

Easy to Use

You do not need an accelerator to run the library. The hardware support is checked at run time! To use PARALUTION, no knowledge in OpenMP, OpenCL and CUDA is required.

Dual License Model

The library is available under a dual license model - GPLv3 and commercial. With the dual license model we are targeting at the same time the industry and the academic users.

	Basic GPLv3 version	Single - node/ accelerator version	Multi - node/ accelerator version
Basic GPLv3	■	■	■
Single node	■	■	■
Commercial license		■	■
Advanced solvers		■	■
Full complex support		■	■
More advanced solvers			■
MPI communication layer			■

Gefördert durch:



aufgrund eines Beschlusses des Deutschen Bundestages



Existenzgründungen aus der Wissenschaft



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PARALUTION



The Library for Iterative Sparse Methods on Multi - and Many-core Platforms



About PARALUTION Labs

PARALUTION Labs is a company with competence in parallel computation and applied mathematics. It delivers various software solutions to the CAE (Computer Aided Engineering) market. The company is located in Gaggenau, BW, Germany and operates on a global scale.

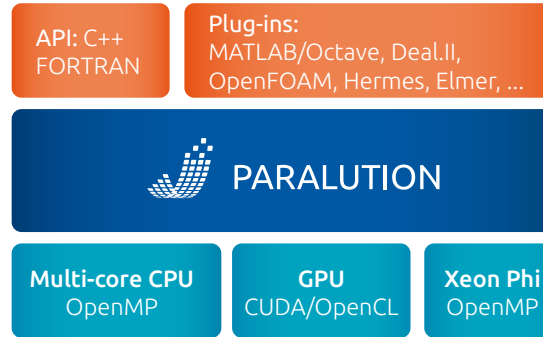
The core of the company is the development and support of the PARALUTION Library. This is a highly efficient and easy to use software for iterative sparse methods which can be used on multi-core CPUs, GPUs and other accelerators, as well as in multi-node/multi-GPU configurations.

Consultancy

Due to the nature of our work, we have profound knowledge in parallel computation with OpenMP, OpenCL, CUDA, MPI and many other languages. We have worked on various projects to fully design new parallel software and to modernize existing software frameworks. We have vast experience with C, C++ and FORTRAN. Do you need help? Let us know!

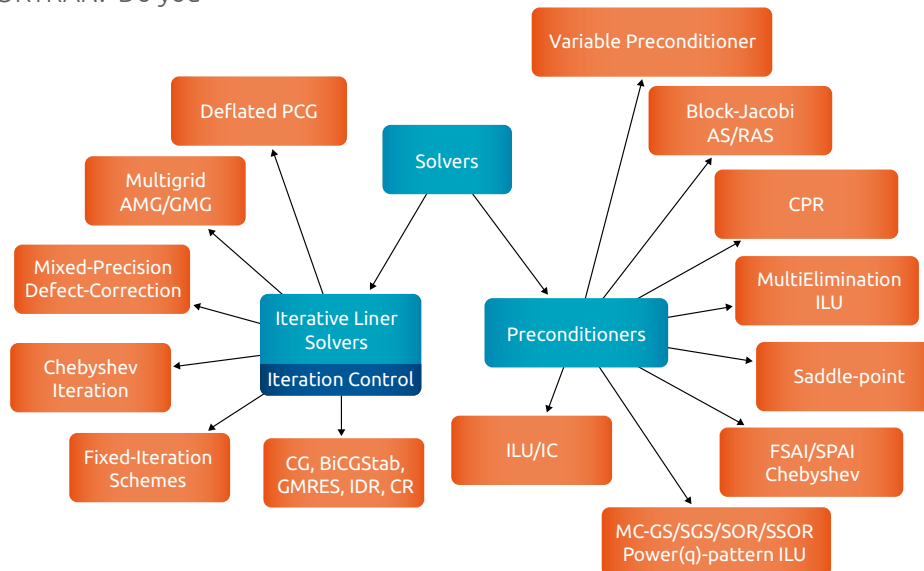
Training

We offer various on-site training courses on applied numerics and parallel programming in terms of multi-core (OpenMP), NVIDIA GPUs (CUDA, OpenCL), AMD GPUs (OpenCL) as well as multi-node/multi-GPU via MPI (Message Passing Interface).



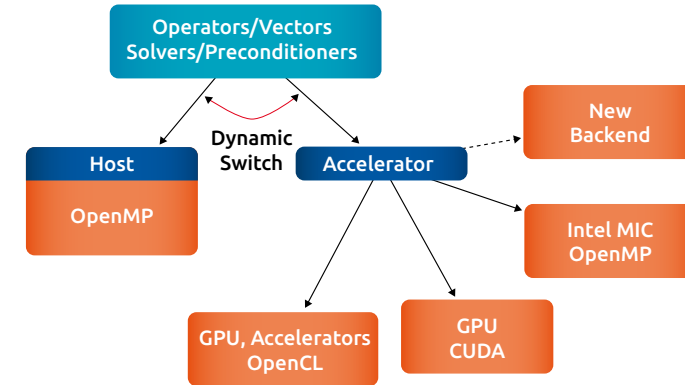
PARALUTION Software

PARALUTION is a library which allows you to use a variety of sparse iterative solvers and preconditioners on multi/many-core CPUs and accelerators, including Xeon Phi (MIC) and GPU devices. Based on C++, it provides generic and flexible design which allows seamless integration into other scientific software packages. With PARALUTION your application performs faster on any hardware platform.



Portability

The library provides full portability of the code! Building your code with PARALUTION guarantees that you can move your application from CPU to GPU or any accelerator technology and vice versa without any modification of the source code.



Run Time Decisions

Any object in the library can be moved to the accelerator at run time. Based on RTTI (Run Time Type Identification), all matrices, vectors, solvers and preconditioners can be offloaded to the accelerator at any time.

Accelerate Your Application

PARALUTION can be successfully deployed for

- Poisson equations
- Navier-Stokes (CFD) problems
- Stress/Deformation analysis
- Convection-diffusion problems
- Bubbly-flow simulations
- Semiconductor simulations

and many more non-linear and time-dependent problems in 2D or 3D, including discretizations based on finite differences, finite elements or finite volumes.