Unsteady numerical solution for viscous compressible flows in a channel

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Abstract

This work deals with numerical solution of the system of Navier-Stokes equations in a channel with time changing wall. MacCormack scheme and Jameson artificial viscosity are used for numerical solution in the form of finite volume method with grid of quadrilateral cells. Mathematical model is unsteady system of 2D Navier-Stokes equations. Unsteady behavior is caused by time change of lower wall of the channel. The channel represents a simple case of vocal tract. An unsteady domain is presented using Arbitrary Lagrangian-Eulerian method. In the end several numerical results of flows in two different channels are presented.

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