

A New Approach for Parallel Multigrid Adaption

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Abstract

We present a new approach for the parallel adaption of multigrids on distributed memory architectures. It is based on a simple, object-oriented data structure employing arrays rather than the more customary linked lists. The particular problem of dynamic load balancing is solved using an innovative recursive partitioning strategy.

Large-scale computations on a Cray T3E system using up to 512 processors demonstrate the excellent efficiency and scalability of our approach. Moreover, the proposed partitioning strategy is shown to yield multigrids which are uniformly balanced over all grid levels.