

1126-65-282

Thomas C Clevenger, Timo Heister* (heister@clemsun.edu), **Guido Kanschat** and **Martin Kronbichler**. *Flexible, Parallel, Adaptive Geometric Multigrid in deal.II*. Preliminary report.

We present data structures and implementation details of a geometric multigrid method on adaptively refined meshes for massively parallel finite element computations. The method uses local smoothing on the refined part of the mesh. Partitioning is achieved by using a space filling curve for the leaf mesh and distributing ancestors in the hierarchy based on the leaves. The method is flexible and shown to work with continuous, DG, and mixed elements of arbitrary order and is scaling to 10,000 cores and more than one billion DoFs. The algorithm is implemented as part of the deal.II finite element library and as such available to the public. (Received January 16, 2017)