

Scalable algebraic solvers for PDEs. Encapsulate parallelism in high-level objects. Active & supported user community. Full API from Fortran, C/C++, Python.

Optimization

Time Integrators

Nonlinear Algebraic Solvers

Krylov Subspace Solvers

Preconditioners

**Domain-
Specific
Interfaces**

Networks

Quadtree / Octree

Unstructured Mesh

Structured Mesh

Vectors

Index Sets

Matrices

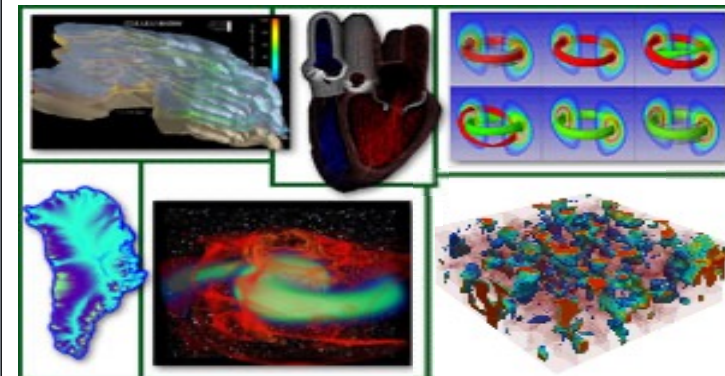
Computation & Communication Kernels

■ Easy customization and composability of solvers at runtime

- Enables optimality via flexible combinations of physics, algorithmics, architectures
- Try new algorithms by composing new/existing algorithms (multilevel, domain decomposition, splitting, etc.)

■ Portability & performance

- Largest DOE machines, also clusters, laptops; NVIDIA, AMD, and Intel GPUs
- Thousands of users worldwide



PETSc provides the backbone of diverse scientific applications.

clockwise from upper left: hydrology, cardiology, fusion, multiphase steel, relativistic matter, ice sheet modeling

