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TEMPORAL-ADAPTIVE EULER/NAVIER-STOKES ALGORITHM FOR UNSTEADY AERODYNAMIC ANALYSIS OF AIRFOILS USING UNSTRUCTURED DYNAMIC MESHES

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16. Abstract
A temporal adaptive algorithm for the time-integration of the two-dimensional Euler or Navier-Stokes equations is presented. The flow solver involves an upwind flux-split spatial discretization for the convective terms and central differencing for the shear-stress and heat flux terms on an unstructured mesh of triangles. The temporal adaptive algorithm is a time-accurate integration procedure which allows flows with high spatial and temporal gradients to be computed efficiently by advancing each grid cell near its maximum allowable time step. Results indicate that an appreciable computational savings can be achieved for both inviscid and viscous unsteady airfoil problems using unstructured meshes without degrading spatial or temporal accuracy.

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