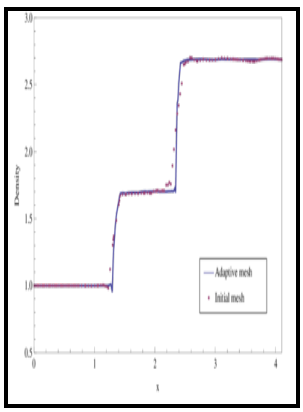
Grid-transparent numerical method for compressible viscous flows on mixed unstructured grids

- - Spectral difference method for compressible flow on unstructured grids with mixed elements



Description: -
-grid-transparent numerical method for compressible viscous flows on mixed unstructured grids
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Notes: Thesis (Ph.D.) - Loughborough University, 1999.
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Tags: #High

The discontinuous Galerkin spectral element methods for compressible flows on two

Stokes flow, creeping flow, interface tracking, discontinuous coefficients, immersed interface methods, Cartesian grids, bubbles.

Numerical Analysis for Compressible Viscous Isothermal Stationary Flows

The support is gratefully acknowledged. Using a finite-volume discretization throughout the entire computational domain the method exhibits strict discrete convergence of mass, momentum, and energy. The effects of turbulence are modelled through the eddy-viscosity hypothesis and the one-equation model of Spalart and Allmaras.

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Such local interpolation is obviously insufficient to guarantee that the global sum of the mass fluxes across the overlapping interfaces vanishes.

Spectral difference method for compressible flow on unstructured grids with mixed elements

The accuracy and fidelity of the solver is validated by simulating a number of canonical flows and the ability of the solver to simulate flows with very complicated immersed boundaries is Citation Context. The calculation of viscous fluxes are detailed, and the implementation of the Spalart-Allmaras turbulence model is described.

CiteSeerX — Citation Query An alternative to unstructured grids for computing gas dynamic flows around arbitrarily complex two

Good performance is shown in all test cases, and quadrilateral cells are found to be considerably more accurate than triangular cells for some test cases. A detailed performance analysis substantiates the necessity of dynamic load balancing. The dispersion and dissipation analysis shows that the scheme is stable for linear problems on triangles.

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Part I: Algorithm and validation Theoretical and Computational Fluid Dynamics 19 5 , 2005, 331-354. The imposition of boundary conditions exactly on a sharp interface that passes through the Cartesian grid is performed using simple stencil readjustments in the vicinity of the interface.

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