Optimised interfaces for domain decomposition method applied to solid and fluid mechanics

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The aim of this talk is to showcase recent advances in the construction of robust coarse spaces for optimised Schwarz domain decomposition methods. We formulate and analyse a two level preconditioner as well as a one-level preconditioner with recycling technic. A broad spectrum of applications will be covered, such as incompressible linear elasticity and incompressible Stokes problems, incompressible Navier-Stokes problem. Numerical results with hundreds of processes will be provided, clearly showing the effectiveness and the robustness of the proposed approach.