Development of Three Dimensional Euler Solver Using Finite Volume Method on Multiblock Structured Grid

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Abstract: This paper addresses the development of three-dimensional Euler solver using finite volume method on multi-block structured grid. The Euler equations are integrated by the finite volume method over fixed control volumes. Roes scheme is used to compute numerical flux through control volumes surface, and extended to higher order by using MUSCL approach. The temporal discretization is done by using modified Runge-Kutta schemes. In addition, point-Jacobi preconditioner and multigrid methods are used to accelerate the convergence to steady state solutions. The code has been verified with several case-studies. The results obtained demonstrate the usefulness and accuracy of solver. Combining of preconditioning with multigrid to accelerate the convergence to state steady solution is under considered. Parallelization of this code on Beowulf system is under progress.

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