Study of the Turbulence Model with Compressible Flow

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ABSTRACT

This study emphasizes the turbulent effect to a compressible flow through the method of CFD (Computational Fluid Dynamics).Utilizing the Reynold Stress Analysis both momentum and energy equation are modified.The κ - ε turbulence model is introduced to bring out the turbulence viscosity (μ t) and (μ eff) and eventually to study the turbulence effect. In order to investigate the realistic transonic flow phenomenon,the flow is set to be viscous compressible one.The orthogonal H type grid is employed to solve a 2D flat plate flow,and the wall function is exploited to simulate the flow within the boundary layer. The conclusion is drawn by comparing the turbulence flow the laminar flow.This will provide some basic understanding toward turbulence compressible effect of the transonic floe region.

Keywords : compressible flow . turbulence effect . κ - ε turbulence model

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