

Adaptive refinement in a CFD parallel environment

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Abstract

We present an adaptive refinement strategy based on self-similar decomposition of quads, triangles and hexahedra. This method has the advantage of preserving mesh quality under an arbitrary level of refinement. Continuity of interpolation functions is guaranteed by imposing constraints on the fields at the irregular nodes at the interface between elements of different degree of refinement. Inclusion in a production parallel Navier-Stokes code is discussed, and results are shown for high Reynolds number shear flows.

Keywords: adaptive refinement, self-similar refinement, parallel computing