

February 11, 2014

12:00-13:00

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HYBRID DIRECT AND ITERATIVE SOLVER FOR H-ADAPTIVE MESHES

In this talk we present a hybrid direct multi-frontal solver coupled with iterative ILUPCG solver for fast solution of adaptive grids. In particular we utilize direct solver as a preprocessor for iterative solver, enabling for elimination of local singularities with linear computational cost. The resulting initial unrefined mesh, with element frontal matrices, replaced by the Schur complements obtained from the preprocessing step, is submitted to iterative ILUPCG solver. We show that our linear computational cost preprocessor reduces significantly the number of iterations of the ILUPCG solver, as well as it reduces the size of the problem submitted to ILUPCG.

Victor Calo (KAUST), Lisandro Dalcin (KAUST), David Pardo (UPH/EHU & IKERBASQUE), Keshav Pingali (ICES, UT)