Provide coupling with the mineral physics toolbox BurnMan

Items

CT 1.5.0 release
ccessfully benchmarked ASPECT with the Blankenbach benchmarks
work on parameter GUI

n in December before AGU
ECT paper got submitted
ted and merged a correct Boussinesq, ALA, and TALA approximation
lly benchmarked ASPECT with the TanGurnis and King2010 benchmarks
er has been published
ce paper “Stability and accuracy of free surface time integration in viscous flows” has been accepted
ged a large number of improvements to the particle code, making it vastly faster than it was before
ibing the techniques underlying the particle code has been written and submitted
nitial BurnMan coupling module for adiabatic conditions coming out of mineral physics data