

Partnership EDF-MUMPS, a fruitful win-win story

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Abstract

As a major european energy utility, EDF must guarantee the technical and economic control of its production means, from the conception to the end of operational life. The maintenance and optimization of these facilities and materials need, among several things, reliable and powerful simulation softwares like Code_Aster, TELEMAC or Code_Carmel3D. To achieve good performances and robust simulations, the bottleneck of these codes is often the solve of linear systems.

For more than 6 years, we've used MUMPS, in addition to other tools, to manage with efficiency, robustness and flexibility this difficult issue. This intensive use feeds a steady working between the MUMPS and the EDF teams: functional and numerical feedbacks, numerical tricks, bug report and industrial validation under software quality plan. Moreover, EDF supports general innovation and research in MUMPS: for instance the very challenging and promising PhD work of C.Weisbecker about low-rank compression.

This talk aims to highlight some aspects of this fruitful win-win partnership and to detail some uses of MUMPS in our codes.