

## **On an efficient parallel implementation of adaptive FETI-DP**

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based on joint work with

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Domain decomposition methods such as FETI-DP (Finite Element Tearing and Interconnecting - Dual Primal) and BDDC (Balancing Domain Decomposition by Constraints) are highly scalable parallel solvers for the numerical solution of partial differential equations (PDEs).

However, the convergence behavior of FETI-DP and BDDC methods with a standard coarse space highly depends on the parameters of the underlying PDE. The convergence rate of both methods can deteriorate significantly if composite materials are considered. In such cases, problem-dependent (or adaptive) coarse spaces offer a remedy. In adaptive methods, difficulties arisen from highly heterogeneous materials are detected automatically and an adaptive coarse space is set up. These methods are thus characterized by great robustness. Though, for an efficient parallel implementation, different issues have to be tackled to reduce the computational overhead in the set up phase.

We will present details of the set up of the adaptive method to implement the coarse space enrichment efficiently in a parallel context. We will present weak and strong scaling results to show the good parallel scalability of our method.