

As the core of a large number of simulation tools, the resolution of large linear systems often represents the dominant part of the computing time.

Massively parallel versions are needed to maintain advances in multi-physics and multi-scale simulations, especially when targeting exascale platforms.

The aim is therefore to address the major challenge of designing and building numerically robust solvers on runtime systems that can scale up and push back the limits of existing industrial codes of the EoCoE project.

In this talk, we will study the recent changes made to the solver with matrices issued from the project such as the block low-rank compression factorization, the capacity to exploit modern GPU accelerators through runtime systems, and the scalability on distributed memory.